

THE HISTORY OF
HOLYOKE WATER POWER COMPANY

A SUBSIDIARY OF NORTHEAST UTILITIES
1859 - 1967

HOLYOKE, MASSACHUSETTS

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THE HISTORY

Foreword

This book, "The History of Holyoke Water Power Company 1859-1967", is the second of two volumes about this company.

The first book, titled "The Roots of Holyoke Water Power Company", written in 1985 is devoted to its predecessor companies. They were the Proprietors of the Locks and Canals on the Connecticut River, the Hadley Falls Company of 1827 and the Hadley Falls Company of 1848.

A section of that book is also devoted to Alfred Smith, native of South Hadley, distinguished Hartford lawyer, active participant in the affairs of the two Hadley Falls companies and the founder of the Holyoke Water Power Company.

The Holyoke Water Power Company was incorporated in 1859 and continued as an independent company until 1967 when it became a subsidiary of Northeast Utilities. This volume is devoted to the life of the company during the intervening years.

(Robert E. Barrett was employed by the Holyoke Water Power Company from 1930 to 1974. He became President of the Company in 1945. Following his retirement, he became a consultant for Northeast Utilities.)

Preface

When the Holyoke Water Power Company was incorporated in 1859 there was included among the provisions in its charter, the authority to acquire the property of the Hadley Falls Company. That company went into receivership in 1858. The property was sold at auction in 1859 to Alfred Smith. Thereafter, it was purchased by the new company.

Holyoke was the first name in the corporate title of this new company. Its choice indicates its geographical location in the town of Holyoke, which had become separated from West Springfield on March 14, 1850. The incorporation of the new town and the choice of the name, Holyoke, is discussed in "The Roots of Holyoke Water Power Company" on page III-29. The probable reason for the choice of the name is included among the accompanying exhibits. ¹⁰⁹

This volume has the unique opportunity to tell the story of a company which had an independent corporate existence of 108 years, a longevity unique even in New England. The text relies throughout upon excellent corporate records which began in 1859 and upon contemporary writings. In addition, the writer has freely called upon his personal knowledge of the company from 1930 to 1967.

The major items included in the purchase by the new company were approximately 1,100 acres of land, a dam across the Connecticut River, and a partially completed system of power canals.

The conversion of such a large area of land into industrial sites, a commercial section and residential area, all combining together to create a comprehensively planned industrial city, will be a constant theme throughout much of the text. Another subject that continues through most of the period is the development of the Connecticut River at Holyoke as an energy source. Interspersed through the years will be examples of successful methods used to spur the industrial development of the area.

In addition to the mundane events of typical corporate existence, this volume will tell some of the unusual events in the company's history. Among these will be building the first facility in the country to commercially test water wheels, the invention of the Venturi meter which measures the flows of large quantities of water, and the design and construction of the first successful fishway for shad on the Atlantic sea coast.

This history begins when the industrial revolution, which replaced hand labor with machines in industry, was in its early stages. It ends with the Holyoke Water Power Company becoming a subsidiary of Northeast Utilities, the largest electric power system in New England, and a leader in the development of nuclear power.

To Hildegarde Newton, a long time member of the company staff until her retirement, and to Doris K. Wenzel of the present staff, I express appreciation for their collection and maintenance of pertinent historical materials over many years. Their work has been an invaluable source of factual information for this history.

Sharon Tower and Elizabeth Belliveau of the Western Massachusetts Electric Company staff have typed this manuscript and have been of great help as this book has moved through the editing and publishing stages.

To John T. Hickey, Manager of Holyoke Water Power Company, go my thanks for his review of the materials in this book. His knowledge of Holyoke history made his comments very valuable.

I especially express my gratitude to Walter F. Fee, retired Executive Vice President of Northeast Utilities. It was he who first suggested that this history be written and who gave support and encouragement to the writer during its preparation.

1859 - 1890

The Beginning

Prologue

The birth of the Holyoke Water Power Company was unique and complicated. Therefore, this history will begin with a much more detailed account of the corporate beginnings of the company than usually would be given.

Incorporation

It was on January 31, 1859, that the Massachusetts Legislature incorporated the Holyoke Water Power Company. The Corporators named in the legislation were Francis Bacon, Augustus H. Fiske, George W. Lyman, and William Appleton.¹

Corporators

Three of the four Corporators, Bacon, Fiske, and Lyman were, at the time of incorporation, the court appointed Receivers of the Hadley Falls Company. Lyman was a former treasurer of that company as well as treasurer of the Lyman Mills. Appleton was a former director of the Hadley Falls Company.

Comments concerning Appleton in "Boston's North Shore"² follow: "There was William Appleton, merchant-ship owner who came down to Boston from New Hampshire 'with a small bundle in his hand and a few cents in his pocket' as he liked to recall. William was a cousin of Nathan and Samuel Appleton, mill owners in league with the Lawrences and Lowells; he regarded the Nahant air as a tonic for the chronic dyspepsia to which his daguerreotype bears witness."

Subscribers' Meeting

The Corporators called a meeting of the subscribers to the stock of the Holyoke Water Power Company on February 8. The meeting was held at the Boston office of the Lyman Mills.

Some of the actions taken at this meeting were:³

- o The Act of Incorporation was adopted.
- o Bylaws were adopted
- o Directors were elected
- o Chester W. Chapin was elected President and George W. Lyman was elected Treasurer
- o Capital stock of \$350,000 was authorized
- o Authority was given to the Directors to purchase, at the Receivers auction, the property of the Hadley Falls Company
- o Meeting was adjourned to March 17 at the same place

The propriety of the Receivers of the Hadley Falls Company, taking such a prominent role in the formation of a company which was preparing to bid for the former Hadley Falls Company property at their forthcoming auction, is interesting to conjecture upon, 125 years later.

Chester W. Chapin, who was elected President, was a prominent businessman of Springfield. He was also a former director of the Hadley Falls Company having been first elected in 1855.⁴

The Auction

The auction was held on February 10. An account of it follows:

"The auction took place in Holyoke itself. A considerable crowd attended. The bidding was opened by Chester W. Chapin, once of Ireland Parish, now railroad magnate of Springfield, who was representing a group of associates--"Boston cotton lords," quickly ran the rumor. Confidently he offered \$300,000, (*) the total sum apparently which his friends had deemed needed to secure the property. Promptly a counter bid of \$315,000 was heard. Chapin, professing to doubt the bona fide character of the rival offer, insisted upon delay to investigate the source of the bid. Presumably he used the hour's grace to communicate with his principals, for after a time he raised the bid \$2,000. The

immediate response was a bid of \$325,000. Chapin gave up. The whole of the real estate and water power rights of the Hadley Falls Company passed into the hands of Alfred Smith, from whom, as president of the first Hadley Falls Company, part had once come. However unwilling Smith might be to reinvest in any Boston-managed enterprise, his belief in the soundness of a well-run power project brought the property at last into his own hands. His aims were more general than those of the cotton lords, and by his more flexible attitude the town was to benefit. Holyoke rejoiced."⁵

(*)At the request of the Boston interests, as to the worth of the property, S. S. Chase former engineer of the Hadley Falls Company valued it at \$300,000.⁷⁶

The plans of the Receivers and of some of the former Hadley Falls Company stockholders to keep the control of the Hadley Falls development in Boston had failed.

Valuation of the Hadley Falls Company

Upon becoming the successful bidder, Alfred Smith promptly published his opinion of the value of the properties which he had purchased. That valuation, dated February 16, 1859, and titled "Hadley Falls Company - Schedule and Valuation" is included herewith.⁶

In arriving at his valuation, Smith confined his appraisal to that portion of the property upon which some initial development had already taken place and which made up only one-sixth of the entire area. His computations assumed a total property purchase price of \$334,000, subsequently increased to \$350,000 in the schedule. His valuation gave a surplus of \$56,430 over the property cost, or a total value of \$406,430.

In this manner, Smith proved the proposition with which he began his analysis which was:

"That the one-sixth or east side part of the property, is worth enough and can be made available, within say three years, to pay off the entire cost and valuation price of the recently purchased property, and leave a handsome surplus for further profit, on the

east side part, besides leaving the whole five-sixths, or west side part for a clear additional profit."

Procedure Proposed by Alfred Smith for his Acquisition of Hadley Falls Company Property

On February 21, Alfred Smith made public the manner in which he intended to acquire the property of the Hadley Falls Company from the Receivers. That statement is summarized as follows:

- o To pay the Receivers, on or before March 11, 1859, \$325,000 for the former Hadley Falls Company property which he had purchased on February 10
- o To convey the property on the above date to Trustees to hold for the benefit of its future owners.
- o To offer the property to subscribers at a price of \$350,000
- o The total amount of shares to be distributed to be \$400,000 (later reduced \$350,000).
- o Subscribers to make payment for the shares prior to March 11
- o Over subscription to be reduced to \$400,000
- o In case of under subscription as of March 4, the offer may be withdrawn and the property disposed of in some other manner.

Declaration of Alfred Smith to the Trustees

On February 21, Alfred Smith also wrote a declaration to the Trustees in which he stated that the Hadley Falls Company, which he had purchased for \$325,000, would be placed in common stock at a value of \$350,000. Thus, Smith was to gain \$25,000 by the transaction.

At the same time, Smith said he would give up the \$25,000 to the stockholders if they were not satisfied with the prospects of the new company. In addition, he offered to take back the stock of all subscribers, at cost and interest, who were not satisfied after a two-years' trial.

Transfer of the Hadley Falls Company Property from the Receivers to Alfred Smith

In accordance with his statement of February 21, Smith evidently received subscriptions for the entire capitalization of the new company. Then on or before March 11 he paid to the Receivers \$325,000. On March 12 he received from the Receivers a deed⁹ to the property of the former Hadley Falls Company.

Agreement Between Trustees and Alfred Smith

Also on March 12, Alfred Smith and the Trustees, who were Henry A. Perkins and James Goodwin of Hartford, Henry W. Clapp of Greenfield and Reuben A. Chapman of Springfield, entered into an agreement. By that agreement, Smith transferred the property, which he had just received from the Receivers, to the Trustees. The Trustees, on their part, agreed to hold the property for the benefit of the subscribers to the common stock.¹⁰

Adjourned Meeting of the Holyoke Water Power Company

In accordance with the vote taken at the February 8 meeting of the Company, the meeting of the subscribers continued on March 17 at the same place in Boston. However, an entirely different group of subscribers was present. Alfred Smith was chosen chairman.

Resignations were received from all of the directors and officers who had been elected on February 8. Six new directors were elected. They were Alfred Smith, James Goodwin, Roland Mather, and George M. Bartholomew of Hartford, John Chase of Chicopee, and John P. Williston of Northampton. Alfred Smith was elected President.

It was also voted to distribute the capital stock among the new subscribers who were listed as part of the vote.¹¹

They were "hereby admitted as the associates of the persons named in the act of incorporation, and as stockholders therein." In this manner the capital stock of the company was distributed.

The last vote of the meeting authorized the Directors to purchase the property of the former Hadley Falls Company from Alfred Smith or from the Trustees to whom it had been conveyed by Smith. The meeting then adjourned to meet in Holyoke on March 24.¹²

Trustees Deed Property To Holyoke Water Power Company

On March 22 the Trustees transferred the former Hadley Falls Company¹³ property by deed to the Holyoke Water Power Company.

Second Adjourned Meeting of the Holyoke Water Power Company

On March 24 the stockholders continued the meeting of March 17. It was held in the counting room, of the former Hadley Falls Company. Among the actions of the stockholders were:

- o Election of a Treasurer
- o Amending the bylaws
- o Changing the form of the stock certificate
- o Acceptance of the deed from the Trustees for the Hadley Falls Company property

Transfer of the Property to Holyoke Water Power Company

The legal formality of completing the transfer of the former Hadley Falls Company property to the Holyoke Water Power Company took place at the stockholders' meeting of March 24. The transfer process had begun with the incorporation of the company by the Legislature on January 31. On February 10 Alfred Smith purchased the property at public auction. During the intervening 42 days he raised the capital needed to pay for the property and created the necessary legal documents for its transfer. In the latter role he brought to bear his great legal talent. In the Hartford community he "was considered one of the best legal draftsmen the bar ever had."¹⁴

For a corporate transfer of this magnitude to take place, from beginning to end, in less than two months would be a great accomplishment today. For it to occur in 1859, when communications were primitive (the telephone was not invented until 1874) and travel slow, was a tribute to the extraordinary abilities of Alfred Smith.

First Annual Stockholders Meeting

The stockholders held their first annual meeting on June 15, 1859, at their counting room in Holyoke. A

report of the business and property was laid before them.¹⁵ Directors were elected and Alfred Smith was chosen President.

Retirement of Alfred Smith from Active Management

The Directors then met on July 5. The minutes of that meeting contain an extensive statement by President Smith of his stewardship of the company since its inception. He reviewed the various leases which had been made with tenants for space in company buildings and he reported on the sales of land. He told of the installation of a double entry bookkeeping system and commented upon the start of manufacturing heavy equipment in the machine shop. The report was evidently written in contemplation of his approaching resignation as President.

At the August Directors' meeting of August 26, Smith resigned. He had become 70 years old on July 10.¹⁶ During the preceding six months he had purchased the former Hadley Falls Company from its Receivers, organized a new Holyoke Water Power Company, and had placed the company upon a firm financial foundation. He passed the active management of the company on to others but continued as a director until his death on August 12, 1868.¹⁷ George M. Bartholomew succeeded him as president.

"Roots of Holyoke Water Power Company" is the first volume of this history of the company. The footsteps of Alfred Smith marched through the pages of each of those roots. They continued to do so through the corporate organization stage in this second volume. The continuity of his association with the Holyoke Water Power Company and its predecessor companies is thus, by necessity, separated into two parts. However, there is included herewith "A Biography of Alfred Smith."¹⁸ It gives in one essay a continuous record of his involvement with the predecessor companies and with the Holyoke Water Power Company.

Proprietors of the Locks and Canals

The navigation canal in South Hadley was built by the Proprietors of the Locks and Canals, one of the predecessor companies of Holyoke Water Power Company (HWP). The stock of the Proprietors was acquired by the Hadley Falls Company in 1847 which had held it in the names of its directors. At the August meeting, at the request of the Receivers of the Hadley Falls Company, it was transferred to the HWP directors.

The Estate

The property purchased by the company consisted of:

1. Hydraulic System

- o Dam across the Connecticut River and gate houses
- o Two and one half miles of power canals on three levels with a boat lock between the First and Second Levels

2. Real Estate

- o Approximately 1,100 acres of land in Holyoke¹⁹
- o The lands of the Proprietors of Locks and Canals in South Hadley
- o Grist mill
- o Old cotton mill
- o Office
- o Large machine shop
- o Tenements for operatives of the machine shop

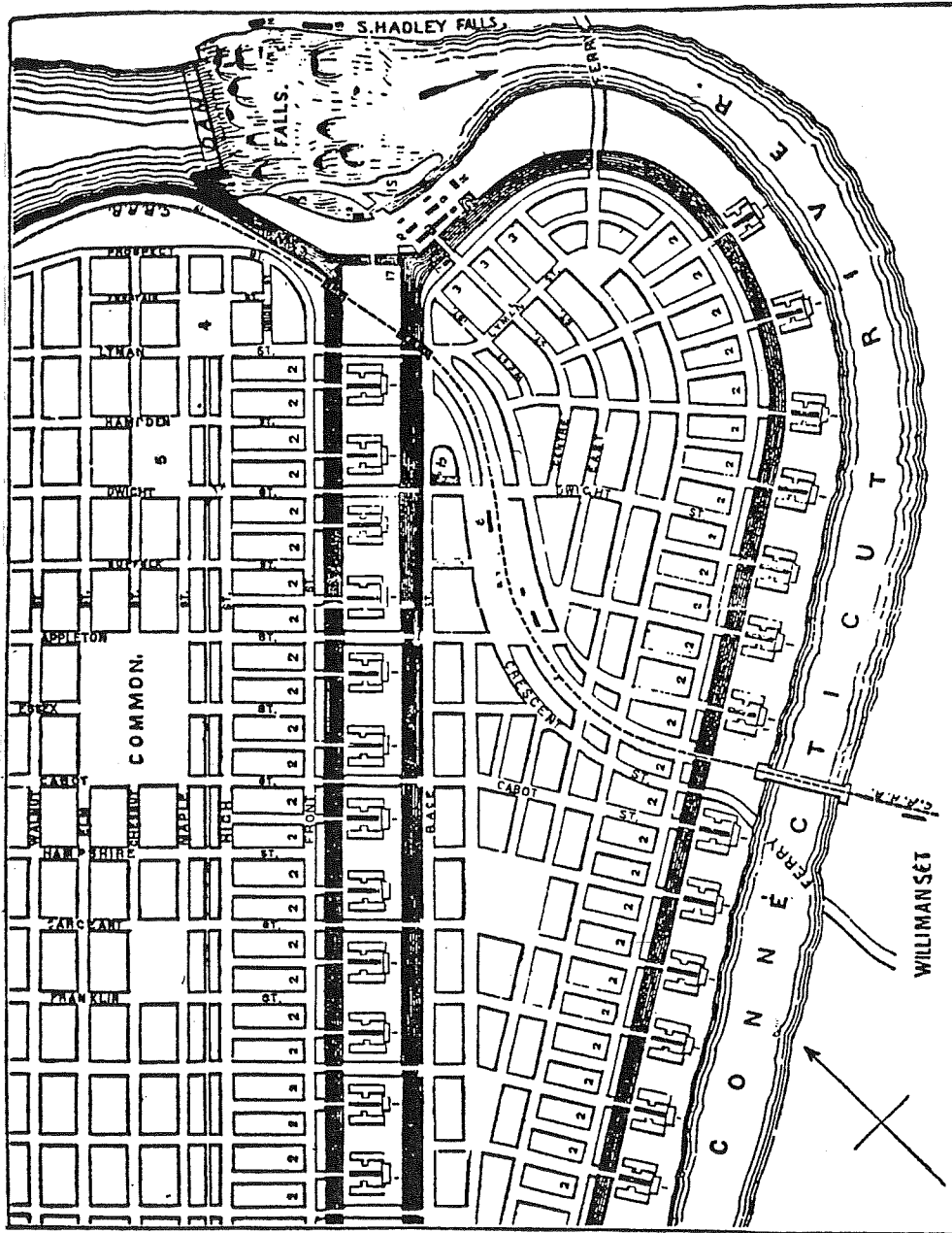
The office, machine shop and the tenements are still in active use today but have no connection with the company.

3. Public Services

- o A water supply reservoir, distribution piping and a system for pumping water from the Connecticut River.
- o A gas plant with distribution system

Maps

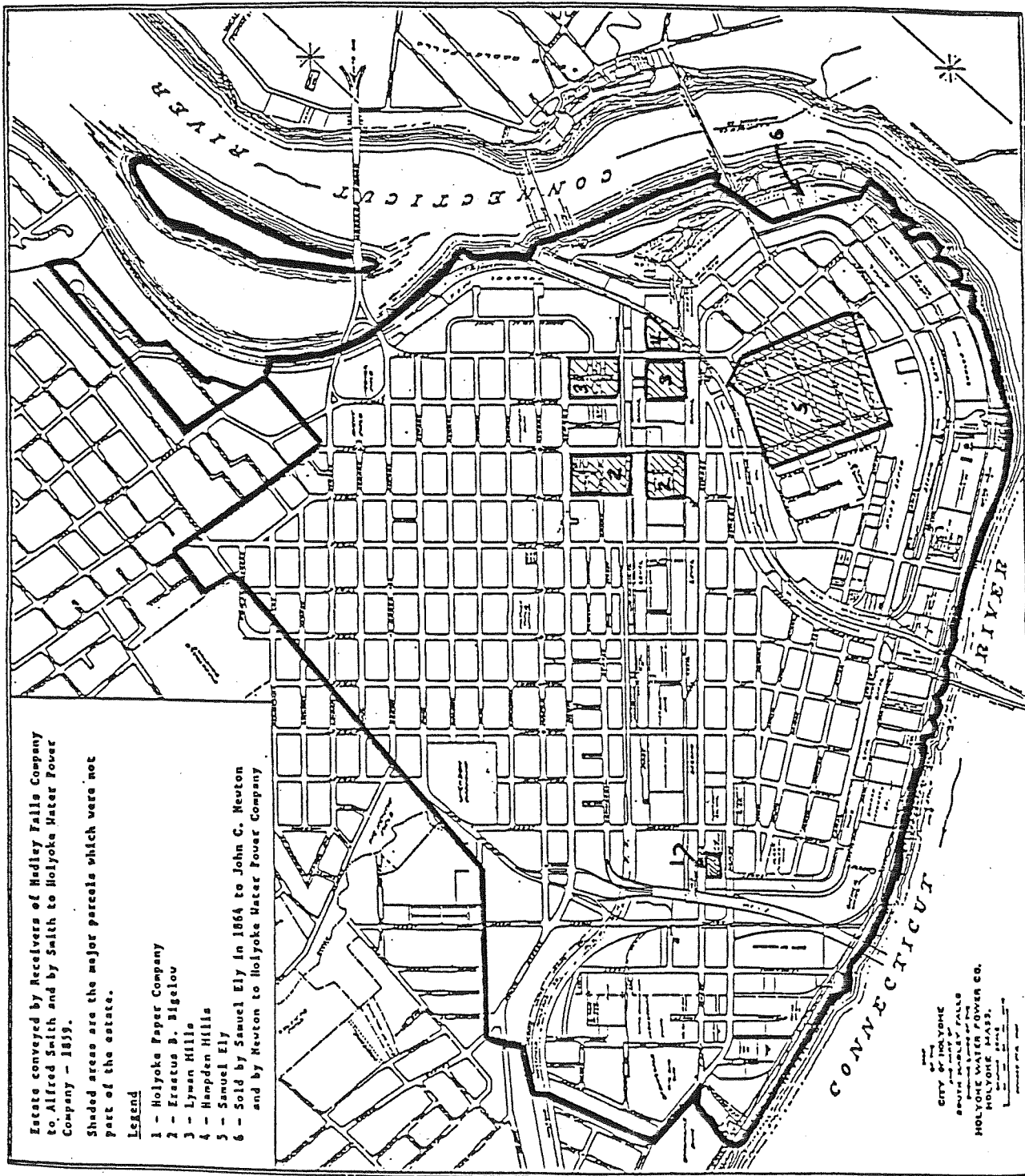
A map marked "A" is included here. It comes from an advertising circular issued in 1850.^{19A} It shows the dam, the canals, the machine shop buildings near the river below the dam, the nearby tenements for the machine shop operatives and the company office and the water supply reservoir on High Street.

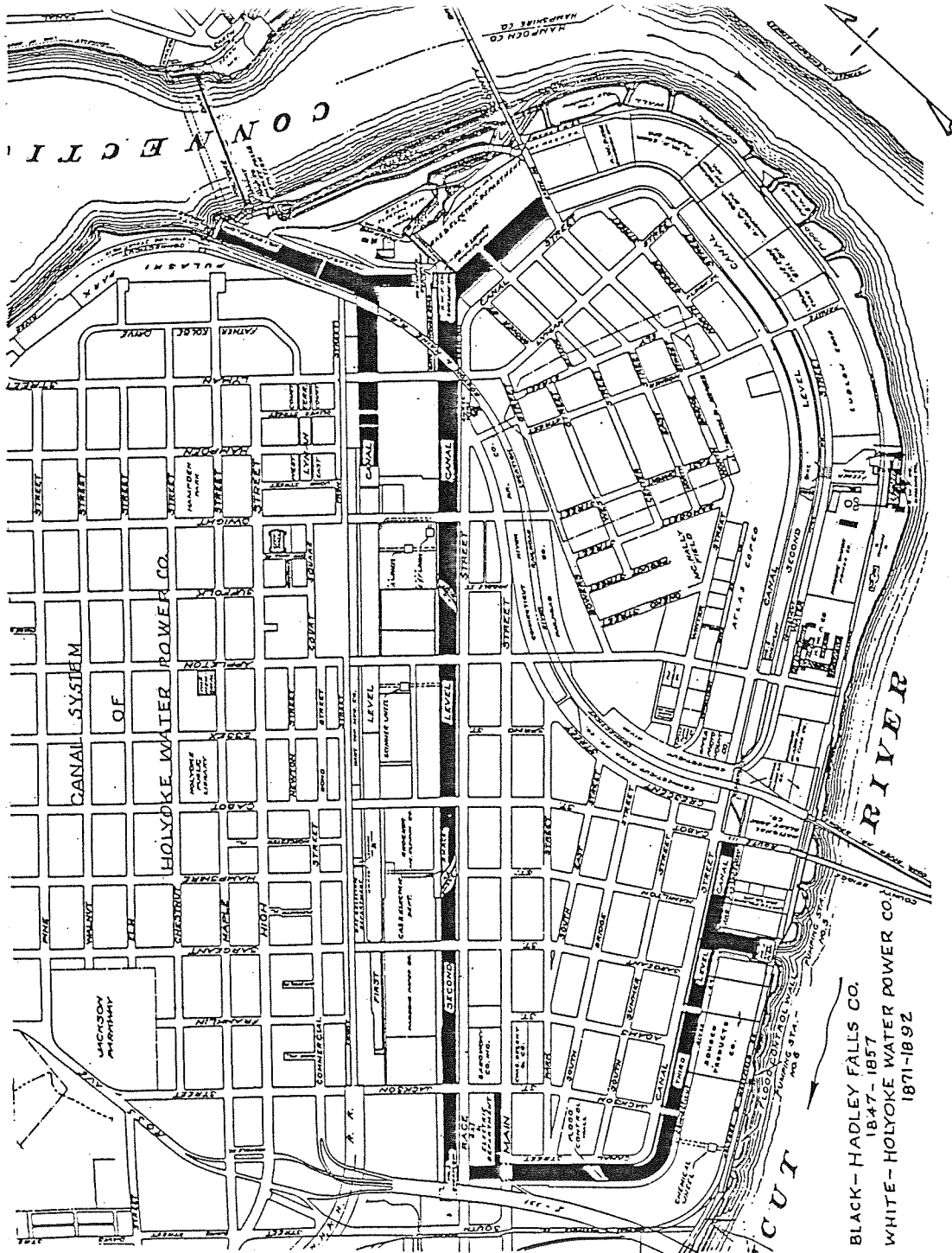


PLAN OF THE NEW CITY OF HOLYOKE
1850

REFERENCES.

- 1.1.1. Cotton Mills.
- 2.2.2. Boarding-house Blocks.
- 3.3.3. Mechanic Blocks.
- 4. Reservoir.
- 5. Hampden Square.
- 6. Railroad Station.
- 7. Office of Hadley Falls Co.
- 8. Machine Shop.
- 9. Furnace.
- 10. Blacksmith Shop.
- 11. Saw Mill.
- 12. Old Cotton Mill.
- 13. Flour Mill.
- 14. Paper Mill.
- 15. Glasgow Mill.
- 16. Hotel.
- 17. Locks.
- 18. Pump House.





BLACK-HADLEY FALLS CO.
 1847-1857
 WHITE-HOLYOKE WATER POWER CO.
 1871-1892

The map also shows the proposed street system of the town, the areas planned for cotton mills and for boarding-house blocks.

Another map marked "B" is of present day Holyoke. Outlined with a black border line is the property purchased by the Company. The shaded areas within the border line are those which had been sold by the Hadley Falls Company or which the company had been unable to purchase.

A third map marked "C" shows in black the parts of the canal system completed by the Hadley Falls Company. The remainder of the canals was finished by the Holyoke Water Power Company.

Letter from Holyoke 1853

A letter written in 1853 by a person living in the Mechanics Block of the Hadley Falls Company follows:

"Holyoke, May 29, 1853

Cousin Augustus

"I will send you a sheet of Holyoke paper and that is about all that I can send. There is not much news just now. Everything remains about the same. There is some progress made in building the brick work of a large mill and Dye house is nearly done. They calculate to have it running sometime in the fall. The church is pretty well along. It will probably be done as soon as the first of August. A man came very near getting killed in the Machine Shop here last Thursday by his clothes catching and throwing him over a shaft. Every particle of his clothes were torn off. It was thought for sometime that he was dead but he revived and is getting along well. I had a letter from Frank this week. He did not write much news. He is well and in good spirits. I will try to write a little more. You see I begun a fortnight ago but I have not had time to write any since. I send you a plan of Holyoke, but you need not suppose Holyoke is anything like it now only the land and water is here. If you was here you would not know that this map had anything to do with the place...

"Give our respects to Uncle Otis and Aunt Irene and Caroline and all inquiring friends. Write soon.

H. Soule

"PS: I have made a dot where we live. It is No. 5 Mechanics Block. (See "Plan of New City of Holyoke" marked "A" preceding.")

A similar letter written from Ireland Depot (now Holyoke) in 1849 is included among the Exhibits.^{19B} It is part of a paper presented to the Other Club in Holyoke in 1986 by Donald R. Taber. The letter was written by Mr. Taber's grandmother who had just moved to Ireland Depot. A few sentences from that letter follow:

"Ireland Depot
January 29, 1849

Dear Cousins:

"I now seat myself to pen a few lines from our new home for so we must call it. ---- It is a new place and layed out for a large manufacturing city. ---- The company will put a log dam across the river in another summer and are storing works incident to building up a factory village in Massachusetts. The company is called the Hadley Falls Company with a capital of \$4,000,000.

"Land, rent and everything are up to top notch on prices. We live upstairs - have one room for a shop over house and get along very comfortable. We give a man his meals for \$2.00 a week. ---- My husband keeps a jeweler's shop in one corner and I wash dishes in the other.

"We have been quite unwell since we have been here. ---- One week ago last Sabbath was the first morning I have been sick enough to be in bed until after breakfast. ---- Our complaint is diarrhea which everyone has. To become acclimated here we are taking a medicine to be a certain cure - Dr. Payne's Curminative Balsam."

Another letter dated November 1851, nearly three years later, said in part, "Holyoke is chill, chill as far as business is concerned and unless there is more enterprise another year, times must be still harder, but all are staying and hope for the future to be more cheering and prosperous."

Samuel Ely, His Shot Gun and Parcel 6

Parcel 6, shown on map B, was owned by Samuel Ely and contained about 14 acres. It was strategically located between the Second Level Canal and the Connecticut River. The Company wanted the land because it could provide locations for mills which would use water power from the canal. The company was unsuccessful in persuading Ely to sell.

Following is an excerpt from "Picturesque Hampden"²⁰ telling about one of the unsuccessful efforts:

"Large prices were paid for the land, if viewed from a farming standpoint, which had previously been the land's only claim to worth; but from a manufacturing standpoint the prices were extremely moderate. Five thousand dollars, at the time the dam was completed, would have bought fifty acres right in the best part of the present city. Most of the farmers were ready enough to sell at the prices offered, and the only one with whom any trouble was had was Sam Ely who had an eighty-acre farm on the river-side, some distance below the proposed dam. Half he sold, but the rest he clung to. He was an old-fashioned farmer, who had an antipathy to innovations, and he wished to keep the old homestead on which he had been brought up and where he had always lived. Besides, he said he didn't want to see the corporations control everything, and he was sorry they had come there. "He didn't s'pose he could raise nothing now; it'd all be stolen." But the company wanted the land, and they kept after him. "Uncle" John Chase was their emissary in this matter. Finally Sam got sick of the harassing and one day, seeing Uncle Chase approaching on his usual errand, he raised his chamber window and poked the muzzle of his old gun over the sash, and warned Uncle Chase to come no nearer or he would shoot. Uncle Chase thought this an idle threat and kept right on, and Ely pulled the trigger.

The musket was heavily loaded and the discharge was quite startling. The visitor was not hurt, but he was well scared, and made haste to retreat. This event was the sensation of the town for some time. There was talk of arresting Ely; but this was not considered politic, as anything to disturb him would but put off the day of securing the land. The wisdom of this course was proved, when a little later the desired transfer was made."

Parcel 6 Purchased by John C. Newton

John C. Newton of Holyoke had more success in dealing with Ely than did John Chase. He purchased Parcel 6 on March 12, 1864 for \$18,000.²¹ On March 28 at a Directors' Meeting held at the Hartford home of Alfred Smith, a report was made of the Newton purchase. It was also reported that Newton would assign to the Company his rights to the property. One of the considerations for the property transfer was that the Company would assume the payment of the \$18,000 notes that Newton had given to Ely. The Directors also discussed compensation to Newton for his services in obtaining the land.

On December 15, 1864, Newton transferred the Ely property to the Company.²² The conveyance was subject to the assumption by the Company of the Mortgage Deed for \$18,000 given by Newton to Ely. It also was in consideration of a payment to Newton of \$11,000.

The total cost to the Company for Parcel 6 was \$29,000. The area of the tract was about 14 acres which made the cost to the Company about \$2,100 an acre. The preceding article from Picturesque Hampden states that, at the time the dam was completed, \$5,000 would have brought 50 acres in the best part of the city, at a price of \$100 an acre. Two shrewd Yankees, Ely and Newton, had driven hard bargains with great advantage to themselves.

1859-1890The Legacy

Holyoke Water Power Company formally became the successor to the Hadley Falls Company on March 24, 1859 and as such, the owner of the estate which has already been described. In addition, it became the beneficiary of a well thought out plan for the development of that estate.

Into the hands of a new management had come the opportunity to meld together the power potential of the Connecticut River with a vast land area to create an industrial city. The seeds for such a community had been sown by the Hadley Falls Company. Could they be nurtured successfully by the Holyoke Water Power Company?

Following is a description of Holyoke in 1859 when the Company was in its first year of existence:

"Holyoke in the spring of 1859 found itself with a new company in control of its destiny. The dam was built, the canal system fully mapped out and sixty percent of it dug. The large machine shop was in existence. Three cotton mills, two paper mills, and several small manufactories, such as the wire and power-loom reed plants, had survived the storm of 1857. The Hadley Falls Bank and the Holyoke Savings Bank were still functioning. The local newspaper was still being published. A few stores--two or three groceries, two meat markets, dry goods and clothing establishments, a stove and hardware dealer's, and a shoe store--offered the necessaries of life to the town. Water and gas were sold to townspeople by the power company. Four churches, two schoolhouses, a railroad depot, several rows of brick tenements, a scattering of separate frame houses, and an array of turf and plank shanties along the river bank in the Patch, completed the physical layout of the place. The New City was a rather dreary spot.

"But the prospects for the future were not unhopeful. Holyoke was no longer an outright company town. The Holyoke Water Power Company was headed by men familiar with the local scene. Chief of these was old

Alfred Smith, whose connection with the Hadley Falls had begun in 1832, and whose shrewd analysis of the difficulties behind the failure of the Hadley Falls Company was guarantee against repetition of those mistakes. The agent and engineer in charge came to live in town. Although Alfred Smith himself resigned as president of the new company a few months after its organization, and his successor knew little of Holyoke at first hand, the fruits of Smith's long experience were embodied in the company's policies. To give permanence and stability to the town eventually new manufactures must be found. But for the time being a careful regime of patience and economy was inaugurated. The stockholders declared against any scheme of building mills or dwellings in order to effect sales or rentals. Income from the water power rentals, from leases of manufacturing space in existing buildings and sale of gas and water sufficed to pay the investors a 5 percent dividend on the investment the first year, and there seemed therefore no occasion for uncertain expansion. Capital was wary as a result of the panic of 1857, and there was no immediate prospect of further investment in the town."²⁴

First Year Income

In his report to the Stockholders²³ at the first annual meeting the President listed the sources of income which the company had at that time. They were:

Water Power Rentals	\$ 8,650
Old Cotton Mill (now wire mill)	750
Grist Mill	312
Farming Lands	650
Tenement Houses	6,912
1 Room in Machine Shop	1,600
Gas Works	1,000
Water Works	1,000
Paint and Harness Shop	60
	<u>\$ 20,934</u>

Grist Mill

On March 14, 1859, three days before the first stockholders meeting of the new company, HWP leased to Roswell P. Crafts the "basement or lower story in which

the Burr Stones²⁶ are running and one half of one of the stories above, of their Brick grist Mill for the purpose of carrying on a Milling or Flouring business." The rental was \$312 a year.²⁷ This lease was signed for the Holyoke Water Power Company by Alfred Smith, President, although he was not elected to that office until the stockholders meeting of March 17. The grist mill was located along the river near the dam.

The Brick Yards

The brick yards were located in the area of Holyoke which today would be bounded by Jackson Street on the south, High Street on the west, and the Second Level Canal on the east. (The First Level Canal had not yet been extended this far southerly.)

When the Hadley Falls Company (1827) was organized it purchased from Titus Ingraham one acre which had been part of the Alvord and Munger farms and was used for a brick yard.²⁸ That land passed to the Hadley Falls Company (1848) when it purchased the earlier company. It then passed to HWP as part of the 1,100 acre estate. This was evidently the nucleus of what was to become an extensive brick making operation.

On April 1, 1859, the company leased the northerly portion of an enlarged brick yard area to C. M. McClaflyn of Chicopee and the southerly portion to L. P. Bosworth. The rental of each was 25¢ for each one thousand bricks made.²⁹ The Bosworth lease was renewed on January 1, 1869. At that time the dimensions of the leased area were 660 feet along Jackson Street and 600 feet along High Street, amounting to nine acres.³⁰

The rental in the Cook, Niles lease was 25¢ for each 1,000 bricks plus power at the rate of 15¢ for each 1,000 bricks. Mechanical power for brick making was supplied by an HWP water wheel located at #3 overflow, taking water from the Second Level Canal and discharging it into the Third Level Canal.

An indication of the extent of the Holyoke brick yard operations can be had from the following quotation, "From brick yards, opened just before the Civil War, E. T. Bosworth was turning out 10,000,000 bricks a season in 1873 with three hundred men at work and a monthly payroll of \$10,000."⁴⁰ These men were earning about \$1.25 a day making bricks.

Ice Cutting

In May of 1860 the Company leased to J. W. Davis the right to cut ice on the pond above the dam and one-half acre of ground on the river bank for an ice house. The price for the³² ice cutting privilege and for the land was \$25 a year.

Ice cutting on the pond continued yearly until the early part of this century. Its demise was probably caused by concern for the purity of ice made from river water and by the advent of electric refrigeration.

Holyoke Shad Company

On January 1, 1866, an agreement was reached between the company and a group of Holyoke men who were associated together under the name of the Holyoke Shad Company.

Shad fishing in the river has been an annual spring event for as long as man has lived in the Connecticut Valley. Shad migrating upstream to spawn were caught at those places where rapids occurred in the riverbed. Holyoke, like Enfield and Turners Falls, was one of those places.

At Holyoke there were two areas along the river where shad fishing was done with seines. One was located downstream of the dam where man-made islands had been built in the riverbed. An account of³⁵ fishing from one of those islands is included herein.

The second area for shad fishing by seine was at Jed Days' Landing at the southerly end of Holyoke, near today's Springdale Industrial Park. Here the company leased from HWP the riverfront for a distance of 1,650 feet, a third of a mile, for its fishing activity. The lease was for a five-year period and³⁶ was signed by the eleven men who formed the company.

The annual rent for the property was five percent of the value of all the fish caught each year. HWP could cancel the lease of the Shad Company should it "fail or neglect to prosecute the business of fishing within the aforesaid fishing grounds with reasonable diligence."



FISHING FOR SHAD BY MOONLIGHT, AT "JED DAY'S LANDING."

At night the shad dropped back from the falls to the quieter water below, and at Jed Day's landing another company was ready to attack them. This company fished nights altogether.

35

The Quarry

Among the properties purchased by the Hadley Falls Company of 1848 was an area for quarrying rock suitable for canal walls and building foundations. A quarry operation was begun and stone was carried by railroad to the construction sites.

At the time of the auction of the former property of the Hadley Falls Company by its Receivers, the quarry was not included with the estate on February 10, 1859. It was bought by Joseph C. Parsons for \$1,350 with a 10 percent deposit of \$135.00. Evidently Parsons had a change of mind and did not complete his purchase. At a Directors' Meeting on April 14 it was voted: "To approve the purchase of the quarry and railway appertaining thereto at the price of eighteen hundred dollars and that a deed be taken to and in the name of Holyoke Water Power Company."

On July 2, 1859, the Receivers sold the quarry to HWP.³⁴ Prior to that on April 1, the Company had leased the quarry for one year to Louis P. Bosworth of Chicopee. The lease required Bosworth to pay HWP fifteen cents for each perch of twenty-five cubic feet of stone taken from the quarry as rent. The lease also stated that Bosworth would charge HWP or any other purchaser sixty-five cents for each perch to which would be added the fifteen cents for each perch for rent payment to HWP. As a means of insuring the rental income to HWP, Bosworth covenanted "to work the said quarry."

By 1866 it seems that other quarry arrangements were in place. For on June 1, an agreement was made with John Delaney. A copy of that agreement follows:

John Delaney

June 1st 1866

It is this day agreed by and between John Delaney of the first part and the Holyoke Water Power Company of the second part that the party of the first part will lay and complete in a good substantial manner the Canal Wall on the upper Canal Northwary of Dwight Street. The said Wall to be dry rubble and built of a good stone and in the same manner as that formerly done on said Canal. The Holyoke Water Power Company agreed to furnish the stone in the ledge before quarrying without the usual charge or cost of fifteen (15) cents per perch, and to pay said Delaney Four (4) Dollars per perch of twenty five (25) cub feet each.

The said Holyoke Water Power Company may have the option of completing fifty (50) feet of Canal Wall on each side of said Canal on the dootherby side of Dwight Street at the above price during this season.

*The Holyoke Water Power Co
By L. Shaw agt
John Delaney*



Industrial Development

The making of brick, quarrying of stone, cutting of ice or catching shad were minor but essential roles which this new company filled in the early life of Holyoke. However, from its beginning the main thrust of the company was to foster the growth of manufacturing firms which could locate upon its land and use its water power.

Industrial Properties from Hadley Falls Company

The estate purchased by HWP from the Receivers of the Hadley Falls Company included three industrial properties in Holyoke. They were the machine shop, grist mill and cotton mill.

Machine Shop

The machine shop was operated by the company for one year from the summer of 1859 to that of 1860 for the manufacture of heavy machinery. In 1860 the plant was sold to J. C. Whitin, textile machinery manufacturer of Whitinsville, Mass. for \$150,000.⁴¹ In this one sale HWP recouped more than 40 percent of the \$350,000 which it had paid for the entire estate of hydraulic system, mill buildings and 1,100 acres of land.³⁸ The plant was operated by Whitin for only two years.

In 1863 the Hadley Company was formed to make cotton thread and converted the machine shop to a textile mill.³⁹ That Company was an important part of the Holyoke industrial community until 1927 when its textile operations ended. However, the building has continued to be used for manufacturing. Today it is owned by Graham Medical Products.

Grist Mill

This mill, earlier referred to herein, was part of the real estate which came to HWP when it acquired the property of the Hadley Falls Company. It was destined to have a long and useful life in the Holyoke industrial community.

Before 1865 there had been eight different concerns manufacturing commodities in the mill.⁵⁵ In 1866 it was sold by HWP to the Mt. Tom Paper Company.⁵⁷ It was then fitted up to manufacture a kind of paper known as manila. It became known as the Mt. Tom

Mill.⁵⁶ It was subsequently sold to several successive owners the last of which was the Hadley Falls Paper Company. On September 15, 1880,⁵⁸ that company sold the mill to Parsons Paper Company⁵⁸ which needed the room for expansion and which owned and operated all the other paper mills on the site.⁴⁷ In 1899 the mill was sold to the American Writing Paper Company (AWP) and became its Parsons Division. It was purchased in 1949 by HWP.

The Cotton Mill

The former cotton mill of the Hadley Falls Company (1827), was leased to W. E. Rice by HWP on October 1, 1859 for use as a wire mill.²⁵ The building later became part of the Parsons Paper Company. It eventually became part of the the Parsons Division of AWP. HWP purchased the entire Parsons Division in 1949 from AWP.

Prentiss Wire Company

George W. Prentiss began a wire company in 1857^{25a} in the Grist Mill of the Hadley Falls Company located near the dam. This property was part of the estate transferred to Holyoke Water Power Company. On July 21, 1862, the company directors agreed to erect a brick building fifty feet long attached to the northerly end of the Grist Mill and to supply thirty-five horsepower to the wire company.⁴² In 1873 the company procured a site from HWP on the First Level Canal⁴³ built a new mill, and continued a successful wire business until 1961 when it was sold to H. K. Porter Company. That company left the city in 1963 and the plant was eventually torn down.

Early Customers of Water Power

As the successor to the Hadley Falls Company (HFC), HWP had inherited the customers which had begun to take water from the canals on both sides of the river during the 1849 to 1858 period. Thus, HWP had a nucleus of customers with which to begin its business.

In South Hadley

Two companies in South Hadley began using water for power purposes from the navigation canal in 1849. The earliest of these was the Glasgow Company, a

textile mill, which contracted with HFC for water power on January 1, 1848. That company stayed in business until 1904 when it was superseded by the Hadley Company, another textile firm. This latter firm shut down in 1931. The building was purchased by HWP that year and razed. The mill site eventually became part of the disposal area for the material from the tailrace of the Hadley Falls hydroelectric unit #1 of HWP.

The second indenture written by HFC and dated February 9, 1849, was with the Carew Manufacturing Company, a paper manufacturer. The successor to Carew was the Texon Company. In 1985 that firm went out of business. The mill site and buildings were purchased by HWP in 1988 in order to complete its ownership of the properties at the South Hadley end of the dam.

In Holyoke

Prior to 1859, HFC had entered into contractual arrangements to supply water power to four industries in Holyoke.

Parsons Paper Company

In 1855 HFC sold to Joseph Parsons and his associates a site, Parcel B-1, for a paper mill near the dam. Then in 1856 the Parsons Paper Company purchased from L. & J. B. Woods Parcel D, the former Card Factory, which had water power rights.^{44a} Over the years the company grew and additional mill buildings were built. It later became a division of the American Writing Paper Company, a combine of several Holyoke paper mills.⁴⁵ The mill ceased operations in 1948. It was purchased by HWP in 1949 to be used as a staging area for the construction of Hadley Station No. 1.

The mill was razed in stages until 1983 when the last structure was torn down. In 1888 the Parsons Paper Company built a second mill at the southerly end of the First Level Canal. That mill is an active paper mill today being owned by the National Vulcanized Fibre Company.

Lyman Mills

The Lyman Mills were textile mills originally built and operated by HFC⁴⁶ in 1853. In 1854 they became a separate company and operated as textile mills until 1927. They later became a paper mill known as Whiting #3. Today they are occupied by a diversified group of small industries.

Hampden Mills

The Hampden Mills were constructed by the Hadley Falls Company in 1855,⁴⁶ as a textile mill for Patrick T. Jackson, a Boston financier. It ceased operations in 1875. Subsequently, it was purchased by D. Mackintosh and Sons and operated as a plant in which to dye textiles. Today it has commercial and industrial occupants.

Holyoke Paper Company

The Holyoke Paper Company was founded in 1857. The organizers bought a mill site from HFC at the southerly end of the Second Level Canal. They also contracted with the Hadley Falls Company to build the mill and to supply some of the machinery.⁴⁸ In 1899 the mill was sold to the American Writing Paper Company.⁴⁹ That company was bringing into one corporate structure a total of sixteen Holyoke paper mills. The mill was eventually sold to the Holyoke Gas and Electric Department which razed most of it and constructed a hydroelectric plant on a portion of the site.

Rapid Growth

The first thirty years of the corporate life of HWP was a time of rapid growth for it and for Holyoke. One measure of that growth can be found in the population figures for those years.

Population

Census of Holyoke ⁷⁴
Holyoke City Directory

<u>Year</u>	<u>Population</u>
1860	4,997
1865	5,648
1870	10,733
1875	16,260
1880	21,961
1885	27,894
1890	35,674

Number of Industries Increases

The foundation of this growth was the industry which was being attracted to the town because of its water power. A tabulation⁶⁶, based upon the 1882 City Directory, has been compiled. It shows that between 1862 and 1880 20 paper mills were established here. During the same period, 11 textile mills were started. In addition, several miscellaneous industries came. All of these mills were built on lands which were part of the original development plan conceived by the HFC and continued by HWP.

Some of the mills built in Holyoke during these years were begun by Holyoke residents. Among those are the names of Whiting, Newton, Parsons and McElwain. Other mills were started by those who moved to Holyoke to build their factories. Three of these are mills started by the Merrick Brothers who came from Mansfield, Connecticut, William Skinner from Haydenville, Mass., and Herbert Farr from Hespeler, Ontario.

Financial Aid from HWP

Most of the mills begun in Holyoke at this time received financial encouragement from HWP. Some random examples of such assistance as recorded in the directors' minutes are:

July 22, 1862 Voted to build an addition to north end of grist mill of 50 feet in length to accommodate and lease to George W. Prentiss for wire manufacturing with necessary power---

November 4, 1862 Voted to build and lease a three-story mill for woolen manufacture to E. Kellogg and N. Kingsbury.

July 7, 1863 Voted to build a mill 150 feet x 50 feet four stories high with dye shop, office, etc., next easterly of Kingsbury Mill.

April 2, 1864 Voted to loan Samuel Whiting \$23,000 to aid in completing a paper mill on the Third Level Canal.

October 29, 1873 Voted to loan \$50,000 to assist the construction of an Alpaca Mill.

May 25, 1875 Loaned to R. Chapman \$6,000 being one-half the cost of a cutlery mill he was building next north of the Screw Mill.

November 10, 1875 President reported that the expenditures on the Connors Mill Building, etc., would be about \$25,000; that the Tape Mill Building, wheel, etc., would require about \$20,000; that the File Works Building, wheel, etc., would require about \$7,000.

June 18, 1879 Erecting a new building between the Chapman Mill and the Rubber Mill on Bigelow Street at a cost of about \$10,000 - which building is engaged for rental with power.

March 10, 1883 Voted to build mill for Holyoke Envelope at a "steam site." Mill 250 feet long at a cost not to exceed \$25,000 for land and building.

Skinner and Farr Alpaca Textile Mills

In the early 1870's, two textile manufacturers moved to Holyoke. William Skinner and Sons and the Farr Alpaca Company became major factors in the industrial life of Holyoke for more than half a century.

William Skinner and Sons

"A quite different type of enterprise was the Unquomok Silk Mill, from its beginning a family-owned undertaking. William Skinner's first mill had been located upon a small stream above Haydenville, Massachusetts. In the spring of 1874 the dam of the Mill River reservoir burst, sweeping away the mills and the industrial village at Skinnerville. Skinner was then hesitating between rebuilding there and setting up in Worcester. James H. Newton's persuasiveness, however, led to a generous offer from the Holyoke Water Power Company which Skinner decided to accept. The Water Power Company allowed Skinner a \$6,000 mill site, ground and power rent-free for five years, and lent him enough to pay the Newtons for building the mill and connecting the machinery to the shafting. From January 1, 1875 on, Skinner was to pay the Holyoke Water Power 7 per cent interest on the investment, and was given the privilege of buying the mill and site in five years' time at the original cost. On such terms Skinner began spinning silk for spooled twist in Holyoke in December 1874."⁵⁰

Farr Alpaca Company

"The manufacture of alpaca wool had been introduced into England in the fifties and at the end of the sixties into Canada. There in Hespeler, Ontario, Herbert Farr had invested in an alpaca mill, but when he had learned the essentials of handling the long fibers of alpaca wools he decided to manufacture within the United States where a low tariff on the raw wool was many times offset by a high tariff upon the finished fabric. Farr's negotiations with men in Holyoke began just before the panic in September 1873. Some fifteen citizens met with him to hear his presentation of the case for alpaca manufacture in Holyoke. He proposed to provide two thirds of the necessary capital from his own resources and that of his Canadian associates. If the mill building and power rights could be supplied by local capital, his money could most profitably be put into working capital, machinery, and raw materials. Some of the English help in Hespeler would immigrate to Holyoke, enough at least to train operatives here. It would cost, Farr estimated, about 10 per cent more to manufacture in the United States than in Canada, but there would be a saving of 60 per cent in customs duties on the finished cloths.

"The listening citizens, a representative group of manufacturers and professional men, were impressed. Jared Beebe, as a textile expert, went to Canada to investigate, and meanwhile a committee of three undertook to interest local investors. Money was hard to raise despite the favorable reports from Beebe's Ontario trip and Farr's assurance. The upshot was that when the company was organized, capital was set at \$250,000 of which Farr and his brother-in-law put up \$135,000 and Holyoke business men about \$100,000. The Holyoke Water Power Company financed the building of the mill and allowed the company ten years in which to extinguish the debt. The Newtons built the mill on the first level canal south of the Beebe and Holbrook and Massasoit paper mills."⁵¹

Power Transmission

Transmission of Mechanical Power

The 30-year period from 1859 to 1889 preceded the development of electricity as a source of power. Energy developed from water power had to be transmitted mechanically. As a result, the water wheels were an integral part of each mill installation with their power directly transmitted to the machines by gears, shafting, pulleys and belts.

Multi-storied mills of three and four floors proved to make the most economical use of mill sites. The power from the waterwheels was transmitted vertically by belts to lines of main shafting which ran the length of the mills. Machines such as textile mill looms or paper mill beaters received their power by being connected with belts and pulleys to the main shafting.

Power Transmission by Steel Shafting

There were, however, occasions when there was need of power on lands on which there was no appurtenant water power. One such case was at the southern end of the Second Level Canal. On the west side of that canal was a brick yard owned by the Company and leased to others. Also, there was a saw mill nearby. Both needed power. The solution was for HWP to install a water wheel at the overflow from the Second to the Third Level Canal. A shaft was connected to the water wheel and extended across the canal to connect to the shafting of the brick yard.

At the Directors Meeting of January 9, 1865, the following occurs:

"It was proposed by the Engineer to put in a waterwheel at the lower overfall of the Second Level, in order to lease power to S. S. Wright of Northampton for a saw mill and for the brick yard and other purposes which was approved and the Wheel and Shafting was authorized to be put in."

In the records of HWP⁵⁴ there is a lease of the HWP brick yard dated January 1, 1867 to L. R. Cook and Russell Niles. A portion of that lease reads as follows:

"The party of the second part (Cook and Niles) also have the use, during the brick making season, of power for making brick equal to twenty horses from the wheel now in operation at the overfall on the easterly side of, and the shafting across, said canal. The party of the first part agree to maintain and keep in repair and good running order the wheel and shafting mentioned equal at least to the power herein named, the said shafting to terminate at the intersecting point of transmission of said power on to the Brick Yard main line of shafting or shafting immediately connected with the brick machinery."

The rental payment to HWP for the brick yard in the lease was 25 cents per 1,000 bricks made, plus 15 cents per 1,000 bricks made, for power from the wheel and shafting.

Power Transmission by Wire Rope

There were at least two instances where power from water wheels was transmitted across the First Level Canal by wire rope drives. One of these was located near Cabot Street and the other near Dwight Street. Accompanying this section are copies of drawings which show the wire rope locations.

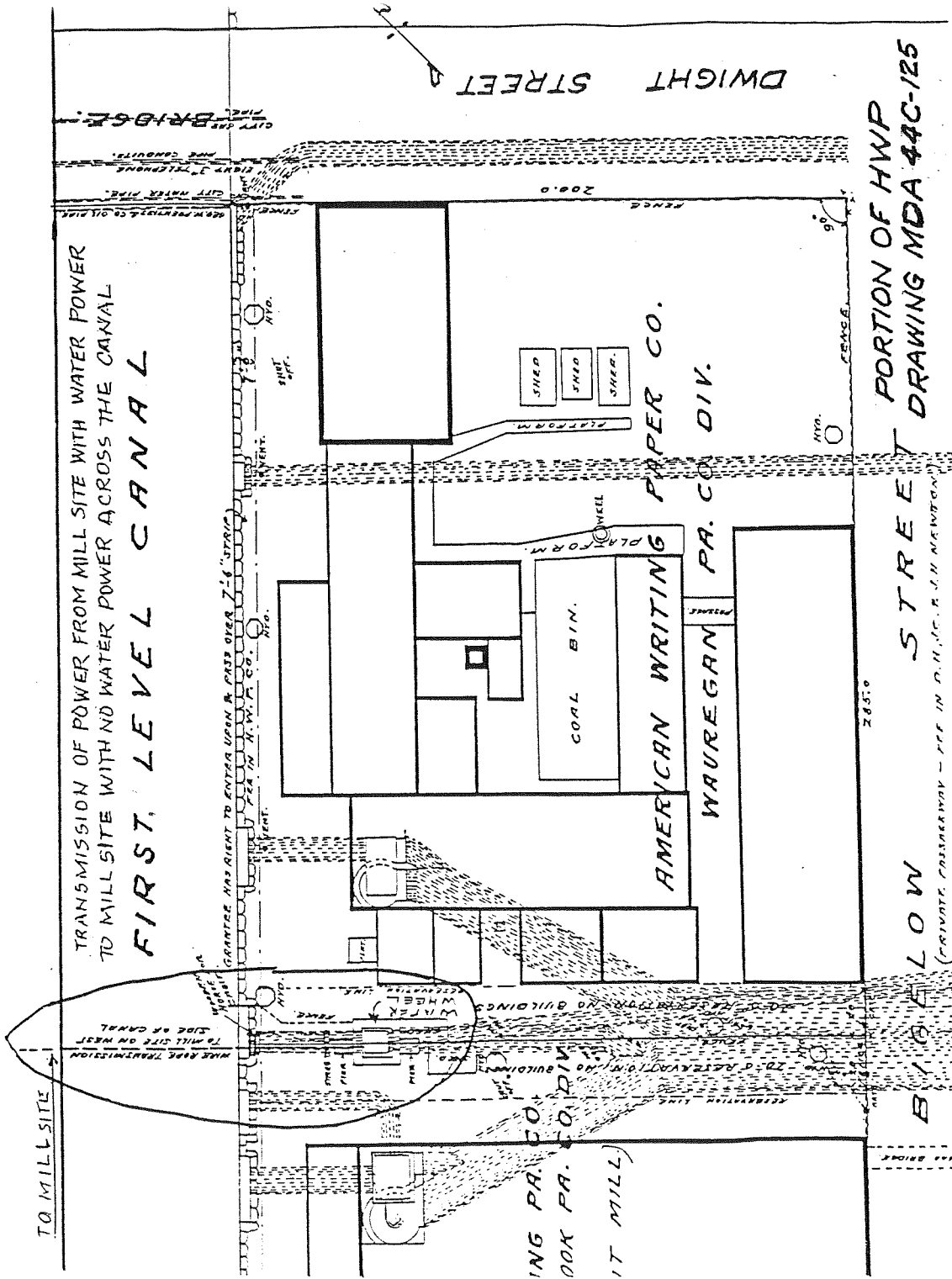
The rope drive near Cabot Street was evidently changed later to metal shafting according to the following newspaper article:

"The Water Power Company are making new shafting connections, from the wheel which drives the Connors Brothers woolen mill across the first level canal, to drive Jolly Brothers machine shop, Buchanan Bolt wire works and Ingham's wood turning shop, and the other establishments on that line."⁶²

Mill Site Sales

By 1884 many of the mill sites along the canal system had been sold and industries using water power, particularly manufacturers of paper and textiles, were in operation. Descriptions of these industries⁵² and maps of their locations are included herewith.

The First Level Canal had been fully developed except for one site remaining on the south side of Sargeant Street.



TRANSMISSION OF POWER FROM MILL SITE WITH WATER POWER
 TO MILL SITE WITH NO WATER POWER ACROSS THE CANAL
 FIRST LEVEL CANAL

PORTION OF HWP
 DRAWING MDA 44C-125

BIG FLOW

AMERICAN WRITING PAPER CO.

WAUREGAN PA. CO. DIV.

ING PA. CO. DIV.
 OOK PA. CO. DIV.
 IT MILL)

TO MILL SITE

DWIGHT STREET

CITY WATER PIPE

CITY WATER MAIN

SEPARATING LINE

TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE

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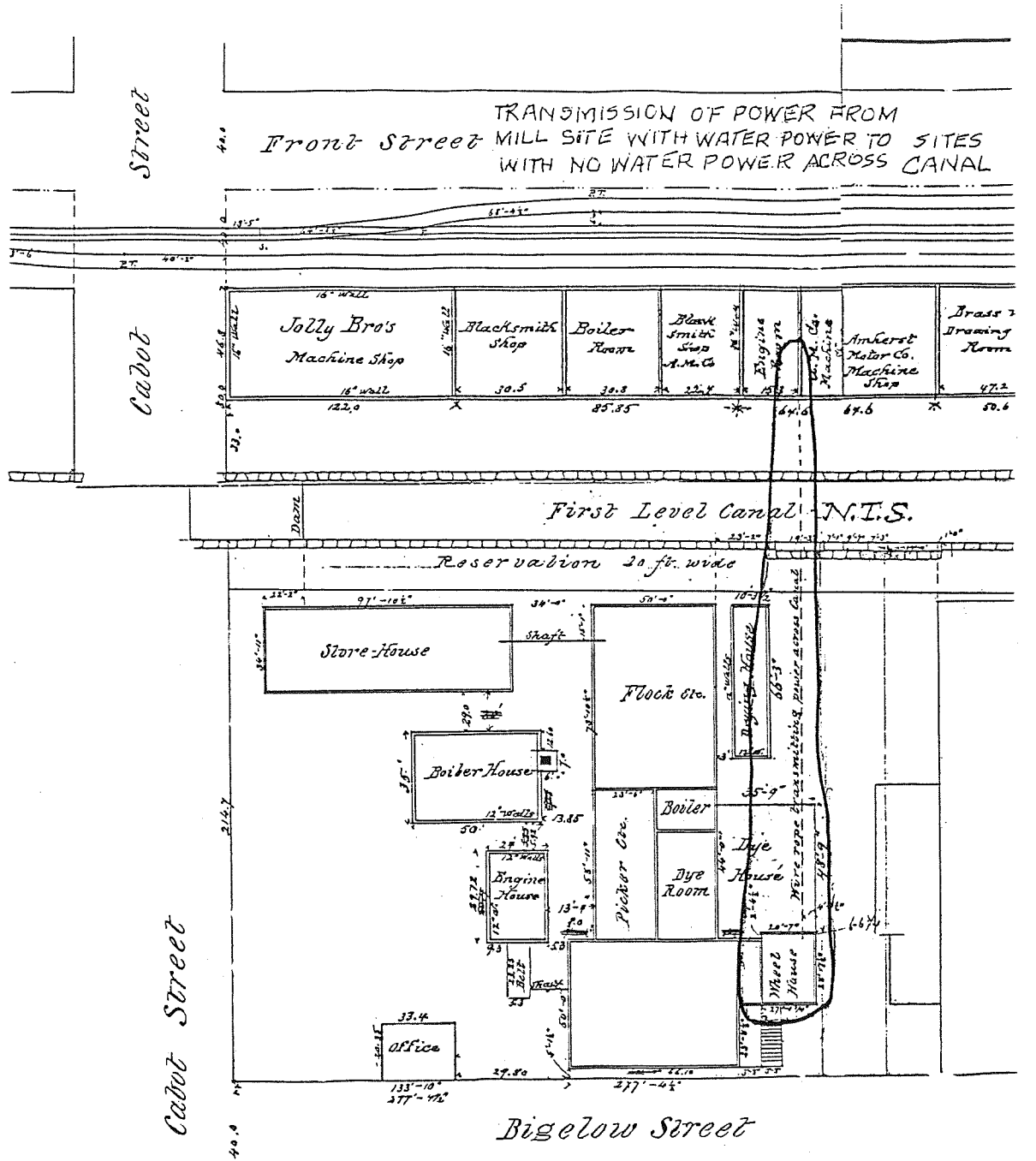
TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE

TO MILL SITE



FROM HWP PLAN BOOK
AMDZ-1 PAGE 47

The Second Level Canal at its southerly end had been completely developed. At its northerly end it had been developed from #2 lower overflow to Mosier Street.

The Third Level Canal had been developed northerly to Cabot Street.

The original layout of industrial sites in the canal system had now been largely completed except for three mills, the Parsons Paper Company at the southerly end of the First Level Canal (1888), the Riverside Paper Company north of Cabot Street (1892) on the Third Level Canal, and the Norman Paper Company north of Appleton Street at #5 Overflow (1892).

The Newtons

Many of the mills on the canal system were either built by the local Newton family or were ones in which they had a financial interest. They also seemed to have a close working relationship to HWP.

"To the untiring zeal of the Newton brothers as well as to the liberality of the Water Power Company under its new agent, William Chase, is due much of the honor of keeping Holyoke growing during these years."⁵³

Water Lots and Steam Lots

As more and more of the mill sites along the canal system were sold, it became evident that other sites without water power would have to be developed if industry was going to continue to expand in Holyoke. Accordingly, industries in which the quantity of power required for manufacturing was less than needed by the paper or textile industries began to buy sites which were not on the canal system. They supplied their own power with steam engines. Such sites were called "steam sites."

The directors' records of March 10, 1883, reported that the Holyoke Envelope Company had applied for a "steam site" for a new mill. The site chosen was on the east side of Main Street adjacent to the Third Level Canal. The mill was built by HWP and sold to the envelope company which eventually became part of the United States Envelope Company. In later years the building became the office building of the Chemical Paper Company. Eventually it was razed to make way for highway I-391 as it enters Holyoke.

At their meeting of September 11, 1889, the directors discussed the possible sale of a portion of a water lot between Jackson and South Street westerly of the Second Level Canal. They also considered the possible sale of a small water lot next north of the Parsons Paper Company.

At their meeting on June 18, 1890, the directors discussed the possible sale of a water lot north of Appleton Street on the Third Level Canal.

Steam Power

Before 1870 only the steam operated saw and grist mill and the steam-driven brick machines in the company's South Holyoke brick yard were using anything but water for power.⁵⁹ In this period many of the industries coming here were those which converted Holyoke-made paper to a variety of products. They were known as paper converters, were not large users of power in relation to the value of their finished goods, and could and did use steam power.

The sale of the earlier mentioned mill site to Holyoke Envelope Company was the first to be labeled a steam site by the directors.

Space for Small Industries

The main emphasis upon industrial development by HWP from its beginning in 1859 was upon attracting the large manufacturers of textiles and paper. These firms could use complete mill sites and large amounts of water power. This policy brought forth criticism from the community.

"Once the town began to grow the Holyoke Water Power Company ceased to encourage industrial ventures of small scale and, unless the prospective manufacturer could afford to purchase a whole mill power with its site on the canal, there was no place before 1871 where new manufacturing enterprise could find a foothold. Frequent were the protests of the Transcript over the situation which drove the little fellow to start his mill elsewhere."⁶⁰

Cabot Street Mill

By the summer of 1880 the directors of the company, now that most of the water sites had been sold, authorized the construction of a factory building designed to house many small tenants. The mill was a four-story structure and built in the shape of a hollow square. It was finished in 1881 and became the home of many small industries as the following account shows:

"The rooms of the Cabot Street mill, as it was called for twenty-five years, were quickly leased, an envelope company, a publishing firm, manufacturers of card and glazed paper, of blank books, and in 1882 of imitation sealskins, being the first of a series of occupants. As was hoped, the companies thus inexpensively started were again and again to grow to the point of moving into mills of their own, and the space was released to new comers."⁶¹

Two of the early firms to locate there were B. F. Perkins, Machinists and J. G. Shaw. The latter firm which came from New York City was an established manufacturer of blank books. It shortly changed its name to National Blank Book Company. At this writing the National Blank Book Company, now called Dennison National, is one of the largest employers in Holyoke. B. F. Perkins, Machinists, is located today across the river in the Willimansett section of Chicopee.

As originally constructed the mill had about 50,000 square feet of manufacturing space on each of its four floors. Following its completion it had a long and useful career as an incubator building for small industries.

Fire

In 1888 the wing of the building along the Second Level Canal was destroyed by fire. It was rebuilt. An account of that fire follows:

Holyoke Daily Transcript
January 23 and 28, 1888

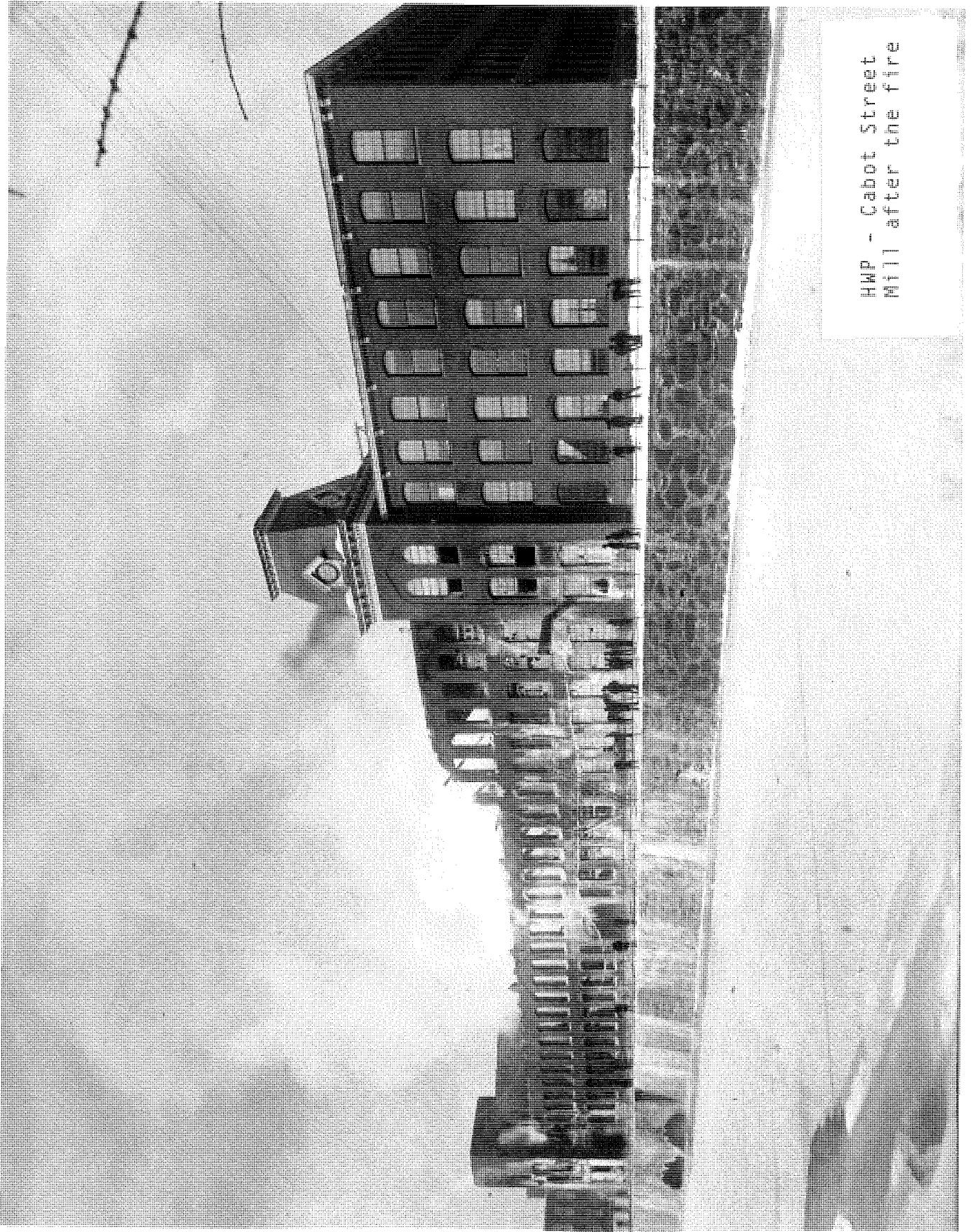
"The heaviest conflagration which Holyoke has had for many years, if ever, occurred Sunday afternoon, when the east wing of the Water Power Company's big quadrangular building on Cabot Street was destroyed by



HWP Cabot Street
Mill before the fire

fire, entailing a loss of about \$300,000 of which nearly \$200,000 falls upon the Holyoke Envelope Co., the principal tenants, the other tenant of that part of the building being B. F. Perkins, the machinist. The alarm was given at 2:25 p.m. by Officer Peters who saw the blaze coming out of the windows of the upper floor, southeast section. He sounded the alarm from box 31 and soon after box 62 was sounded. The whole fire department turned out. So rapidly did the flames spread from the start that the long, wide room, packed with 20,000,000 envelopes and 200 tons of paper besides other things, was almost instantly a solid sheet of fire. The severe cold weather and something of a breeze made it a very difficult matter to control the flames and it soon became evident that the utmost that could be done would be to fight it away from the main building. Streams of water from all sides were deluged upon the mill but at times it seemed as if the fire burned the water, so furnace-like was the raging pile.

"The four steamers were placed near the upper level canal at the southwest corner of the building and floods of water were obtainable from both canals. Other streams were used from the various public hydrants and also from that in the court yard of the quadrangle. From the Deane Steam Pump Works, across the way on Bigelow Street, two streams were sent through 500 feet of hose by the Deane pumps. These streams were very effective and showed the power and merit of the Deane steam pump. John C. Newton ran hose too, from the Massachusetts screw mill. It was not many minutes before the higher walls of the third story fell with a great crash. There were a number of daring firemen in the southeast corner tower at the time and they had a narrow escape, leaping from the rear windows down upon the roof of a one-story structure adjoining. The fire was a great sight at this time. From every window of the upper room lurid flames leaped out and the heavy timbers could be seen fiercely burning, while the iron girders twisted and writhed in the super heat fed by the great quantity of material of the most inflammable kind. On the west side, the long wall came down with a roar and immediately the roof fell to the second floor, which



HWP - Cabot Street
MIT after the fire

already weakened by the fire, gave way and thundered through with its weight of fifty machines and twenty presses. Then the flames redoubled their fury and shot far up into the air and from the sides immense volumes of fire poured. The court on the west side was for a long time dense with the smoke so that it was not only difficult but very dangerous for the firemen to work and progress involved much caution. There were many narrow escapes from falling bricks as well as from suffocation. By six o'clock the fire was under control, but the fire laddies kept on playing their streams on the building for hours more.

"An immense crowd of people watched the fire. Race Street from Appleton Street to Cabot Street was a mass of humanity who gave constant shouts as the big cinders were blown across the canal and the wind setting in that direction made it hot at this distance even.

Mill is Sold

HWP sold the Cabot Street Mill to the Crocker McElwain Company in 1903 which converted it into a paper mill. Paper was manufactured there until 1966 when the mill was sold to the Gas and Electric Department of the City of Holyoke. That department leased space in the mill to a group of small industrial firms for many years. It was subsequently sold by the Department to others.

Real Estate Activity

During the first thirty years of HWP's existence, Holyoke's population had rapid growth. People came to the city to work in the expanding paper and textile industries. A population of 4,997 in 1860 had grown to 35,674 by 1890, a sevenfold increase.

All of those who came to Holyoke needed places in which to live. Because HWP owned nearly all the land suitable for building homes or stores, it became deeply involved in the real estate business. It laid out the streets, supplied the water and gas and then sold the sites for homes and stores. It usually sold the land for a modest down payment and then took a mortgage for the balance.

Land Sales

During the thirty years from 1859 through 1888, the Company made 1,524 sales of real estate amounting to \$2,883,289.¹⁰² That sum is equivalent to \$34,400,000 when comparing the Consumer Price Indexes of 1888 and 1985.¹⁰³

The monies obtained from land sales enabled the company to make major repairs to its dam, complete the canal system, construct mill buildings and pay dividends to its stockholders.

Building of Houses

In addition to selling land, the minutes of Directors' meetings tell of the building of houses:

November 12, 1866

Voted to build two houses of one or two tenements each.

June 17, 1878

Reported the erection of a block of six tenements on Bond Street at a cost of \$5,700. Sold it at sufficient price to cover the cost of the block and the land.

Commenced the building of three cottages at Walnut and Suffolk Streets at a cost of about \$2,500 each.

Voted to build a house and barn for the Company Agent, William A. Chase, at a cost not to exceed \$10,000. A picture of that house as well as a newspaper article describing it is included herein. This house later became the home of Attorney William H. Brooks. He received it from HWP in exchange for a receipted bill for legal services.¹⁰⁴ Subsequently, it was purchased as the location for the YMCA. It was torn down to make way for its latest expansion.

January 4, 1879

Reported the building of six cottages in addition to three already announced and that it had sold some of them. Reported the building of a six tenement block on Bond Street and that it had been sold.



1882 - Row of ten brick cottages built for sale by HWP

BUY A HOME!

Holyoke Transcript
March 5, 1887
How to get Low Rents!

But two of the COTTAGES remain unsold, and to close out the balance of our House Property we offer FOR SALE THE TENEMENTS IN THE NEW WALNUT STREET BLOCK, (ten in all,) at a price that will bring the rental of each, to the purchaser, BELOW ONE HUNDRED AND FIFTY DOLLARS PER ANNUM.

These tenements are entirely new, thoroughly built of brick, and contain six comfortable rooms, (3 on each floor,) bath room, water closets, &c., and are fitted with gas throughout. For a small family of from 3 to 5 persons, these are perfect gems. They will rent readily at from \$18 to \$20 per month. It will pay anyone to buy the whole block, as it will prove a good investment.

Apply to

WM. A. CHASE, Agent.

Holyoke Water Power Co.



1986 - Same cottages as shown above are still in use on Walnut Street in Holyoke

The Holyoke News.

SATURDAY, AUGUST 10, 1878.

The Water Power Company Cottages.

The attention of persons desiring homes in this city is called to the advertisement of Wm. A. Chase, the energetic Agent of the Holyoke Water Power Company, who has commenced the experiment of constructing residences for citizens at cost figures on the most desirable and pleasant building lots owned by the company.

The cottage now offered for sale on Walnut street is constructed as thoroughly and conveniently as though it was to be occupied by the Agent himself, is on a lot 67½x118 feet, and is the most complete and cheapest residence in the city for the about \$5,100 which it cost, including the land at 25 cents a foot.

If this experiment succeeds, the company will immediately build other cottages for sale, taking the plan of any citizen who may not have time to superintend the building of a residence, and turning the same over to him ready for occupancy, on terms attractive enough to any one paying a rental of from \$275 to \$375 a year.

We give a full description below of the Walnut street cottage, which will be finished to-day, and would refer our readers, after the perusal of this article, to the advertisement of the Water Power Company relating to it, to be found in another column:

From a piazza which is on the front and leads around the North side, one enters the front door and is ushered into a hall, 10x14 feet, containing winding stairs. On the left is the parlor, a beautifully painted room, 13½x-15½ feet, having a double arched-window in front and two square ones on the South side, opposite which is an imitation fireplace with a furnace register. Passing from the parlor through folding doors, the spacious 13x14 sitting room, with its large bay window and imitation fireplace, is presented to view, with doors opening into the front hall, dining-room, kitchen and china closet. On the opposite side of the building is the dining-room, 13½x12½ feet, finished in ash, with doors leading into the yard and side hall, where is a wash bowl to accommodate the guest.

Housekeepers will be interested to know that between the sitting-room and kitchen is a lighted pantry, and in the kitchen is a brass boiler to be connected with the range, where hot water can be obtained at all times. This room is 12x12 feet, receives light from two large windows, and opens upon a piazza on the South side. The cellar, which is reached from this room, contains a wash-room with three trays supplied with hot and cold water. In front of the wash-room is the furnace-room, supplied with all the necessary coal bins, &c. Still further front, on the North side, is a fruit and vegetable room, without windows, while on the South side is a large, well-lighted room.

After passing through the different departments on the first floor, the viewer is brought back to the front entrance, where he ascends the winding stairs and is taken to the dome above. Over the parlor is a 13½x13 feet chamber with closet, an inviting room, but the most spacious is that over the sitting-room, which is 13½x14 feet, with two closets and a large bay window. Across the hall from this is a bath-room with every requisite, (one of the finest in the city) and is supplied with hot and cold water from the kitchen below. West of the bath-room is another chamber, 12x13 feet, and back of all is still another, 12x12 feet. The house is equipped throughout with gas fixtures, water faucets, furnace registers, and ventilating outlets, making it one of the best planned buildings in the city.

The brick work was done by Lynch Bros.; the wood work, by the day's work, by the Water Power Company, and the painting by H. M. Farnum.

CHEAP RENT.

And the best in the city.

We now offer for sale at a LOW PRICE, the New, Beautiful and thoroughly constructed Cottage on WALNUT STREET, between APPLETON and SUFFOLK STREETS.

Lot 67 1-2 feet front by 118 feet deep

Special pains have been taken to construct this and other cottages, so that any one

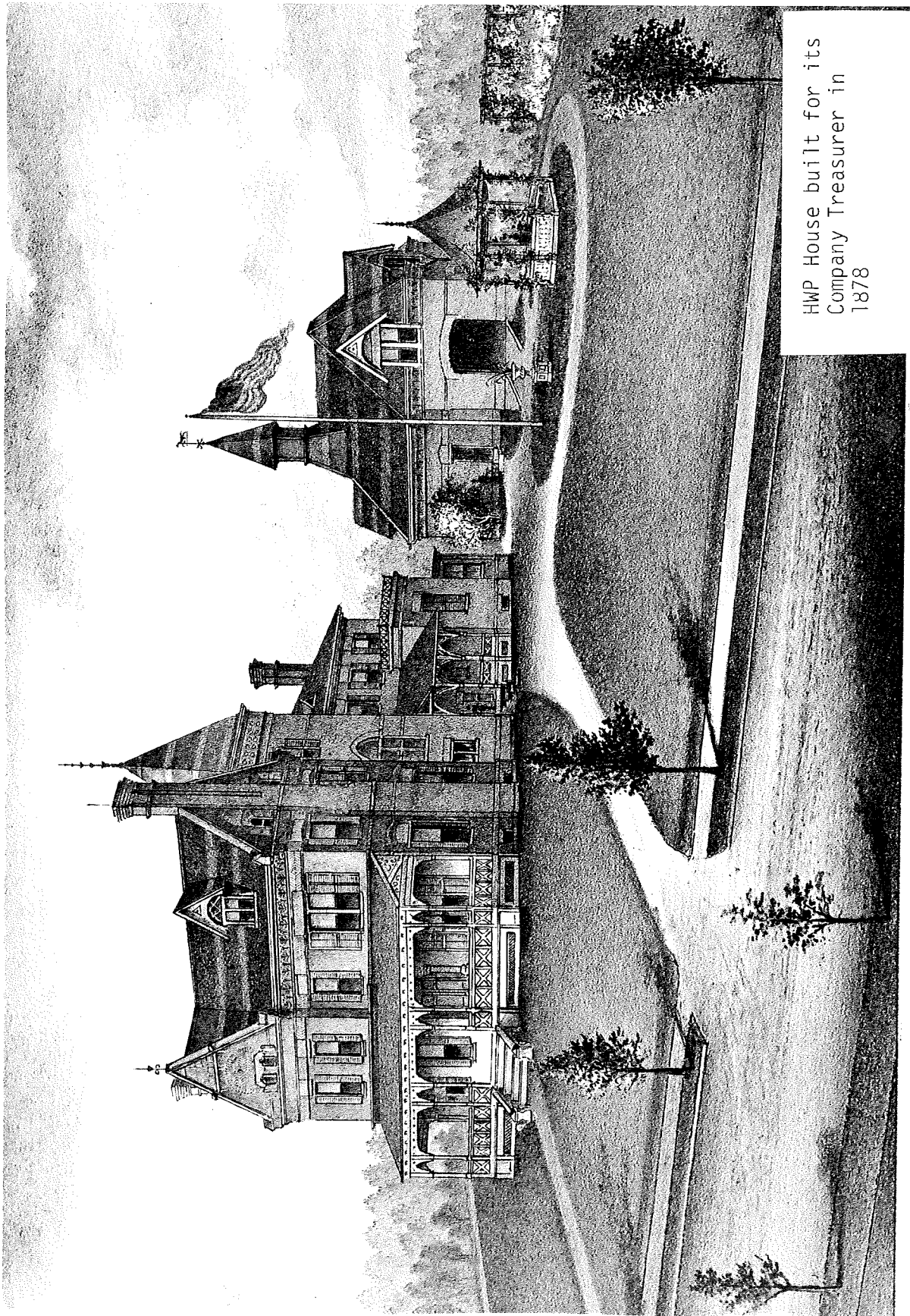
Paying a Rental of from \$275 to \$375 may save money by purchasing.

The cottage particularly referred to contains eight large rooms, exclusive of Spacious Closets, Hall, Attic and Laundry Room, and with all the necessary Ventilating, Heating, Lighting, Bathing and Sewage conveniences.

The demand for houses of this class is so great that we shall name a price that will insure a ready sale for them. TERMS EASY. For particulars inquire of

Wm. A. CHASE, Agent,

At Office of Holyoke Water Power Company, or at his house, cor. Walnut and Suffolk streets. 35



HWP House built for its
Company Treasurer in
1878

Residence of WM. A. CHASE, Cor. Pine and Appleton Sts.

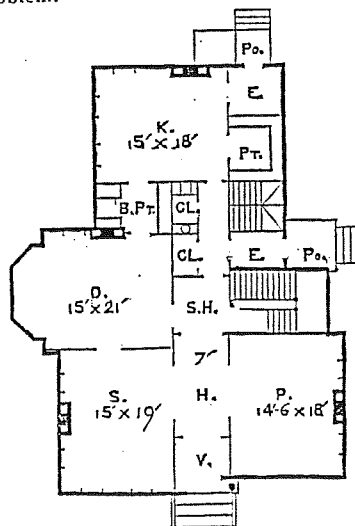
The Transcript

SATURDAY MORNING, MAY 3, 1879.

A House—Residence—Home

Hundreds of houses are yearly erected, and among them are many residences and a few homes. It is an easy matter to build a house, though not as easy as in the flush times when the Savings Banks were ready helpers and aiders, with large loans and the coincident mortgages. The mere building of a house or residence is not a difficult piece of brain business for the owner, as money will hire architects and builders, but the erection of a combined house—residence—home is a problem that few men have solved. Any owner of a "bar'l of money" can build, but the almost numberless details of the arrangement of the interior and exterior demand more brain-labor than is symbolized by the head on the gold-pieces that pay the bills of architects and contractors. The extravagant era of a few years ago had its influence and tended to convince people that a grand display of brown-stone, pressed-brick, plate-glass, fresco, hard-wood-finish, costly mantels, gas-fixtures and pier mirrors, velvet carpets, expensive furniture, and the glitter of silver table furnishings constituted the only true home but the eyes of sensible men have recovered from the daze of the years of glare and shoddy and the problem of how to build a comfortable and beautiful home is being solved without the need of a large expenditure.

The Holyoke Water Power Company have recently erected a house for the use of the agent of the company, and this building combines so many sensible ideas that it does much towards solving the problem.

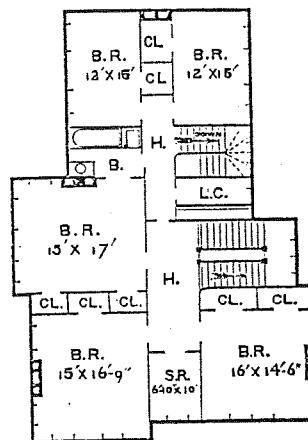


FIRST FLOOR PLAN

P. Parlor; H. Hall; V. Vestibule; S. Sitting-Room; S. H. Staircase Hall; D. Dining-Room; Cl. Closet; E. Entry; Po. Porch; K. Kitchen; Pt. Pantry; B. Pt. Butler's Pantry.

The rooms are all of pleasing dimensions, neither too large nor too small. The parlor and sitting-room open into the hall by large double doors; the stair-case hall is roomy, the dining-room is the largest

room on the floor, and the kitchen will delight the heart of the housekeeper by its size and conveniences. There are three entrances from outside to the first story and the arrangement of the stairways, entrances, closets and pantries are in good taste. The hard-wood finish in the house is in the dining, bath-room and the stair-case. The wood-work is a good piece of joinery and is painted in parti-colors. The entrances, principal rooms in the house and the barn are connected by bells-wires.



SECOND FLOOR PLAN

S. R. Sewing-Room; B. R. Bed-Room; B. Bath Room; L. C. Linen Closet; CL. Closet.

The second story is also well arranged as the plans show and these plans are so complete that further description of the arrangement and sizes of the rooms is unnecessary. The linen-closet is one that will make happy the lady of the house. The house is not deficient in closets, neither has it an "over-issue" of them to be used as rubbish-rooms. On the third floor are three pleasant rooms.

The house will be heated by a low pressure tubular boiler. The cellar bottom is cemented throughout.

Mr. H. F. Kilburn of New York was the architect. Mr. L. M. Bishop had charge of the wood work; the painters were Messrs. Dean & Wheelock, and the plumbing was put in by M. H. Baker. The brick-work and plastering was done by L. P. Bosworth, and the slating by Wiley. The steam-heating apparatus was the work of T. F. Kegan. Mr. L. D. Rhoades was the superintendent of construction.

The barn is a structure appropriate to such a residence, and is well arranged in all its parts and finishings. It has been constructed with the aim to accomplish the same result as intended in the building of the house.

The house is a plain substantial structure with little of ornament, and devoid of "gingerbread" or filigree-work. As a whole it is as near a model of its class as any house in the city.

The house is to be connected with the office of the company by a telephone wire.

We advise every one, contemplating building a home, to visit this establishment.

June 18, 1879

Reported that the Company had been engaged to build homes on Appleton Street for H. N. Farr and Joseph Metcalf, officials of the Farr Alpaca Company at costs of \$8,000 to \$9,000. The Metcalf house later became the home of Mr. and Mrs. William G. Dwight, the owners of the Holyoke Transcript and was subsequently razed. The Farr house is now used for doctors' offices.

It also was reported that there were many applications for cottages which the Company could build upon its land and pay for in part by bills receivable. It was thereupon voted to build three cottages for rental or sale.

December 2, 1879

The Agent was authorized at the discretion and approval of the President to build an additional number of cottages for rental or sale.

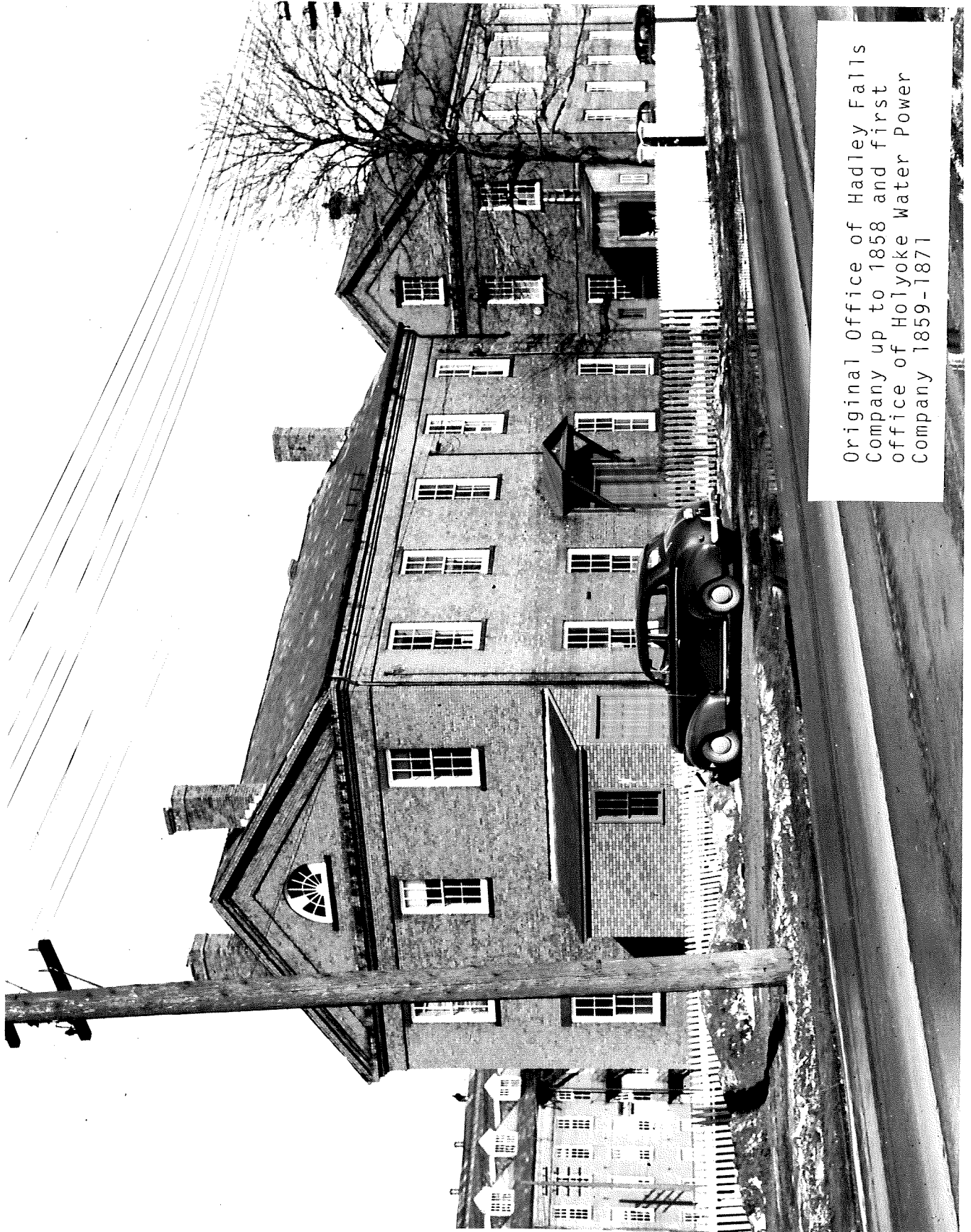
In an advertisement, placed in a local newspaper of August 10, 1878, the Company invited persons to purchase its newly constructed homes. It has been included here along with a newspaper article describing the cottages.

Gifts of Land

Throughout its history the Company and its predecessor, the Hadley Falls Company, made gifts of land for churches and public purposes in Holyoke and South Hadley. As early as 1856, land was donated for a Baptist Church at Race and Main Streets. That church and a subsequent hotel built on the lot have come and gone. The land is now part of the yard of the present HWP office building.

In the same year, land at the corner of Chestnut and Hampden Streets was donated for a Catholic church. St. Jerome's Church was soon built there and stands today as one of Holyoke's finest.

A list of lands donated for religious and public purposes is included among the exhibits of this volume.¹²³



Original Office of Hadley Falls
Company up to 1858 and first
office of Holyoke Water Power
Company 1859-1871

Tree Planting

In 1875 HWP undertook a tree planting program for the streets in the residential and commercial areas of the city. It purchased 20,810 trees for \$93.14; the price included freight from Boston.⁷² They were set out for growth and transplanting in the square south of Essex Street between Maple and Chestnut Streets. Today the Holyoke Public Library occupies this site. The land was given to the City by HWP.

Office Building

The first Directors' meeting of the company was held on March 21, 1859, at its office in Holyoke. That office was built by the Hadley Falls Company (1848). A picture of it as originally built is included herein. It is still in use today by others for office purposes. Its peaked roof has been removed and replaced by a flat roof.

In the early years, many directors' meetings were held in this office. However, meetings were also held at the Massasoit House in Springfield, and in Hartford at the Connecticut Mutual Life Insurance Company, the Connecticut River Banking Company, the Bank of Hartford County, the American National Bank, the office of President George M. Bartholomew and the home of Alfred Smith.

At its meeting on June 13, 1868, the directors voted: "That the President and Superintendent be authorized to erect a building for offices upon such plan and at such location as may by them be deemed expedient." That office was built in 1871. A picture of it is included herein.

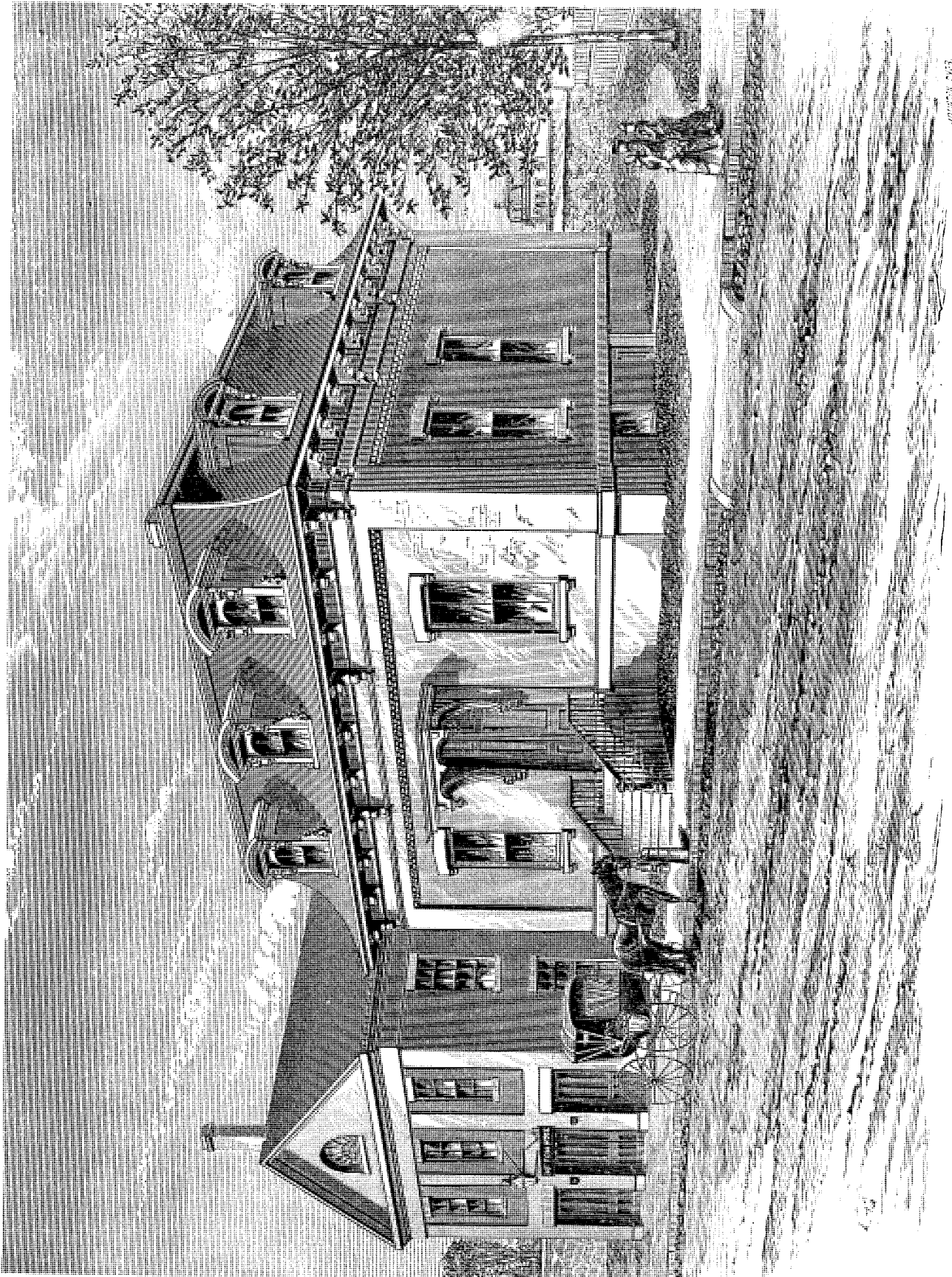
In 1880 a second floor was added to the building. In 1885 an office was added to the north side, and in 1887 a new addition was built. It is believed that the Directors' Room and President's office were added at that time. In 1927 the drafting room on the second floor was built over the Directors' Room.

There were many "firsts" in connection with this office building. The first typewriter in Holyoke was used here. Its electric self-winding clock and electrically controlled guard gate warranted a news item in the local newspaper as follows:

Holyoke Daily Transcript
November 7, 1887

"The Water Power Company has put two self-winding clocks into their office extension. They are the first to be introduced into the city, and are warranted to run a year. The self-winding apparatus is electric. A device has also been arranged whereby, by touching an electric button, the gate 50 feet away leading upon the depot platform is unlocked. This is a convenience to the directors, who can enter the yard direct from the cars and the gate can be opened by anyone in the office without going to it."

The office was the first building to be air conditioned in the city.



OFFICE OF HOLYOKE WATER POWER COMPANY.

1871

Copyright 1871



Office of Holyoke
Water Power Company
1986

The Birthplace of Holyoke Industry

This is the history of a very special area of land which has played, and is playing, an important role in the economic life of Holyoke. The site is on the west bank of the river bordered by the Connecticut River on the east, the Boston and Maine Railroad on the west, the Gatehouse on the north and the Boatlock hydroelectric station on the south.

The beginning occurred many millions of years ago, at the time of the dinosaurs, when the bedrock of this area was laid down. In more modern times, some 12,000 years ago, the retreating northward of the last glacier created Lake Hitchcock.¹ With the draining of that lake, the Connecticut River re-established its course. In the intervening years, the eroding effect of the flowing water has worn away the rock ledges that were exposed to its forces. In this manner the Hadley falls were created, along which lay this land.

Following is a brief description of the falls in the words of a visitor to them: "A cataract is, of course, a romantic and delightful object: particularly in a great river. This spot is uncommonly interesting and beautiful. The cataract descends over a rift of rocks, thirty feet in height, and about one hundred rods in length, down which the water is thrown into all the fine forms of fantastical beauty, excessive force, and wild majesty; and at its foot presents a noble limit to the solitary spots of cultivated ground, opening on their declivities, and beyond them the peak of Mt. Tom, ascending in blue, misty grandeur."¹¹

Ever since the coming of early man to this area, these falls have filled an important role in the life of the portions of South Hadley and Holyoke which they border.

In the time of the Indians and of the early white settlers the river was used as a means of transportation with canoes and boats. The falls prevented continuous passage and forced the portaging of canoes and cargoes overland around the falls. At the same time, the falls interfered with the free passage of salmon and shad up river in the spring and made possible their being caught by the Indians and later by the white settlers.

The presence of the falls created the need for developing a method of by-passing them so that boats could make continuous passages upstream and downstream.

* The Roman numerals in this section refer to the references beginning on page 65.

This brought into being in 1792, the "Proprietors of the Locks and Canals on the Connecticut River."^{III} These men built in South Hadley, on the east shore of the river, an inclined plane to raise the boats to a height above the rapids and a canal to by-pass them. The lifting mechanism was powered by an overshot water wheel, one of the earliest records of the waters of the river being utilized to create mechanical power. Later a wing dam powered several small mills on the river's shore.

The first recorded use of the river for power purposes on the westerly shore occurred in 1783 when a saw mill was built on this site.^{IV} A grist mill was built just above it soon after. A wing dam and a canal or "floom" supplied the water to run the mills.^V There is no record of when the wing dam and canal were built.

The saw mill was built by Titus Morgan.²⁷ He was the son of Joseph Morgan I who was born in Springfield and who moved to what was then a part of West Springfield and is now a part of Holyoke. He owned a 200-acre farm between the Connecticut River and the "county" road (now Northampton Street in Holyoke) and bounded northerly by the then Northampton town line (now near the entrance to Mountain Park). That farm was later owned by his son Titus.¹⁴⁵

Titus Morgan was the brother of Joseph Morgan II. The latter was the father of Joseph Morgan III and grandfather of Junius Spencer Morgan. Both Joseph III and his son Junius were born in what is now Holyoke. Junius became an international financier and was known as the founder of the House of Morgan. He was the father of J. P. Morgan. Thus, Titus was the great uncle of Junius Morgan and the great-great-uncle of J. P. Morgan.¹⁴⁶

In 1827 the first Hadley Falls Company (HFC '27) was incorporated. The incorporators were John, Stephen and Warren Chapin and Alfred Smith.^{VI} Alfred Smith who was born in South Hadley, and who became a successful lawyer in Hartford, was president of HFC '27 and was its largest stockholder. He began here an association with the development of the resources of the Hadley falls which continued for the next 40 years until he died in 1868. During that interval he was associated with HFC '27, Hadley Falls Company 1848 (HFC '48) and Holyoke Water Power Company (HWP).

At the early date of 1827 he must have had a premonition that land in the vicinity of Hadley falls would increase in value. His HFC '27 purchased about

100 acres of such land in the general area of the falls which had no relationship to its industrial needs. His foresight was accurate. He lived to see it all become part of a flourishing city. The accompanying map, ALDZ-7, shows that land.

The Chapins contributed to the new company their interests^{VII} in the wing dam, saw mill, card factory^{VIII} and fulling mill (a wool cloth processing operation). The fulling mill was later converted to a cotton mill and became known as the "old Smith cotton mill."^{IX} There is no record of when the card factory and the fulling mill of the Chapins were built. However, they must have been built well before 1827.

The grist mill, the dam and the flume were purchased by Edward Smith from its former owners^X and then deeded to Alfred Smith who transferred the property to HFC '27.^{XI}

The saw mill was three quarters owned by John and Warren Chapin who transferred their ownership to the company. The remaining owners Elisha Ashley and Joseph Ely also transferred their ownerships of the saw mill to the company.^{XIa} From all the records which are available, it appears that each of the four industries purchased by HFC '27 continued in operation until the whole property was sold to HFC '48.

The locations of the wing dam, "floom," grist mill, saw mill, cotton mill and card factory in relation to the wood and stone dams spanning the river are shown on Plan 1.

In 1855 HFC '48 sold a mill site "B-1" nearby the cotton mill to the Parsons Paper Company (Parsons). This became the first paper mill in the community. All of the land and buildings on this site eventually became owned by Parsons. These properties are shown on Plan 2 and are labeled "A" through "D." A description of the individual property transfers follows.

HFC '48 sold the card factory "D" to intermediaries L. and J. B. Woods who immediately passed it on to Parsons. The restriction in the deed, mentioned in reference IX, places beyond doubt the locations of the card factory and cotton mill.

The remainder of this special piece of land went to HWP as a result of the sale of the HFC '48 estate at the Receivers' Sale.

////// PROPERTY ACQUIRED IN ADDITION TO THAT FOR INDUSTRIAL USES

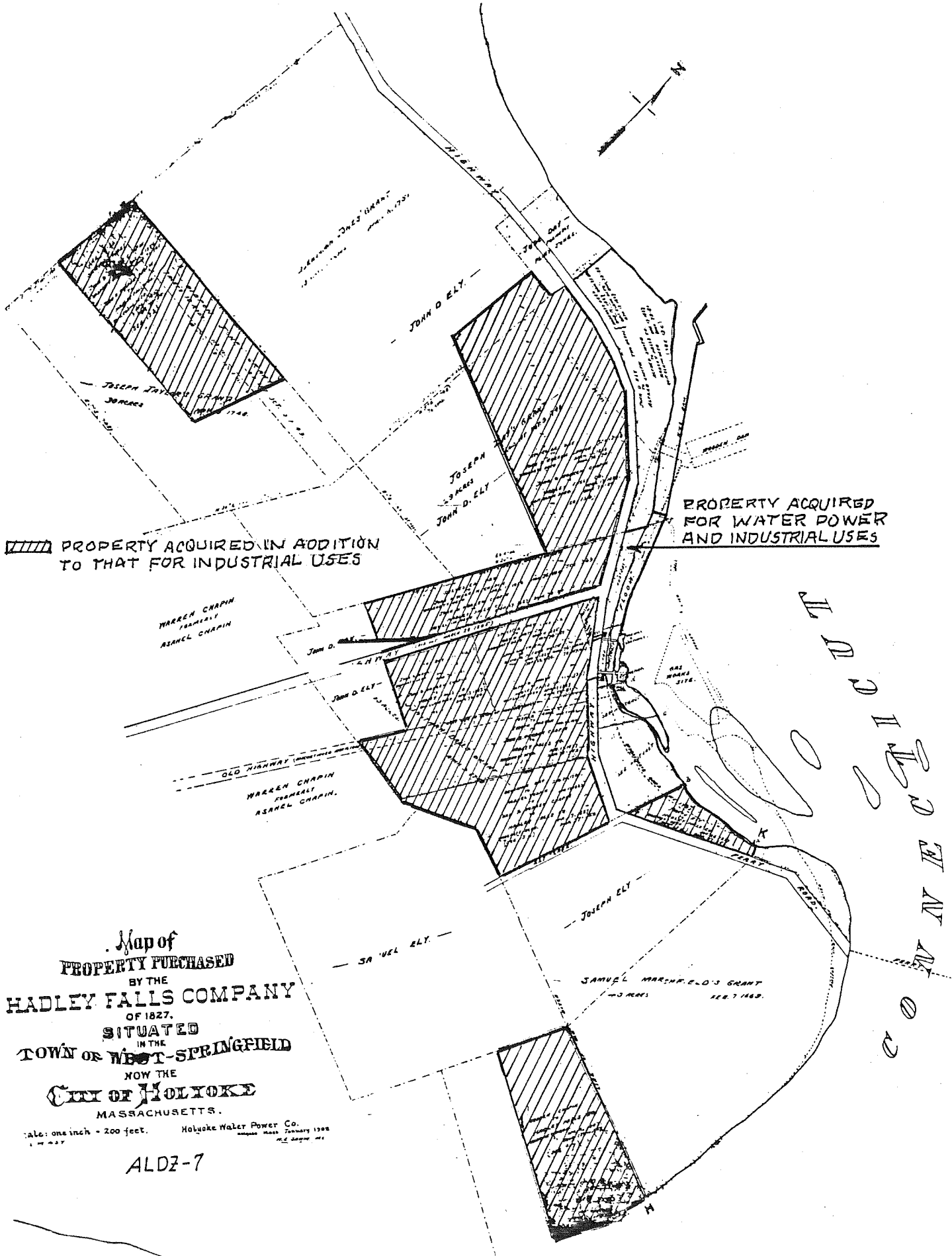
PROPERTY ACQUIRED FOR WATER POWER AND INDUSTRIAL USES

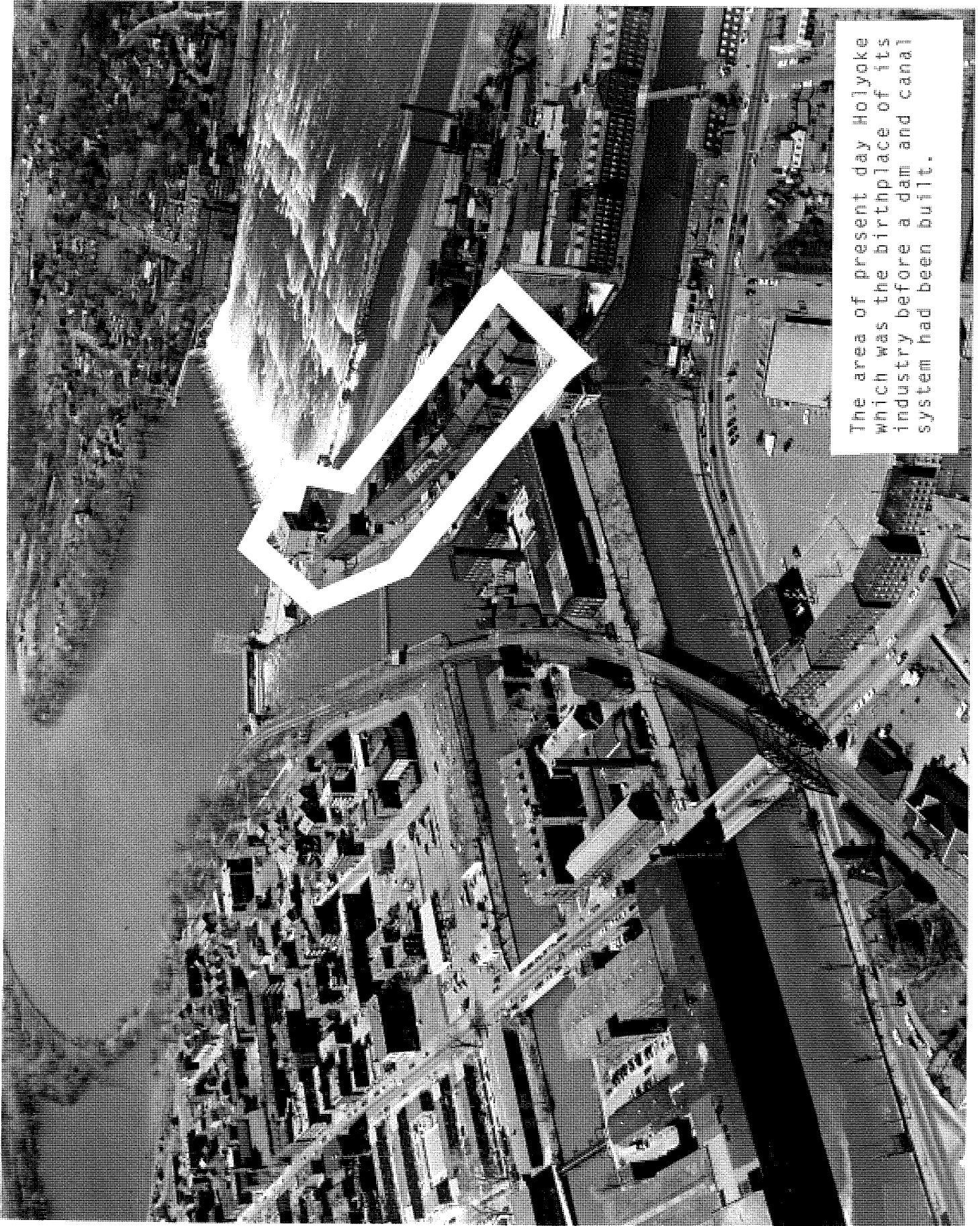
Map of
PROPERTY PURCHASED
BY THE
HADLEY FALLS COMPANY
OF 1827.
SITUATED
IN THE
TOWN OF WEST-SPRINGFIELD
NOW THE
CITY OF HOLYOKE
MASSACHUSETTS.

Scale: one inch = 200 feet.

Holyoke Water Power Co.
Mass. January 1908

ALDZ-7





The area of present day Holyoke which was the birthplace of its industry before a dam and canal system had been built.



Birthplace of Holyoke Industry

1. Grist Mill, Circa 1783
2. First Paper Mill - Parsons 1855
3. Other Parsons Mills 1859
4. Old Smith Cotton Mill Pre-1827
5. Card Factory Pre-1827

The saw mill purchased by HFC '27 is assumed to have passed to HFC '48 when it purchased the former's property. However, there seems to be no further mention of it in the records of HFC '48 or of HWP. It probably just went out of business along the way.

In 1859 HWP sold to Parsons two more mill sites "B-2" and "B-3" which were consecutive to site "B-1" which Parsons had purchased earlier from HFC '48.

The old Smith cotton mill "C" was sold to the Hampden Mills, a nearby textile manufacturer in 1863. It became known as the Hampden, Jr. mill.^{XII} In 1878 the mill was purchased by Merrick Thread Company and ran until 1886. In this latter year, after passing through Clemens Herschel and HWP as intermediaries, the mill was purchased by Parsons.

The grist mill, "A," was sold by HWP to the Mt. Tom Paper Company in 1866 which converted it into a paper mill. After being owned by several different paper manufacturers, the mill was purchased by Parsons in 1880. Parsons sold the mill to the American Writing Paper Company (AWP) in 1899.^{XIII} It was then purchased by HWP in 1949.

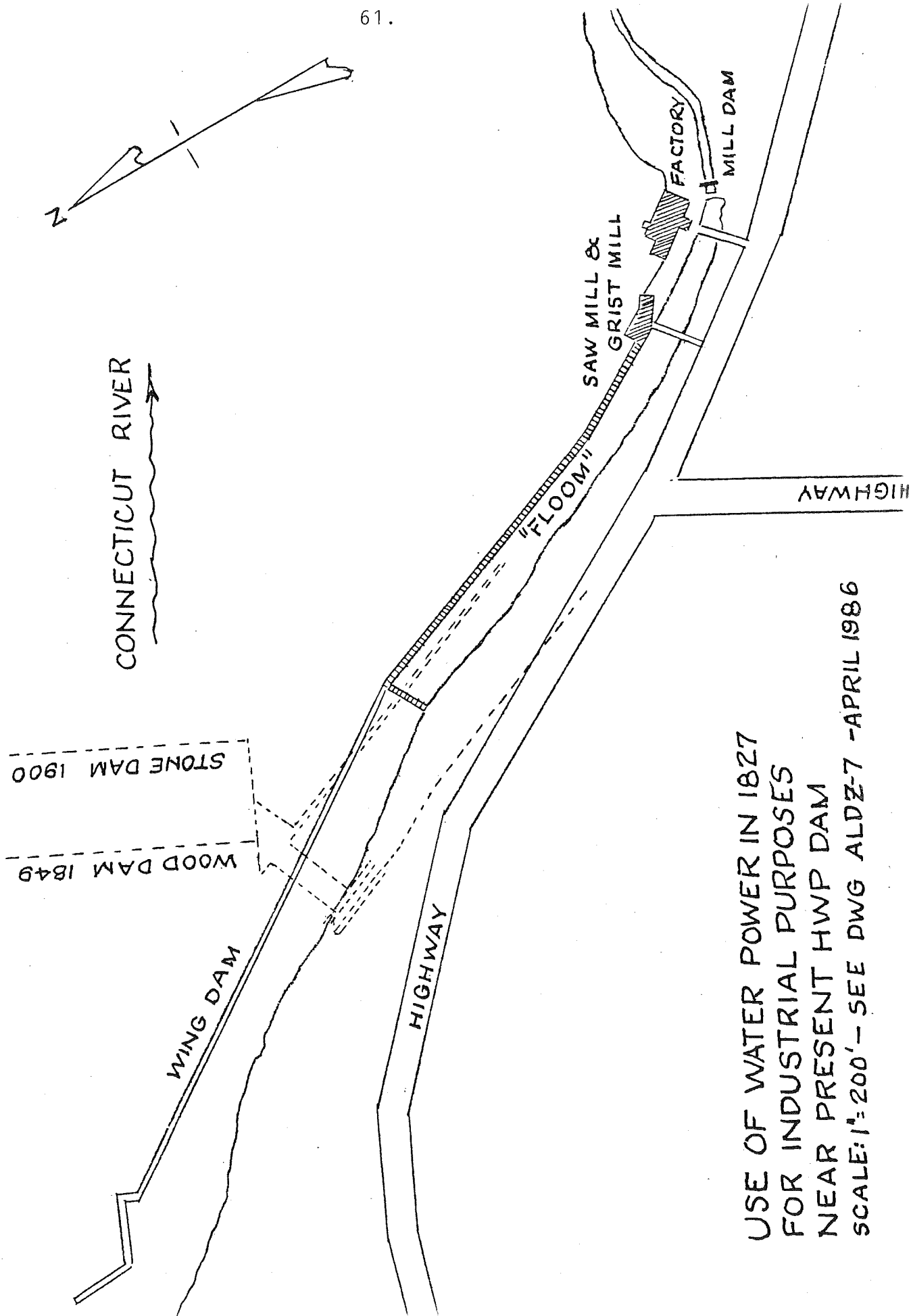
Parcels "A" through "D" are shown on Plan 2. A complete chain of title for each parcel is marked A1 and is included among the exhibits which accompany this volume.

When the mills had fulfilled their usefulness to HWP, they were gradually razed, the last one being removed in 1983. Plan 3 shows the site as it is today supporting the power development at the dam.

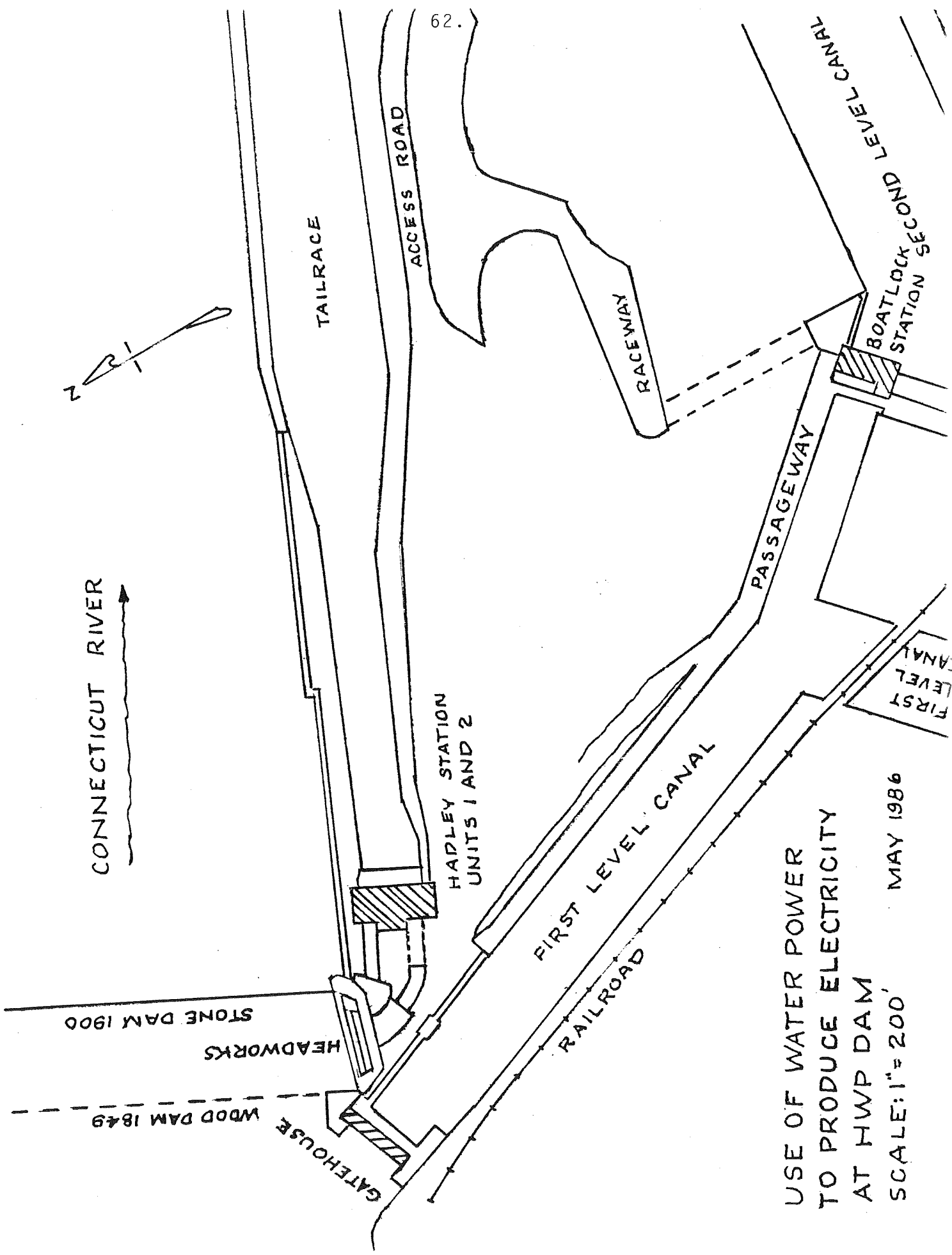
In the 1780's logs were being sawed and corn was being ground into flour to help supply building materials and food for the community. Then in the 1820's wool textiles were being processed and, later, cotton textiles were woven into cloth at the old Smith cotton mill. Carding machines to process textile fibers were being built nearby. These textile operations preceded by many years the large textile mills with thousands of employees which were later to come to Holyoke.

In 1855 the first paper mill in the community was built on this land and paper was made there for nearly 100 years.

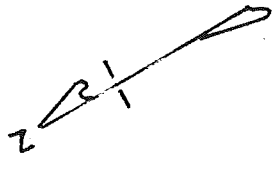
In 1952 HWP built Hadley #1 a major hydroelectric station on the site. In 1983 it added Hadley #2 making a total installation of 30,000 kilowatts.



USE OF WATER POWER IN 1827
 FOR INDUSTRIAL PURPOSES
 NEAR PRESENT HWP DAM
 SCALE: 1" = 200' - SEE DWG ALDZ-7 - APRIL 1986



CONNECTICUT RIVER



62.

TAILRACE

ACCESS ROAD

RACEWAY

BOATLOCK STATION SECOND LEVEL CANAL

PASSAGEWAY

FIRST LEVEL CANAL

HADLEY STATION
UNITS 1 AND 2

FIRST LEVEL CANAL

RAILROAD

STONE DAM 1900

HEADWORKS

WOOD DAM 1849

GATEHOUSE

USE OF WATER POWER
TO PRODUCE ELECTRICITY
AT HWP DAM

SCALE: 1" = 200'

MAY 1986

This area of land, assembled by HFC '27, one of the predecessor companies of HWP, has had a long and constructive history of utilizing the energy of water power to do useful work. Although, during the intervening years the ownership of the property was dispersed among many different owners, now, 160 years later, it has returned full circle to the corporate fold.

And so it is that a geological formation occurring millions of years ago, combining with a retreating glacier of thousands of years ago, has made it possible for this special piece of land to develop the energy resources of the river for the benefit of mankind.

References

- I. Telephone conversation with Professor Thomas Davis of Mount Holyoke College, May 5, 1986
- II. "Travels in New York and New England," Timothy Dwight, page 321.
- III. See "The Roots of Holyoke Water Power Company" (Roots), Barrett, Section I, pages 1-91.
- IV. "Holyoke, Massachusetts," (H.M.), Green, page 9.
- V. HWP drawing ALDZ-7.
- VI. Act to Incorporate the Hadley Falls Company, Chapter 138, Acts of 1827.
- VII. See Registry, Book 77, page 652 and Book 79, page 84.
- VIII. A carding machine is one which cleanses, disentangles, and collects together fibers preparatory to spinning. Webster Third International 1969 (See card and carding machine).
- IX. Restriction in deed of Hadley Falls Company (1848) (HFC '48) to L. & J. B. Woods 1856: "No buildings are to be erected between the card factory now standing on the granted premises and the old Smith cotton mill so-called."
- X. The former owners were Joel Day, Enoch Ely and Stephen Chapin. The property was transferred May 11, 1825, in Registry, Book 74, page 652.
- XI. Registry: Book 79, Page 81.
- XIa. Registry: Book 79, Page 84; Book 77, Page 651; Book 132, Page 516
- XII. Holyoke City Directory 1871. Also see Exhibit A-87.
- XIII. H.M., Page 189.
- XIV. Sources for Plan 1
 - a. H.M. Pages 9 and 158 regarding Grist Mill
 - b. "Roots", Page II-7 for properties owned by HFC '27
 - c. Deed of HFC '48 to L. & J. B. Woods giving location of HFC '27 card factory and old Smith cotton mill

- d. HWP drawing ALDZ-7 showing wing dam and "Floom" in relation to HWP dams. Also shows locations of HFC '27 mill properties. The location shown thereon of the grist mill and saw mill is doubtful. The locations of the mills on Plan 1 seem more accurate.

- e. MDEIC:65 which shows the six separate parcels, "A," "B-1," "B-2," "B-3," "C" and "D" which comprised the paper making mills of the Parsons Paper Company. The note in the southwest corner of parcel "A" shows the location of the "old grist mill." That drawing accompanies Exhibit A-1.

Exhibit A1

Chain of Title Parsons Division

The Parsons Division was made up of six separate real estate acquisitions which were known as A, B-1, B-2, B-3, C and D.

Parcel A was the location of a saw mill and a grist mill which took water from a "floom" and wing dam. It was owned by the Hadley Falls Company (1827), and Hadley Falls Company (1848), the predecessor companies of Holyoke Water Power Company, and then by HWP.

Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1847
Receivers of Hadley Falls Co. (1848) to Alfred Smith (HWP)	1859
HWP to Mt. Tom Paper Co.	1866
Mt. Tom Paper Co. to Felton and Chase	1870
Felton and Chase to Felton Paper Co.	1871
Felton Paper Co. to Hadley Falls Paper Co.	1874
Hadley Falls Paper Co. to Parsons Paper Co.	1880
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949

Parcel B-1Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1847
Hadley Falls Co. (1848) to Parsons Paper Co.	1855
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949
Laminated Paper, Inc., one of Holyoke's successful industries was started in this mill after it was acquired by HWP.	

Parcel B-2Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1847
Receivers of Hadley Falls Co. (1848) to Alfred Smith (HWP)	1859
HWP to Parsons Paper Co.	1859
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949

Parcel B-3Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1847
Receivers of Hadley Falls Co. (1848) to Alfred Smith (HWP)	1859
HWP to Parsons Paper Co.	1859
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949

Parcel C

This parcel was the site of buildings owned by the Chapin brothers which had been used for the finishing of woven woolen cloth and the converting of it for sale in their clothing shop. Carding machines which raised the nap on the cloth were also mentioned. The Hadley Falls Company (1827) was formed by Alfred Smith and his brothers and by Warren Chapin and his brothers. The land and buildings were purchased from the Chapins by the Hadley Falls Company (1827).

Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1848
Receivers of the Hadley Falls Co. to Alfred Smith (HWP)	1859
HWP to Hampden Mills (In the Holyoke Directory of 1871 the mill was listed as Hampden Mill, Jr.)	1863
Hampden Mills to Payson and Endicott Assignees	1875
Payson and Endicott Assignees to Merrick Thread Co.	1878
Merrick Thread Co. to Clemens Herschel (At the Directors' Meeting of June 18, 1884, "The President reported that we have completed negotiations with the Merrick Thread Co. for the purchase of the Mill property known as The Hampden Mill, Jr." Clemens Herschel, the HWP Hydraulic Engineer, evidently was an intermediary. It is believed that this process allowed HWP to make changes it desired in the water power indenture while it was being transferred from Merrick via Herschel to Parsons.)	1886
Clemens Herschel to HWP	1886
HWP to Clemens Herschel	1886
Clemens Herschel to Parsons Paper Co.	1886
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949

Stonington Corporation, maker of paper tubes, now of Easthampton, Mass. was founded in this mill by David Niss after property was bought by HWP.

Parcel D

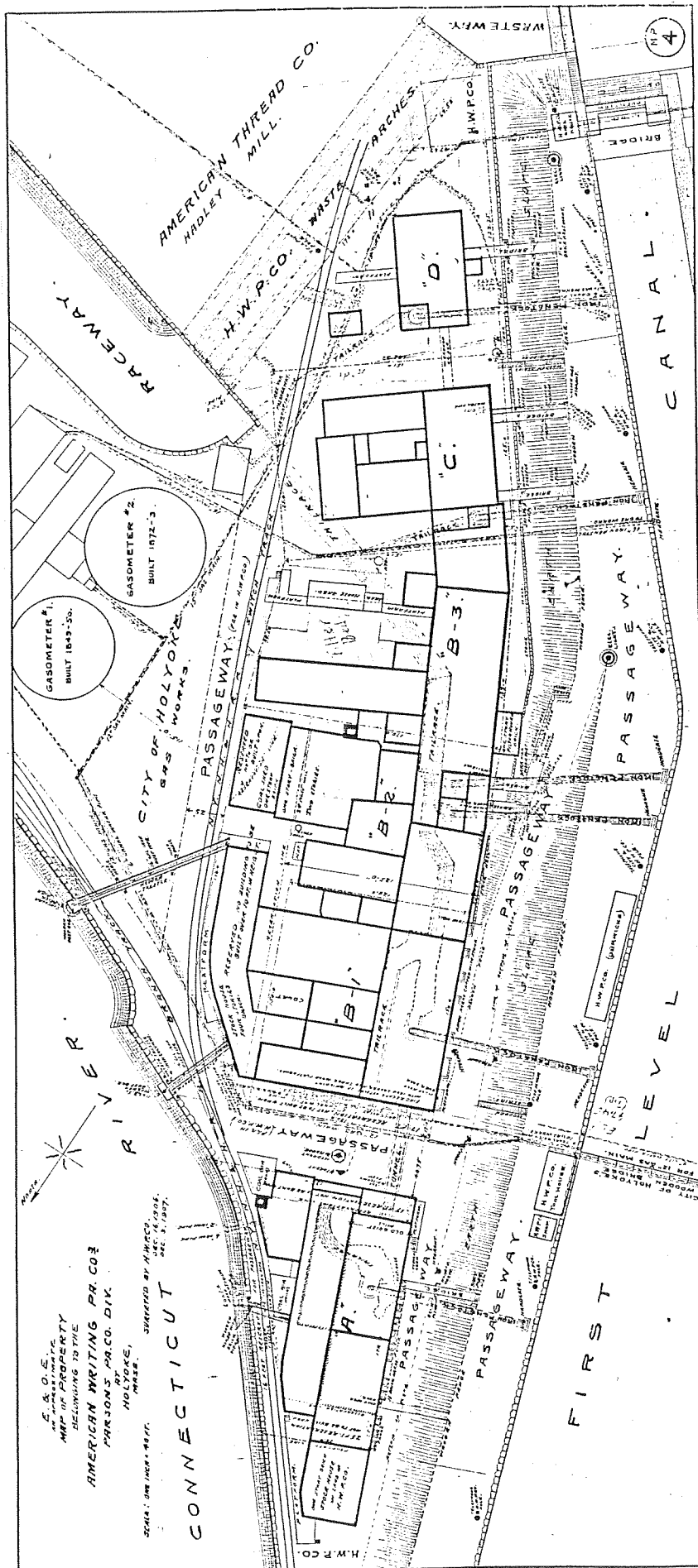
This parcel with its building was part of the property transferred to the Hadley Falls Company (1827) by the Chapin brothers.

Property Transfers

Hadley Falls Co. (1827) to Edmund Dwight (Hadley Falls Co. 1848)	1848
Hadley Falls Co. (1848) to L. and J. B. Woods	1856
L. & J. B. Woods to Parsons Paper Co.	1856
Parsons Paper Co. to American Writing Paper Co.	1899
American Writing Paper Co. to HWP	1949

On this site was the Card Factory, a part of the properties of the Hadley Falls Company (1827). The deed from the Hadley Falls Company (1848) to L. & J. B. Woods said, "No buildings are to be erected between the Card Factory now standing on the granted premises and the 'Old Smith Cotton Mill' so-called, by either the grantors or the grantees, of the successors or assigns of either."

Another source states, "One building housed the wire mill and the Card Factory and gave space to a maker of weaving reeds."¹⁰⁰



The "Old Grist Mill" was the southwest portion of Parcel A and is so designated on this plan.

Holyoke Manufacturers Association

Sometime prior to 1869 the Holyoke Manufacturers Association was formed. In that latter year the newly formed association secured data to prove that the Connecticut River Railroad was subjecting Holyoke to¹²⁸ discriminatory and unjustifiably high freight rates. A successful legislative campaign was mounted which resulted in the formation of a municipally owned competing railroad, the Holyoke and Westfield Railroad.

The Directors' records of October 24, 1881, discuss a proposed schedule of rates for payment by manufacturers for the use of water power. Those rates had evidently been negotiated by the company with a committee of the manufacturers.

The Directors' records of December 10, 1881, contain a copy of an executed agreement with the manufacturers. It follows:

G. M. BARTHOLOMEW, President W. A. Chase, Agent

OFFICE OF
HOLYOKE WATER POWER CO.

(Duplicate)

Holyoke, Mass. Oct. 29, 1881.

MEMO. OF AGREEMENT upon rates for Surplus Power for a period of six years from Jan'y 1st, 1882, by and between the Holyoke Water Power Company and a Committee representing the manufacturers who met at the Holyoke House to consider the subject of rates for Surplus Power.

Agreed that the Holyoke Water Power Company will make a discount of 1-6, being 16.2-3 per cent. from the rates adopted September 16, 1881, leaving the net rate (\$5.00) five dollars per mill-power per 24 hours (day and night) and in that proportion under the Regulations adopted September 16, 1881.

Charge for Surplus to commence Jan'y 1, 1882.

(Signed) Wm. Whiting,
James H. Newton,
J. S. McElwain.

HOLYOKE WATER POWER COMPANY,
Per, Geo. M. Bartholomew, President

In 1884 the manufacturers group took on expanded goals as outlined in the local press:¹²⁹

"The adjourned meeting of the manufacturers of the city was held at the Holyoke house this morning at 10:30 o'clock. The committee appointed for the purpose reported articles of association and they were adopted. All manufacturers, grantees of the Holyoke Water Power Company, will be invited to subscribe to the association's constitution, after which the organization will be perfected with the choice of permanent officers from among the membership. The object is to secure their water rights and to protect their mutual interests. The meeting adjourned subject to the call of the Chairman, Mr. Timothy Merrick."

The efforts to "secure their water rights" evidently took definite shape in 1888 as shown in the following:

"The Holyoke manufacturers are gradually buying up all the stock of the Water Power Co. lying around loose and it is to be hoped will soon have a controlling interest. With the corporations controlled by Holyoke men interested in Holyoke affairs the good that would accrue to the city would be enormous and the already large growth of the city would be greatly increased."¹³⁰

Further accounts of the attempts of the Manufacturers Association to buy up the stock of the Company follow:

Before the Readsboro plant was well begun the Newtons, urged on by their able young bookkeeper, George Gill, called a halt there while they undertook negotiations together with the Holyoke Manufacturers Association to buy out the Holyoke Water Power Company. Gill argued that could Holyoke manufacturers control the power system themselves, the Newtons might more efficiently build a new pulp mill in Holyoke and have their manufacturing interests centered in one locality. The moment was favorable, as Water Power Company stock had dropped in price owing to the defalcation and flight of the president of the company. Stockholders were ready to sell cheap during the weeks in which the exact amount of the defalcation was uncertain. Only one block of shares held up the deal, that of a large Hartford stockholder who lay too ill to transact business. Days dragged by, until John C. Newton, unable to bide his time, dropped the scheme and turned back to push on the Readsboro venture. Without the Newtons the Holyoke Manufacturers Association could not proceed and the opportunity passed, never to come again. To dwellers in Holyoke it is an interesting speculation whether the course of the city's development thereafter would have been profoundly altered had the power been owned here. George C. Gill (Interview); Holyoke Transcript, Sept. 20, 1898.

The Holyoke Water Power Co.
NO TRUTH IN THE STORIES THAT IT HAS CHANGED HANDS.

For some time there has been an effort among certain parties to secure the control of the Holyoke Water Power Co. The nominal price of the stock has run up in Boston to a high figure and some shares have changed hands there. The capital is \$600,000, and less than a sixth of it has been secured by the parties buying. The fact is that the absolute control of the concern rests here in Hartford, and lies with three or four strong parties who have no intention of selling out. The story has gone abroad that the dam was giving way and that there was trouble there, but it is in good condition, although it has all along been known that some day a new stone structure must be put up. The company is financially able to do it at any time, though the cost will be about a million dollars. The present management is conservative and far seeing in its policy and looks to maintaining and developing the possibilities of the place rather than temporarily drawing out all the profits and leaving the future uncertain. One story has been that the Standard Oil company was after the property, but this is denied by those who ought to know. A gentleman in position to talk with authority said yesterday that there was nothing in the story of a purchase of the company, beyond an unsuccessful attempt to accomplish it, that the control remains and will remain here in Hartford, and that the present conservative and impartial policy of management will be maintained.—[Hartford Courant.

MiscellanySkating

The ice on the First Level Canal near Dwight and Front Streets was strong enough today for the boys to skate on. As soon as it is thick and heavy enough to bear the crowd, S. Pepin will smooth the surface and open his ice rink for the winter.

Transcript
December 9, 1882

Note: The growing use of water by industry from the canal system, and its increasing velocity, soon prevented the formation of ice thick enough for safe skating.

The Goldthwaite Case

Goldthwaite fell into the canal opposite the Valley Paper Company (no water being in the canal) on a dark night on the 17th day of July 1873. (The new bridge road having been opened and used from and after the first day of July.) He claims to have been on the line of the old highway.

Goldthwaite sued the City of Holyoke and received a jury award of \$6,000. The City sued HWP for \$6,238.03 plus costs.

The president reported that HWP should not have been found liable.

The president was authorized to pay the award and costs to avoid further litigation.

Directors' Minutes
June 16, 1874 and
September 21, 1874

Electricity for Street Railway

The Street Railway is negotiating with the Water Power Company for cheaper power. It now pays three cents a mile for electricity but if it can get lower rates it will not build the power house for which increased capital stock was allowed.

Holyoke Transcript
April 13, 1892

Hazards of Being an HWP Treasurer - An Accident

Treasurer Wm. A. Chase of the Holyoke Water Power Co. was thrown from his carriage on West Dwight Street last evening. His horse turned out to pass a team, when the carriage-wheel struck a new hydrant, recently put in on the north side of Dwight Street, just west of the Forestdale cemetery entrance, and Mr. Chase was thrown violently to the ground cutting his face badly. He was unconscious for sometime and was removed to a house nearby, where surgical aid was summoned. He was then taken to his home. His condition is not considered critical, but he will probably be confined to the house for several days.

Holyoke Transcript
May 3, 1883

Canal Fences

The First Level Canal wall on both sides of the Cabot Street quadrangle has been provided with an iron railing so that foot passengers need not fall into the canal even when they are drunk.

Holyoke Transcript
November 20, 1882

Canals

The canal system of HWP, in conjunction with its dam across the Connecticut River brings to industries and power plants, in Holyoke, water which is the source for their hydroelectric power. The canals also supply the process water used by local mills in the manufacture of paper.

The canals are four and one half miles in length and are on three different levels. Electricity is generated by the water falling from one canal level to another, or from a canal to the river, turning waterwheels and electric generators in the process.

The canals were dug by men with picks and shovels and horse drawn teams. They were begun in 1847 and were completed in 1892, 45 years later.

Over the years, the canal banks have been planted with different kinds of flowering trees. One of the canal banks has been developed as a park planted with a variety of shrubs. It looks out upon a group of five fountains with jets of water rising 50 feet high.

Canal Washouts

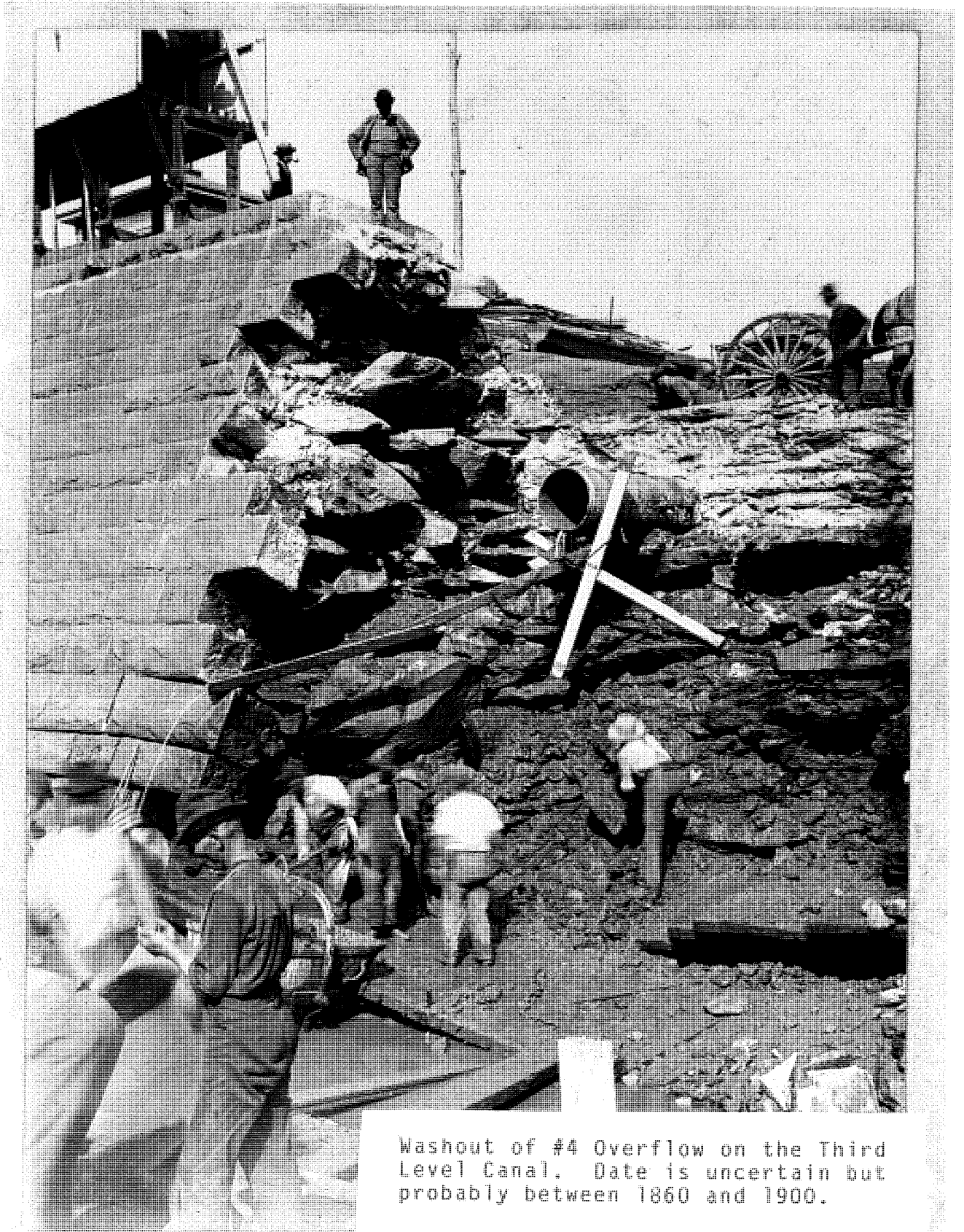
There have been three canal washouts. The first happened on the First Level Canal on August 2, 1872 where a new mill was being built by the Massasoit Paper Company south of Dwight Street.⁶⁴ Another washout occurred on June 12, 1889 and was also on the First Level Canal. It washed away the south side of the Cabot Street Mill where HWP was constructing its first hydroelectric plant.

The damage done by the rampaging water was great. Both of these washouts allowed water to flow unimpeded from the First Level to the Second Level Canal. A newspaper account of the 1872 washout is among the exhibits which accompany the text. A photograph of the 1889 washout is included herewith.

A third washout occurred on the Third Level Canal. The accompanying picture shows the northerly end of No. 4 overflow which was undermined and badly damaged. This failure must have caused a serious interruption of operation to some of the earliest mills to be built in Holyoke.¹⁰⁸



Washout at Cabot Street Mill June 12, 1889. Picture looks east toward Second Level Canal from First Level Canal.



Washout of #4 Overflow on the Third Level Canal. Date is uncertain but probably between 1860 and 1900.

Domestic Water Supply Business

When HWP purchased the estate from the Receivers of the Hadley Falls Company, it became owner of the water system that was serving Holyoke. The system consisted of a waterwheel driven pump at the gate house which delivered river water to a reservoir bounded by High, Lyman and Maple Streets. From the reservoir water for drinking and fire protection purposes flowed down to the mills, to the tenements of the mill operatives and to homes in what was then a residential area of the city.

In 1871 Holyoke decided to procure a municipal water supply of its own. It purchased two ponds located on high ground in the western part of the city. These ponds, known as Ashley Ponds, commanded a watershed of over three square miles. They offered an ample supply of pure water.¹¹⁶ The work of impounding the waters and piping them into the town was begun in 1872. The water mains were connected in 1873. The supply of water from the HWP reservoir ended in November of that year.¹¹⁷

Gas Business

The gas business came to Holyoke Water Power Company as part of the estate which it purchased from the Receivers of the Hadley Falls Company.

In the minutes of the first directors' meeting on March 21, 1859, it was voted that the "President inquire and report on the proper and best method of managing, using, or renting the Gas Works and Water Works."

At the June meeting of the Directors, it was voted "that the Gas Works be carried on the ensuing season on account of the Corporation." The only use for manufactured gas at that time was for lighting purposes, to supplement candles or oil lamps. The "ensuing season" must have meant that the gas works was operated only during the fall, winter and spring months when darkness came early.

At the July meeting of the Directors, the President reported that he had contracted for "Cannel and New Castle coals to supply the gas works." Cannel was "a bituminous coal of fine texture and little luster containing much volatile matter and burning with a bright flame."¹¹⁰ It was gasified to produce illuminating gas.

Subsequent comments concerning the gas business in the Directors' minutes are sparse. They mainly concerned occasional authorizations for gas mains, enlargements of the gas works, and construction of gas holders in several areas of the city. One such gas holder was built in South Holyoke¹¹³ in 1884. This later became known as the Valley Arena, a well known hall for sporting events, dances and public meetings. It was subsequently destroyed by fire.

In 1873 the Legislature amended the company's charter to authorize the manufacture and sale of gas.

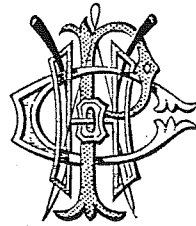
The following quotation discusses the hazards in the mills of illumination by lamps of gas light: "It was not customary in the Holyoke cotton mills to reduce the hours in winter, as was done elsewhere to lessen fire hazards by avoiding as many hours of work by gas or lamplight as possible. With the lint in the air of those close rooms and the feeble flare of gas jets, the crowds of operatives, young girls and tired children, it is a miracle that fire or accidents were not the rule rather than the exception."¹¹¹

Holyoke City Directory 1879

CITY ADVERTISING DIRECTORY.

Holyoke Water Power Co.

HOLYOKE, MASS.



Available H. P. 30,000.

Incorporated, Jan. 31st, 1859.

— PROPRIETORS OF —

CITY GAS WORKS.

House and Store Lots for Sale

ON THE MOST REASONABLE TERMS.

OFFICE: - - NO. 1 CANAL STREET,

NEAR BAPTIST CHURCH.

GEO. M. BARTHOLOMEW, Pres't.

W. A. CHASE, Treas.

An HWP advertisement in the Holyoke City Directory of 1879 emphasizing the Gas Works

Gas was also used for streetlights as noted in the following: "Street lamps, gas and naphtha, were increased in number year by year as the town could afford them, and proved a convenience to pedestrians in those days of cinder and gravel walks."¹¹²

In 1881 a gas engine was purchased by HWP for use by persons desiring small quantities of power. It was described by the local newspaper as follows:

A New Power

Holyoke Transcript, August 27, 1881

"The Holyoke Water Power Co. have received an engine from Philadelphia manufacturers and it is now in position at T. F. Kegan's shop on Appleton Street. This engine is rated at 'four-horse-power,' burns illuminating gas instead of coal or wood and is just the thing for concerns that wish a small amount of power for machinery, elevators, etc. It can be seen in operation at its present location today and all the week. It burns gas and the Water Power Co. will make reasonable arrangements with anyone wishing such an engine."¹²⁴

Gas

Holyoke Transcript, December 14, 1881

"Though gas is defined as an "intangible, aeri-form fluid" there exists no better medium by which to measure the growth and progress of a city than the increase of production of its gas works. Two years ago the Holyoke Gas Works made 20,000,000 cubic feet of gas. The next year the product was increased to 22,000,000. About a year or so ago additions and improvements were made at a cost of \$30,000 by which the capacity was increased one quarter and the present year 27,000,000 cubic feet will be made. Two-thirds of this is consumed by the mills of the city at an actual cost to them of \$2.13 per thousand, which is cheaper than the rate in New York City, though the Holyoke Gas Works have to pay a freight of \$1.85 per ton from New Haven on each ton of coal purchased and used by them. This speaks well for the economical manner which the works are managed

by the efficient and experienced superintendent L. D. Rhoades...."

The gas business was a growing one. A summary of the annual production in cubic feet per year for a twenty year period follows:

<u>Year</u>	<u>Annual Millions of Cubic Feet</u> ¹¹⁵
1871	10
1879	20
1884	30
1891	40

By comparison, the sales of gas in 1856 were 2.7 million cubic feet.^{115A}

George Medad Bartholomew

George M. Bartholomew of Hartford was a member of the first Board of Directors of the Holyoke Water Power Company which was elected on March 21, 1859. Alfred Smith was elected President at that meeting.

At the directors' meeting of August 26, 1859, Smith resigned as President but continued as a director. Bartholomew was elected President. He was considered one of the most brilliant financiers in Hartford and a highly respected businessman. He was president of the Hartford County Bank, a director or officer of several railroads, a partner in the firm of Watkinson and Bartholomew wholesale dealers in dry goods, a director of the Hartford Fire Insurance Company, a trustee and treasurer of the Watkinson Library in Hartford.⁷⁵

During the years of his presidency, HWP experienced busy and fruitful times. Its real estate had a ready market as industry sought locations with water power. The rapidly growing population bought its land for homes and commercial uses. Its sales of water power were growing.

In 1884 Mr. Bartholomew had completed 25 years of service to the company as its President. The stockholders at the annual meeting on June 28 recognized those many years by voting: "That the Directors are authorized to notice such valuable service of the President as they may in their discretion deem proper." On the same day the directors wrote to Mr. Bartholomew the letter included herein requesting that he sit for his portrait which would be placed in the office. Whether that portrait was ever painted is unknown.

Holyoke, Mass., June 18th, 1884.

G. M. BARTHOLOMEW, ESQ.,

President of the Holyoke Water Power Company.

Dear Sir:

In view of the approaching completion by you of 25 years of service in the responsible position of President of this Company, and in view of the able manner in which you have discharged the duties of that position during this long period of service, the undersigned, Directors of the Holyoke Water Power Company respectfully ask that you will sit for your portrait to some artist to be engaged by us and who may be agreeable to you, to the end, that an enduring portrait of you may be placed in the office of the Company.

Respectfully Yours,

John B. Stebbins
O. M. D. Ross
James J. Goodwin
Cha. M. Beach

At the meeting of the directors on September 21, 1886, Mr. Bartholomew resigned as President and Director. The news of his resignation and of his flight to Canada was carried in the local newspaper of September 22 and 23. Those accounts follow:

Resignation of the President of the Water Power Company

Holyoke Transcript, September 22, 1886

"George M. Bartholomew of Hartford and president of the Holyoke Water Power Company for the last twenty-six years tendered his resignation Tuesday as president of that company, the resignation to take effect immediately. John B. Stebbins of Springfield, the oldest remaining director, has been chosen to fill the office rendered vacant by the resignation of Mr. Bartholomew. The retiring president has been identified with the Holyoke Water Power Company from the beginning and he will be greatly missed by Holyoke businessmen who have had occasion to meet him and particularly by those who have been associated with him in the welfare of the Water Power Company."

George M. Bartholomew
Failure and Flight

Holyoke Transcript, September 23, 1886

"The statement that George M. Bartholomew of Hartford, and director and president of the Holyoke Water Power Company, and managing director of several other corporations, had fled from the country surprises everybody. His liabilities figure a million dollars. His flight indicates dishonesty, but to what degree or how far reaching it will be is yet unknown. It is said by officials of the Holyoke Water Power Company that it is secured on all indebtedness of Bartholomew to it.

"George M. Bartholomew is nearly 70 years of age, and has always had the reputation of being a hard working honest, methodical, conservative man. The president of a Hartford bank was recently asked the question, 'Is George M. Bartholomew honest?'

The answer was that he had known Bartholomew many years in business and private life and that he considered him a thoroughly honest man. 'Why' said he, 'If I was worth millions and desired the most honest administration of my estate, I should select George M. Bartholomew as the administrator.'

"Bartholomew was a hard worker, working into the night, regularly, upon the business of the many concerns with which he was connected. His judgment was considered as first class on questions of investment. He was supposed to be worth considerable money, although a few years ago a prominent manufacturer of this city remarked that 'Bartholomew was not worth anywhere near so much money as he should be worth considering his opportunities.' There seem to be \$35,000 of his paper in this city; said to be distributed as follows: William Skinner \$10,000, City National Bank \$10,000, Holyoke National Bank \$5,000, Home National Bank \$5,000, besides the amount of Holyoke Water Power money he took. A portion of the above notes are of the Schuyler Electric Light Company which is supposed by some to be solvent."

While the resignation seems unexpected, in retrospect, certain votes of the HWP Directors which follow seem significant:

August 4, 1886 Voted that no money shall be loaned by this Company excepting by the approval and vote of the Directors.

September 8, 1886 Voted that an immediate demand to be made for the payment of the amount of notes now overdue this Company by the American Emigrant Company. (A committee of three Directors was appointed to press the collection of the notes using all necessary means therefor.)

Voted that the Treasurer of the Corporation shall be the sole custodian of the funds of the Corporation and all monies deposited in banks outside of the City of Holyoke shall be drawn only by joint check of the Treasurer and President.

There followed negotiations in Canada with the Company represented by its Treasurer, W. A. Chase and Mr. Bartholomew by his attorney Charles E. Gross as noted in the Directors Records of March 24, 1887.

Those negotiations gave the Company authority to dispose of certain securities it held as collateral against monies owed by Mr. Bartholomew.

The report to stockholders of 1891 reported that the debt of Mr. Bartholomew was \$182,808.37. The sale of the collateral securities reduced the indebtedness to \$139,147.04. In addition, the Company had secured from Bartholomew an interest in certain anthracite coal lands in Pennsylvania. Because the value of the coal lands was uncertain, the Company charged off the remaining debt of \$139,147.04.

The coal lands which came into the possession of HWP were Bartholomew's interest in the Anthracite Coal Company. Those interests were transferred in 1915 to a new company called the Pequot Coal Company, a corporation set up in Pennsylvania, of which HWP was the sole stockholder. Pequot then sold the property in 1921 for \$250,000 to Madeira Hill Coal Company.

Bartholomew returned to Hartford in late 1890.⁷⁵ The Holyoke Transcript of February 16, 1891 carried the following:

The Terrible Restrictions of Penitentiary Life

"George M. Bartholomew, ex-president of the Holyoke Water Power Company, and who is now serving his one year's sentence at the Wethersfield, Conn. State Prison, can receive a letter from his devoted wife at Hartford once a week, but can only write to her once a month. He can have magazines and books but no daily papers,--indeed, no newspapers at all,--no outside food but fruit and a visit once a month. He is now in his convict's garb and doing some light work with the rest of the prisoners in the shoe shops."

A biographical sketch of Mr. Bartholomew by the Watkinson Library is contained among the exhibits which accompany this history.⁷⁵ Two excerpts from that source follow:

"The disaster that ruined him in September of 1886 at the age of seventy seems to have been touched off by the embezzlement of between one-half and one million dollars from the Hartford Silk Company and the Union Manufacturing Company of Manchester by a

close associate, a man who was president of the Silk Company and treasurer of the Union Company. Bartholomew was president of the Union Company, a director of both companies involved, and personally a heavy endorser of their papers. Thus he was responsible for the amount defaulted. He tried to float a loan in New York City, from Cyrus W. Field, whose wife was a cousin of Mrs. Bartholomew. But Field, upon learning the extent of the involvement, was quoted as having advised him to leave the country. The claims presented at the time amounted to over \$1,500,000 but were subsequently greatly reduced through George M. Bartholomew's trustee, C. M. Joslyn, and one gains the impression in reading the newspaper accounts of the time that his creditors were a pack of howling wolves at his heels."

- - -

"In the meantime Bartholomew had returned to Hartford in late 1890. The last years of his life he lived quietly at home on Prospect Street, giving up all that he had and spending what strength he had to save something out of his broken fortune for his creditors.

"He was characterized as having been full of energy, doing two days work in one, of the simplest habits of life, kindhearted and gentle, and even when one of the powers of the town altogether unassuming in manner. No one who knew him ever intimated that he had profited personally by the operations that ended in disaster. At the time of his flight to Montreal, Canada, repeated comments were made that the institutions he had served were stronger for his management and that any funds due them were unconsidered trifles. Among those who made this assertion were the president of the Holyoke Water Power Company, the treasurer of the Florida Construction Company, an official involved in the Charter Oak Life Insurance Company matter, and a spokesman for the Orphan Asylum. Those nearest him said that he would have been dead or hopelessly broken down had he stayed three days longer in Hartford under the tremendous pressure that was applied.

"He died on February 16, 1899 and his funeral services were conducted by the

Reverend Dr. Samuel Hart of Trinity College. They were attended by many of the influential citizens of the city, including Governor M. G. Bulkeley and Judge Nathaniel Shipman who was also on the Watkinson Library board of trustees.

An extensive obituary of Mr. Bartholomew^{75a} is among the exhibits which accompanies this history.

Waterwheel Testing - Before Herschel

Some testing of waterwheels was done in Europe early in the 19th century. About 1850 a few tests were made in this country, but the records from the tests were not authentic and the process was very expensive. James Francis of Lowell also did some testing of waterwheels in place, but this method⁷⁷ was so expensive as to be prohibitive in many cases.

In Holyoke the testing of waterwheels began as early as 1874 when James Emerson constructed a crude testing flume in the old boat lock between the first and second level canals at the site of the present HWP Boatlock Hydroelectric Station. The company was not officially connected with this work at the beginning, although it encouraged Emerson to come to Holyoke to set up his works. A communication to him from S. S. Chase, engineer of the Company, said, "The testing of turbines is the only way to perfect them, and this is a matter of importance. Move your works to Holyoke, and use all the water necessary for the purpose free of charge."⁶⁵

In 1879 the Company issued a notice to turbine builders which provided means for a thorough competitive test and invited their participation. At the same time the Mayor invited five distinguished hydraulic engineers to come to Holyoke as guests of the city to have charge of the tests and to report the results.⁷⁰

The testing was newsworthy as shown in the following items:

The Great Test

Holyoke Transcript, September 17, 1879

"The great test of turbine water wheels is to come off October 1st, and no further postponement will be made. Ten of the wheels have already arrived at the testing flume, and four of the number have been subjected to private tests. The following are the names, sizes and manufacturers of the ten wheels now at the flume: Humming Bird, 48 inch, made by Willis Read, Danbury, Conn.; Centennial, 30 inch, made by Edward Jones & Son, Rochester, N.Y.; Gates Curtis, 32 inch, double wheel, horizontal shaft; another of the same make, 12 inch, upright shaft, made at Ogdensburg, N.Y.; Champion, 25 inch, made by Young &

Reynolds, Ellensville, N.Y.; Victor, 35 inch, made by Stillwell, Bierce & Co., Dayton, Ohio; Walsh, 48 inch, made by Phoenix Iron Works, Sheboygan, Wis.; Thompson, 45 inch, made by W. J. Thompson, Union City, Penn.; King, 30 inch, made by W. J. King, Pontiac, Mich.; Hercules, 33 inch, made by the Holyoke Machine Company. A Tyler 60-inch wheel will arrive in a day or two, and others will follow."

The Water Wheel Test

Holyoke Transcript, October 1, 1879

"The engineers who are to have in charge the champion test of water wheels at the Holyoke Testing Flume will arrive to-day, and probably two or three days will be consumed in making the preliminary arrangements before the test will be formally commenced. There will be no postponement this time, as all the wheels entered have now been received with a single exception, and that wheel, the Perry turbine from Maine, is expected every day. The test will continue until the middle of October at least; as from one to four days will be consumed by each wheel.

The following wheels have been received in addition to the ones mentioned in our issue of September 17. Success Turbine, 36 inches in diameter, manufactured by S. M. Smith, York, Pa; Tyler Turbine, 60 inches, manufactured by the Putnam Machine Co., Fitchburg, Mass.; Sherwood turbine, 18 inches, from Iowa, entered for an experimental test. The 60 inch Tyler wheel weighs 6 tons, and as the manufacturers will not allow it to be taken apart in moving as it was very carefully adjusted by them, it was found necessary to strengthen and perfect the car and hoisting apparatus at the flume before the wheel arrived."

Holyoke Transcript, October 8, 1879

"A small Sherwood water wheel was the first wheel tested at the flume this week. The large Tyler wheel has arrived and will be tested at once."

Holyoke Transcript, November 12, 1879

"One of the Holyoke Machine Company's "Hercules" water wheels was tested at the testing flume, yesterday, and it attracted considerable attention. The wheel was subjected to several severe tests. A number of water wheel men were present and witnessed the test. The following gentlemen from outside the city were present; General T. G. Ellis of Hartford and Samuel Webber of Manchester, N. H., engineers in charge; Professors W. A. Norton, and A. J. Dubois of New Haven, Conn., and Professor Clemens Herschel of Boston; George F. Marshall, Turners Falls; James Richardson, New York City, A. S. Kimball, Worcester and A. L. Webster of Staten Island."

At the conclusion of the tests, HWP published a booklet titled, "Holyoke Hydrodynamic Experiments Made by Holyoke Water Power Company, Holyoke, Mass. 1879-80." Excerpts from that booklet giving some of the test results, are included among the accompanying exhibits.¹⁰⁵

Clemens Herschel

The connection of Clemens Herschel with Holyoke Water Power Company had its origin in a vote of the Company directors at their meeting on December 2, 1879. A committee was appointed "with authority to employ an engineer and necessary forces to measure the water used by the several millowners or occupants on our lands."

The minutes of the Directors' Meeting of January 6, 1880 read as follows:

"The president reported that the committee appointed to secure the services of a hydraulic engineer to begin the measurement of water drawn by each manufacturing concern upon our canals have engaged Clemens Herschel of Boston, Mass., hydraulic engineer, to take charge of measuring the water. His services to commence March 20, 1880 with a salary at the rate of twenty-five hundred dollars per annum and the use of a dwelling house.

A description of the background of Mr. Herschel prior to his becoming hydraulic engineer of the Company has been excerpted from the Transactions of the American Society of Civil Engineers. It follows:

"Clemens Herschel was born on March 23, 1842. He passed his boyhood in Davenport, Iowa, and, after studying with a tutor, he entered the Lawrence Scientific School of Harvard University at the early age of 16. Graduating in 1860, at age 18, with distinction (summa cum laude), he took an advanced course in chemistry for one term, and then went to Europe to study French and prepare to enter the Ecole de Ponts et Chaussees, in Paris. As the number of foreigners was limited, and the quota was complete, he was unable to obtain admission, and went, as a consequence, to the Technical School of Karlsruhe, Germany, to complete his education. Long afterward, in 1925, the Karlsruhe Technical School bestowed upon him the honorary title of Doctor of Engineering.

"In 1864 Mr. Herschel returned to the United States and opened an office as Consulting Engineer, in Boston, Mass., doing such work as came to hand. He was Engineer of the Albany Street Bridge, built by the City of Boston in 1867, and at one time was connected with the Boston Sewer Department.

The variety of his work is indicated by a letterhead of 1871 which reads, "Civil Engineering in all its branches, Iron and other Bridges and Roofs, Hydraulic Engineering, Roads, River and Harbor Improvements, etc., etc." In 1872 he was appointed Superintendent of Streets of West Roxbury, Mass. (now part of Boston), and from 1881 to 1883 he was one of the three Railroad Commissioners of Massachusetts.

"Mr. Herschel was Engineer of the Quinnipiac Drawbridge, New Haven, Conn., erected 1874-1878, and this led to the publication in 1875, of his book on "Continuous Revolving Drawbridges." A bridge of minor importance, but which is of interest because it is still standing and readily accessible, is that across the Public Garden Pond in Boston. The design, prepared in cooperation with an architect named William G. Preston, was accepted as the result of a prize competition."⁸¹

During the ten-year period while he was Hydraulic Engineer of Holyoke Water Power Company he made four major contributions to the discipline of hydraulic engineering. The first was developing a method for⁷⁷ using waterwheels to become their own water meters. The second was the building of the first commercial testing flume⁷⁸ for measuring the efficiency of waterwheels. Both of these accomplishments made significant additions to the economic well being of HWP.

The third contribution was the development of the Venturi tube into a mechanism for the measurement of water flowing in pipes. This device which he named the Venturi Meter has become the standard method for measuring large quantities of liquids flowing in pipes. It is in use world wide today.⁷⁹

The fourth was the design of the ogee shape for the face of overflow type dams as the most efficient kind of spillway discharge. In a letter to his son Winslow of April 23, 1928, he wrote: "By the way, the ogee form of discharge built and the construction details of it I have always considered one of my successful pieces of engineering work, built moreover, under difficult circumstances, and exposed to very great strains in service."⁸⁰

In addition, Herschel was the engineer responsible for strengthening and preserving the wood dam in 1885.

This major undertaking involved filling the interior of the dam with vast quantities of gravel.⁶⁹

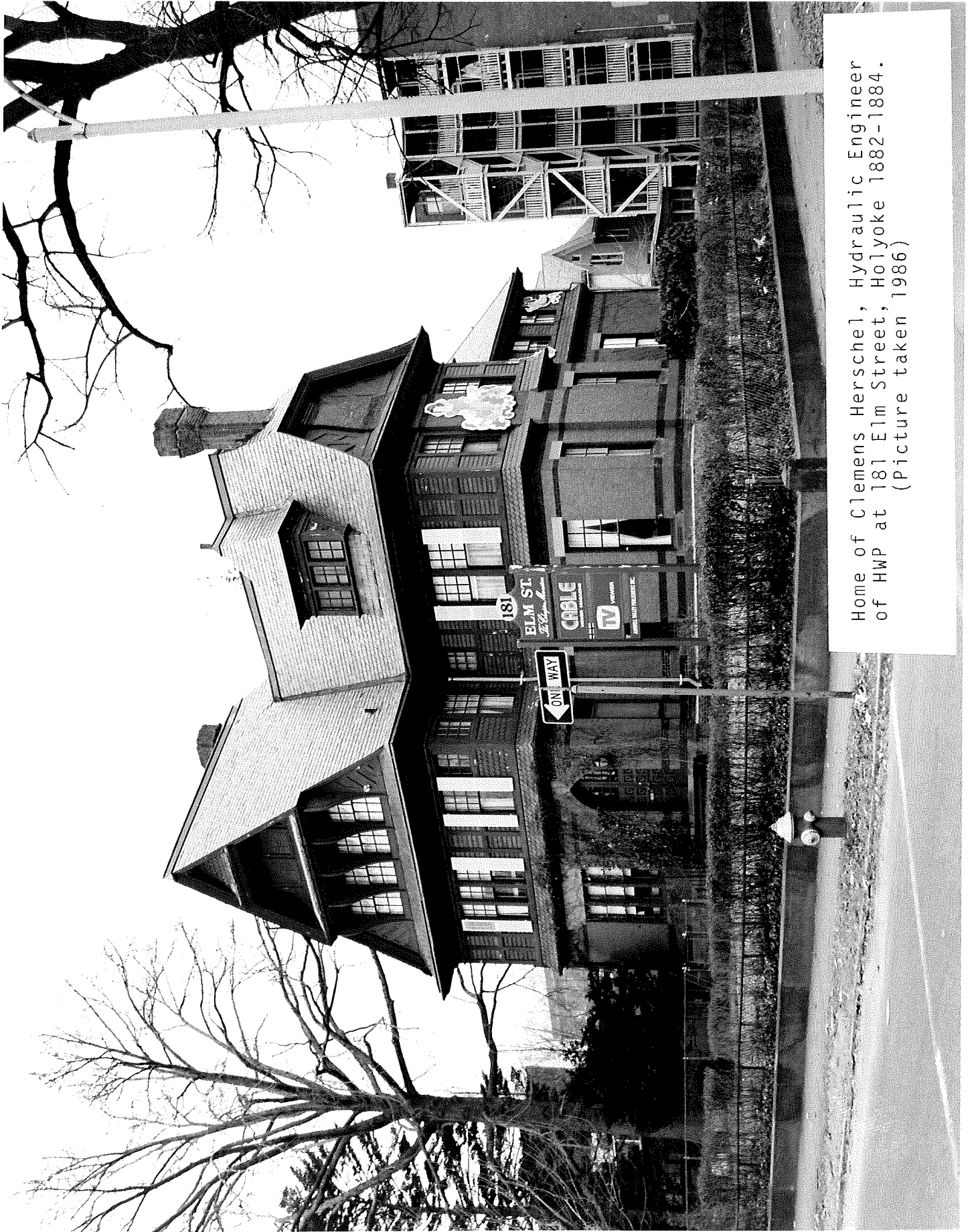
While Herschel lived in Holyoke, he lived at three different locations. From 1882-1884 he occupied the house at 181 Elm Street. A picture of that house taken recently is included herewith along with a plan of the property drawn by him. He then moved to 232 Beech Street and finally to Linden Street where he resided from 1887 to 1890. This latter house was built for him by the local architect and construction firm of Cain and Kilburn at a cost to HWP of \$9,500.⁶³

A description of the Linden Street house as it appeared in the local newspaper follows:

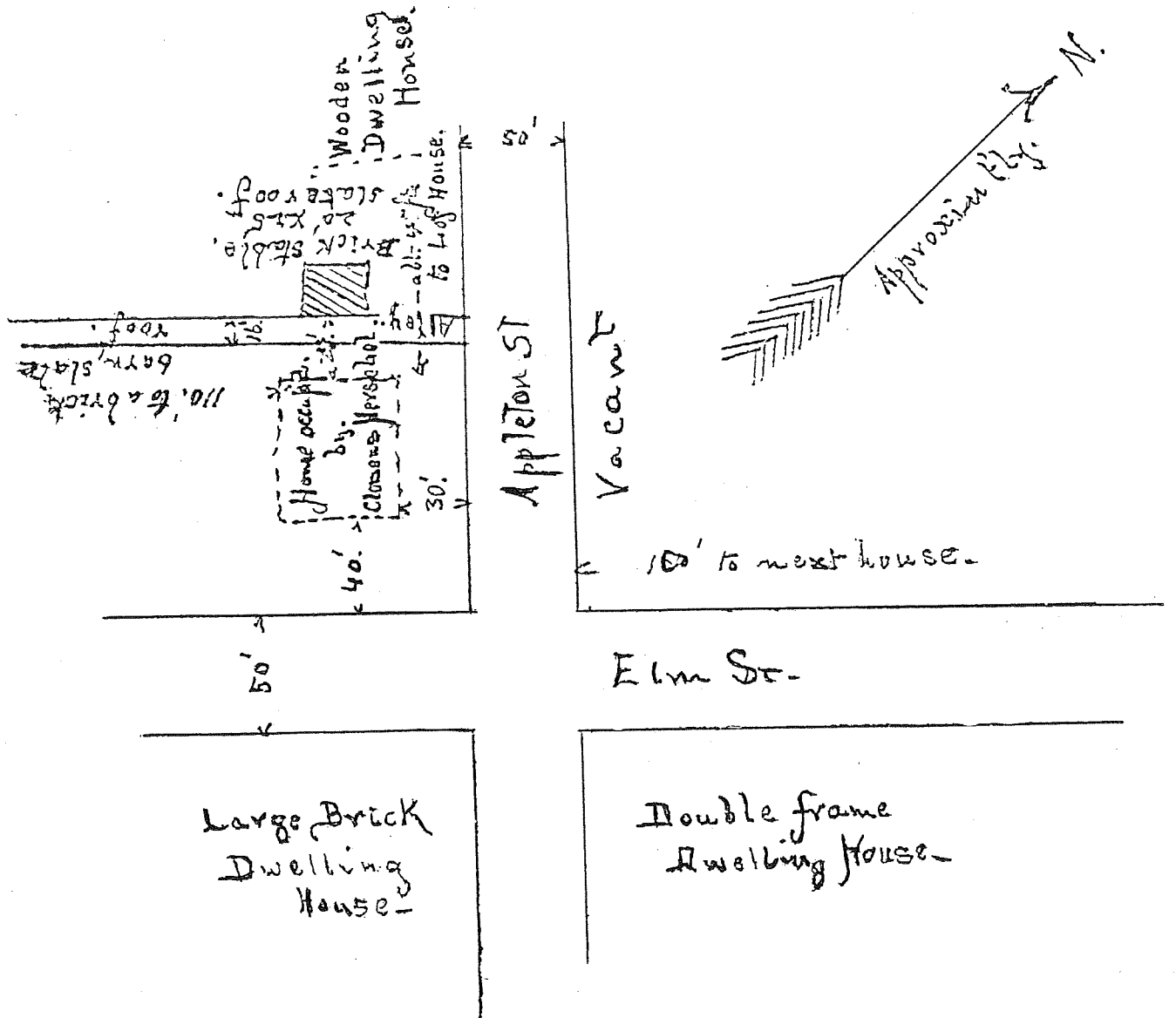
"The Holyoke Water Power Co. are about to build a residence of Mr. Clemens Herschel, their hydraulic engineer. The house will be brick with brown stone trimmings and terracotta panels. It will stand on the corner of Essex and Linden streets. The plans as finished by Cain & Kilburn contemplate a building 51 by 61 feet in ground dimensions and having 12 rooms. It will be two-and-one half stories high, capped with a look-out or observatory. The house will be roofed with black slate except the gables which will have red slate. The ground floor will have four large rooms, the second floor six chambers and the attic a finished store room. Work on the construction will begin as soon as the contracts, now being figured on are awarded."¹²¹

The Herschels evidently found the house suitable for entertaining large numbers of guests, as the following article from the local newspaper indicates:

"Mr. Clemens Herschel's parlors, corner of Essex and Linden streets held a company of 150 persons last evening who had called to shake hands with him on his recent return from Europe. After pleasant greetings, Mr. Herschel treated his company to a pleasant account of his recent travels. He said that the presence of his friends was an entertainment to himself and his wife and they had consulted as to the manner of entertaining their guests. It being decided that progressive euchre and drive whist had become an old story he has a new one which might interest them. In this chatty way Mr. Herschel touched upon Gibraltar, Livonia, Genoa,



Home of Clemens Herschel, Hydraulic Engineer
of HWP at 181 Elm Street, Holyoke 1882-1884.
(Picture taken 1986)



Sketch of Buildings -
 about Cor. Elm & Appleton Sts
 Holyoke, Mass -
 June 4, 1880. Clemens Herschel

Naples,, Stromboli, Messina, Catania, Athens, Salonica, Constantinople, Odessa, Moscow, St. Petersburg, Berlin, Vienna, St. Gothard Railroad, etc.¹²² to the no small pleasure of all present."

This Herschel house was later owned by John McElwain and William Whiting, and then became doctors' offices. It was subsequently razed and replaced with an apartment house.

Herschel left the Company in 1889 at the age of forty-seven to become the chief engineer of the East Jersey Water Company. "Under his supervision a large additional water supply for Newark and adjoining municipalities was built involving new dams and reservoirs, also one of the first riveted steel pipe lines to be used in the East. Thoroughness and speed characterized all his work. Under his direction, the first Venturi Tube and the first Venturi Register, both built by Builders Iron Foundry, were installed in a municipal system."⁸²

Herschel stayed at the East Jersey Company until 1900 and did an increasing amount of consulting work. One of his clients was the Niagara Falls Power Company. He was the only American on an international commission of five members which decided upon the hydraulic turbine manufacturer who could meet the size and head specifications of that company. No American company could meet the specifications. Later he became the first manager of the Hydraulic Engineering Department of the Allis-Chalmers Company but resigned to continue his consulting work when that Company's office moved to Milwaukee.⁸³

"High honors came to Clemens Herschel during his long life: the award by the American Society of Civil Engineering of the Rowland Prize and by the Franklin Institute of the Elliott-Cresson gold medal for his invention of the Venturi Meter; president and honorary member of the Boston Society of Civil Engineers; president and honorary member of the American Society of Civil Engineers; life member of the Institution of Civil Engineers of London."⁸⁴

Among hydraulic engineers of his generation Herschel was also famous for his translation from Latin to English of two books about the water supply of the City of Rome by Julius Sextus Frontinus, a first century water commissioner of that city. He discovered the manuscript in the library of the Benedictine

monastery at Monte Cassino in Italy in 1897. More interesting than the translation, however, are the many pages of Herschel's explanations and comments about construction, operation and maintenance of this ancient water supply system.

The manuscript, "De Aquis," also known as "Water Supply of Rome" was written in 98 and 99 A.D. by Sextus Julius Frontinus. It is the earliest known detailed description of an urban water system that served over a million people.⁸⁵

He concludes his book with the following tribute to Frontinus, "With this sterling resolution to do his duty should necessity arise, we can leave our consideration of this honest old Roman water commissioner, of the man and of his work; only adding his remark to Pliny¹, which in this case has been realized in the fullest sense of the words uttered, and with all the import that attaches to them:

'Memoria nostra durabit, si vita mervimus'

Remembrance will endure if the life shall have merited it."

Herschel died on March 1, 1930 at 88 years of age. He is buried in Mt. Auburn Cemetery in Watertown, Mass. His headstone carries the Latin inscription "Memoria nostra durabit, si vita mervimus."⁸⁶ His Memoirs were published in the 1931 "Transactions of the American Society of Civil Engineers."^{87b}

It is hoped that this brief account of Clemens Herschel will help to give him at least a small measure of the remembrance which his life richly merits.

There now follow descriptions in more detail of the testing flume, the use of waterwheels as their own meters, and the Venturi Meter.

¹Pliny, Epist., IX.19

The Testing Flume

In 1880 Clemens Herschel was employed by the Company to devise a system for measuring the amount of water used by the mills along the canal system. In 1881 he built the Holyoke Testing Flume for⁷⁸ the purpose of measuring the water used by waterwheels.

The first grants to the use of water by the Hadley Falls Company, predecessor to Holyoke Water Power Company, occurred in South Hadley to the Glasgow Company on January 1, 1849 and to the Carew Manufacturing Company on February 9 of that year.

Glasgow was granted the right to draw so much water "as may be sufficient according to the Lowell standard of admeasurement to propel ten thousand spindles for making cotton yarn, of number fourteen, and manufacturing the same into cloth: To wit, for every three thousand five hundred and eighty-four spindles, a power equal to twenty-five cubic feet of water per second, (cfs), under a head and fall of thirty feet." At HWP it was customary⁹⁰ to call that quantity of water 2.802 mill powers.

Carew was granted sufficient water "to operate and propel four paper engines with all the machinery for manufacturing paper." At HWP it was customary⁹¹ to call that quantity of water 1 3/4 mill powers.

The unit of power defined by twenty-five cfs at a head of 30 feet was almost equivalent to the unit later adopted by HWP of 38 cfs at a 20 foot and defined as a mill power in the indentures between the company and the mill owners.

The following is a description of the testing flume excerpted from an HWP report written in 1932.⁷⁷

"Up to the year 1880, no attempt had been made by the Company to measure the amount of water used by the mills under their various indentures. At this time the sales of permanent water power to the mills had reached a point where at low water there was barely enough flow in the river to supply the lessees. In 1880, under the direction of Clemens Herschel who was then Hydraulic Engineer, steps were taken to measure the quantity of water drawn by each mill and a set of rules and regulations were formulated for the draft of water which might be drawn over and above the indentured powers.

"In 1881 the present Holyoke Testing Flume was built. This flume was built for two purposes; first, to calibrate wheels to be used on the Holyoke canal system in accordance with the new policy of measuring the water used by each lessee; and second, to establish a testing laboratory open to all builders of water turbines, for the development of more efficient wheels.

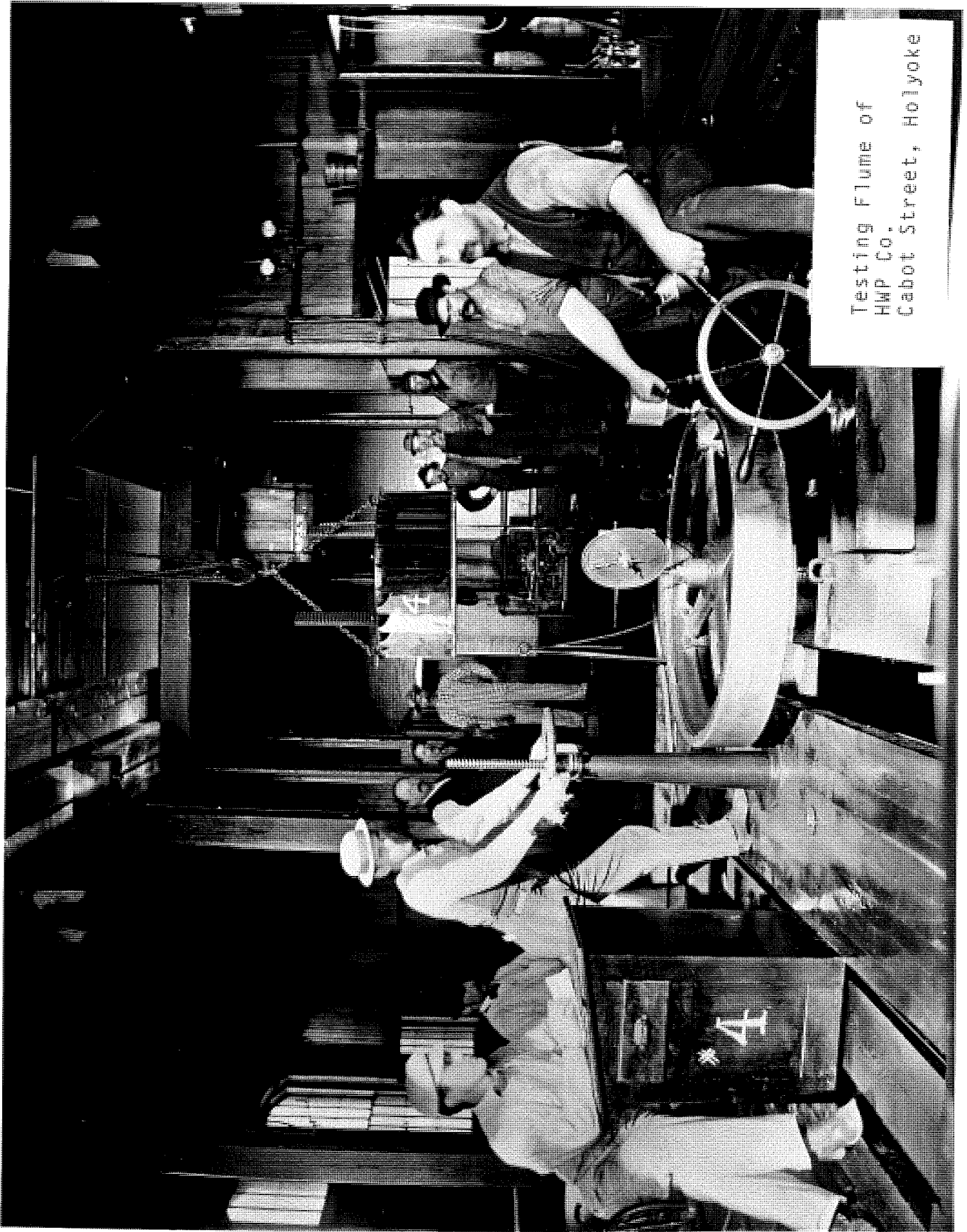
"The procedure in testing a waterwheel at the Holyoke Flume was as follows: the wheel is started up at the gate opening to be investigated and a small weight applied to the brake scale beam. At intervals of one minute a bell rings, at which instant simultaneous readings are taken of the revolution counter, brake setting, head on the wheel and depth of water on the weir. After four or five readings have been taken, the weight on the scale beam is increased to obtain a lower speed. This process is repeated until the desired range of speeds is covered. The gate opening is then changed and the same experiments repeated. 150 to 200 experiments usually are necessary for a complete test of a waterwheel."

Included herewith is a statement issued by HWP in 1911 which outlines the conditions under which it solicited business for its testing flume.

The flume went out of business in 1932 after making 3,176 tests. During that period waterwheel efficiency increased from 80.5% to 94.57%. Waterwheel testing at the flume had decreased because the wheels had become so efficient that there remained but little room for improvement. In addition, other hydraulic testing facilities were being built elsewhere.

In the evolution of turbine design in America, probably no feature played a more important part than the Holyoke Testing Flume. Among the large hydro-electric developments, for which homologous waterwheels were tested, were the following:

Keokuk	Mussel Shoals
Cedar Rapids	Green Island
Shawinigan (Canada)	15 Mile Falls
Niagara Falls	Davis Bridge
Rainbow	Spier Falls
	Dneiper River (Russia)



Testing Flume of
HWP Co.
Cabot Street, Holyoke

"While the business of the Holyoke Testing Flume was principally that of water-wheel testing, various other kinds of apparatus were calibrated by use of the testing flume equipment. One of the first uses to which the flume was put after its completion was an elaborate series of development tests on the venturi meter by the late Clemens Herschel, who was then hydraulic engineer of the Company. Large capacity flow meters were tested and calibrated and discharge coefficient tests made on various designs of sluice gates and dams. Many motor driven centrifugal pumps were also tested in the flume."

The testing procedure developed at the Holyoke flume became widely known throughout the hydraulic engineering profession. It was described in engineering handbooks. The credibility of the testing flume was extremely high because of its complete impartiality and because of the competence of its staff and the accuracy of its methods. For many years purchasers of waterwheels hesitated to buy them unless the wheel had a "Holyoke Test" authenticating its efficiency and output.

The Testing Flume building, following the cessation of waterwheel testing was used for many years as the company carpenter shop. It was eventually sold to the Holyoke Gas and Electric Department.

The Waterwheel As Its Own Meter

The first indentures for the use of water from the canal system were granted in 1849 by the Hadley Falls Company. From that time until 1881, HWP and its predecessor company, the Hadley Falls Company, had no way of knowing how many mill powers the individual waterwheels were using.

On January 6, 1880, the HWP directors appointed Clemens Herschel to take charge of measuring the water used by the mill owners. In 1881 he built the testing flume to measure the power output and quantity of water used under various loading conditions for the wheels that were to be used in the Holyoke mills. The test data which was obtained at various flows of water through the waterwheels, and at known conditions of head upon the wheel, created a method for computing the mill power use.

The test data gave a measure of the waterwheel efficiency in addition to power output and water use. This led to a second benefit from the flume, that of creating an independent testing facility which became of great value to waterwheel manufacturers and waterwheel purchasers. It also became a source of income to HWP.

The benefit of the testing of waterwheels to HWP can best be appreciated from the following quotations which tell of Herschel and his method of measuring water used for power purposes:

"This was before the day when it was possible to purchase electric current distributed from a central station. The Power Company then, as now, controlled the dam and the water supply to the numerous large textile mills for power. Years later, Herschel wrote:

§ This work of measuring water, as was the Lowell office-term for it, was made necessary, at least to some degree, in all of the old-time water-power companies, by that attribute of human nature, which keeps what it has got, and gets what it can. These companies sold, or leased, the right to draw a more or less accurately defined quantity of cubic feet per second out of a system of canals, as appurtenant to a deeded lot of land; upon which, the general lessee then proceeded to consider his lease as a mere ticket of admission to a sort of free-lunch counter, and then drew all the water he could use and waste. On a system of canals supplying a community of mill-owners this naturally led to one man getting perhaps three-fold his lawful quantity, while another might not be able to draw much more than half of what he was entitled to. Measurement became a necessity to enable operation to go on. From the standpoint of the canal owning corporation, there was the additional inducement of a profit to be derived from selling the excess draft of water. In the water-power company of which the writer was hydraulic engineer for 10 years, such newly-created profit, besides creating order out of disorder, caused a multiple increase of water-power income, with a consequent notable enhancement of the value of the whole property. And all this was based on measuring water. 93

"Beneath the floor of one of the Water Power Company's buildings young Herschel constructed the soon famous Holyoke Testing Flume for determining the water consumption by weir measurement from the hydraulic turbines for different gate openings. 'Some of the happiest hours of my life', he wrote, 'were spent in the dark, damp flume watching Nature unfold her laws.' Thus, every turbine became its own water meter; by reading the gate openings twice a day, a reasonably accurate record of the water used became known and an equitable distribution of the water among the various mills possible. To say it another way, Herschel put the sale of water for power purposes on a scientific basis. In times of low river flow, he restricted the use of water and penalized by ten times the regular rate any who exceeded their allotment. Once, an irate customer, after fiery but fruitless expostulation, quoted something about Herschel being 'crowned with a little brief authority' and 'making angels weep.' He was told by our friend that if they wept any surplus tears they would have to pay for them."⁹³

A mill power is defined as the amount of power generated by 38 cubic feet of water per second falling through a height of 20 feet. For different heights (or heads) the quantity of water of a mill power varies inversely with the height. A mill power on the average waterwheel in the Holyoke mills produces about 45 kilowatts equivalent to about 60 horsepower.

When HWP began to meter the use of water it employed gage men who read the gate opening indicators and the head water and tail water gages for each wheel, twice in every 24 hours. With this information, and the wheel test data, the company computed the mill power hours used by the mills and billed the customer accordingly. If the customer used water in excess of his indentured water it was called surplus water and billed at a different rate.

In 1927 a recording gage was installed at each wheel to measure gate openings. Gages were also located along the canals to record continuously the head on the wheels. The need for daily visits by gage men to the mills was thus eliminated.

In the early years of the flume operation almost all of the waterwheels going into the Holyoke mills had either been tested there or were duplicates of such

wheels. When the size of the wheels, being manufactured, outgrew the capacity of the flume, homologous models of larger wheels were tested.

The question arises as to what data was used by the company to compute mill power use for wheels installed before the testing flume was built. A reasonable assumption is that the early wheels tested in the flume had close enough characteristics to those already installed in the mills so that the test data could be used on the older wheels.

As for wheels installed since the testing flume ceased operation which has occurred in only two cases, the manufacturer's specification data has been used. In one of those two cases that data was checked by the salt velocity test method which was developed at Worcester Polytechnic Institute.

The method developed by Herschel of using the waterwheels on the canal system as their own meters has stood the test of time, - time which is now more than 100 years.

Venturi Meter

The most authoritative discussion of the Venturi Meter comes from the words of its inventor Clemens Herschel in his paper titled, "The Venturi Water Meter and the First Twenty Years of Its Existence." The first sentence of that article is: "In 1886 the inventor of the Venturi Meter was the Hydraulic Engineer of the Holyoke Water Power Company." Throughout that paper Herschel used the third person, Hydraulic Engineer, rather than the first person when referring to himself.

Herschel had been employed by HWP to measure the use of water by the waterwheels on the canal system. He built the HWP Testing Flume and developed thereby a system for the measurement of mill power use. He then comments:

"This much of administration had been inaugurated and set in successful motion between 1880 and 1886.

"But there was another draft of water out of the canals, unseen of human eyes, which sorely troubled the mind of the Hydraulic Engineer. This was the large quantity used by the manufacturing corporations, including some 25 large paper mills, as wash-water; roughly estimated at 10 percent of the quantity used for power. This water was drawn through cast-iron pipes, most of them 20 to 24 inches in diameter, painted black on the outside, and, there they lay, usually in the basement of the mill, silent as the grave, and most provokingly secretive of what was passing within their interior. Many a time did the Hydraulic Engineer stand beside such a pipe and exert himself to invent, s'ingenier; (whence our word: engineer), how to force these pipes to reveal the secret of their hidden action.

"In course of time, between 1882 and 1886, these endeavors resulted in a determination at the first opportunity to try how an apparatus like this would work; place an orifice at some point in the pipe, circular and in the form of an adjutage, from choice, and then place an expanding cone or adjutage, downstream from the orifice, in order that the loss of head occasioned by the first orifice may be regained, and no material loss

of head be occasioned by the whole apparatus; all of this superimposed on the existing hydraulic gradient.

"As will presently appear, the theory of the finished invention had little or nothing in common with that of the same invention in embryo; nor has its true formula--first set up many months after the invention had been experimented with--and according to which the finished invention acts, much, if anything, in common with the invention as it was pictured in the mind of the inventor, at any stage of its development."⁹⁵

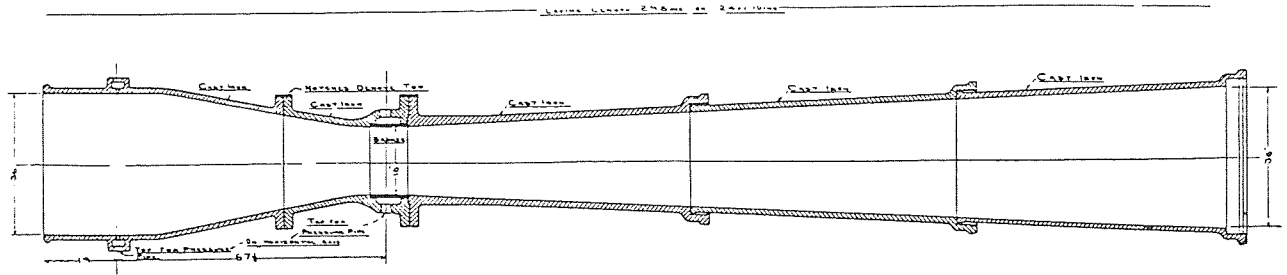
In 1886 Herschel proceeded to design his water meter. He named it the Venturi Meter out of respect for the Italian physicist, G. B. Venturi, who had made experiments with fluids through expanding nozzles. Venturi died in 1822. To quote Herschel:

"Venturi's experiments were made in Modena, about 1791, and he had observed that when fluids or gases discharge through an expanding nozzle or adjutage, that a sucking action is exercised at the small diameter, diminishing as the diameter increases. But Venturi made or suggested no use to be made of this property, and with him it was merely a curious feature in the working of his apparatus. Nor did he correctly explain any of the properties observed.

"Other engineers and investigators noticed the peculiar action of expanding nozzles, or of Venturi adjutages, as they came to be called, and made certain uses of it."⁹⁶

Among those was James B. Francis, noted hydraulic engineer, who did consulting work for HWP on its dams. His "Lowell Hydraulic Experiments" recorded experimental work done at the Proprietors of Locks and Canals in Lowell. A standard waterwheel designed for low head operations bears his name today.

"The experiments detailed in Francis' 'Lowell Hydraulic Experiments' had determined the shape of expanding adjutage, which would give the maximum discharge under a given head; and that is the same thing as a form that will cause the least loss of head with a given discharge, which was what the Hydraulic Engineer then wanted. And the rest was easily supplied.



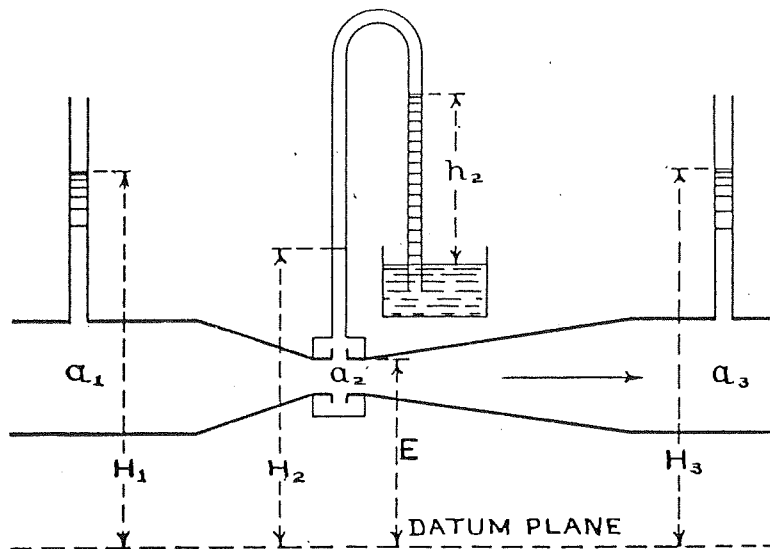
SCALE 1/4" = 1"

ORDER	36 VENTURI METER TUBES SUPPLY FOR CITY OF CHICAGO, ILL.	BUILDERS IRON FOUNDRY PROVIDENCE, R. I.	AUG 23 1898	NO. 1	15595
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Figure 1.

Form and make of a Venturi Meter Tube.

From: Bulletin No. 56, Builders Iron Foundry 1909 - "The Venturi Water Meter" page 8. This company is now B.I.F. Industries, West Warwick, RI.



Sketch of Venturi Meter Tube Showing Piezometers to Measure Water Pressure.

$$Q = 1.0062 a_2 \sqrt{2g(H_1 - H_2)}$$

Q = water flow in cubic feet per second

$$a_1 = 9a_2$$

$$g = 32.2$$

Sketch from: "The Venturi Meter" Builders Iron Foundry, 1898, page 35
Formula from: "The Venturi Water Meter" (see above) page 13.

"This adopted form and construction of the Venturi water meter tube is shown in Figure 1."⁹⁷

On December 21, 1887, while still at HWP, Herschel read a paper before the American Society of Civil Engineers in New York City titled, "The Venturi Meter: An instrument making use of a new method of gauging water; applicable to the cases of very large tubes and of small value only of the liquid to be gauged."^{97a} Because of the importance of this invention for the past century and even today, the paper is reproduced in the Exhibits accompanying this history.

On June 5, 1888 Herschel wrote a letter to Professor W. C. Nuwin in England in which he spoke of testing a one inch Venturi and being satisfied that he had come upon "a new and pregnant principal to be applied to the art of gauging fluids." The letter also showed a sketch of the Venturi tube as he conceived of it at that time. A copy of the letter is included herewith.

Herschel built two Venturi Meters. One was one foot long and one nine feet long. He made extensive tests on them in the HWP Testing Flume. As a result of that work Herschel determined the theoretical formula by which the Venturi measured water flows. It is: $Q = 1.0062 a_2 \sqrt{2g (H_1 - H_2)}$ and is explained on the accompanying sketch.¹ A correction to this formula for the slight friction loss in the tube makes the formula for all sizes of meters and of velocities through them: $Q = (0.97 \pm .03) a_2 \sqrt{2g (H_1 - H_2)}$ ⁹⁸

The Venturi Meter continues today to be the standard method for measuring large flows of fluids. However, at the sacrifice of some accuracy the length of the tube has been somewhat shortened in order to reduce the cost of manufacture. Builders Iron Foundry, now B.I.F. Industries, which made the first Venturi Meters is still making them.⁹⁹

CLEMENS HERSCHEL'S INVENTION OF THE VENTURI METER

PAGE 2 OF LETTER TO HON. M. C. M. DATED, June 5 1888

HOLYOKE WATER POWER COMPANY,
OFFICE OF THE HYDRAULIC ENGINEER

RECEIVED
May 18

objectionable, on account of foreign bodies catching upon them. Such a meter will cost extremely little, in comparison with the ^{same} reason as any other volumetric or differential. And we are but in the beginning of the art of measuring pressures, and differences of pressure. When these shall be delicately measured, the Venturi meter will have become as delicate in its limits of capacity, as any other ^{of its kind} and it is on this score alone, that it is superior to some of the volumetric meters.

I am very grateful to you for having sent an abstract of the paper, to the Secy. Nat. C. E. for publication. You will find a description of the recording gauge, recording differences of pressure, in my application for an English patent. Filed April 17, 1888.

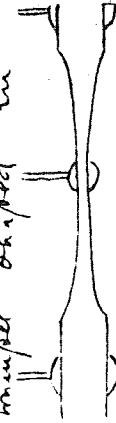
Yours very truly
Clemens Herschel.

Prof. W. C. Muswin,
7 Palace Gate Muswin
Newington, W
Holgate, Mass. June 5 1888.

Dear Sir:

Since writing you. I have tested, though rather crudely, a one inch Venturi meter, under 240 ft.

head. It works all right. I am now satisfied that here is a new and prominent principle to be applied to the art of gauging fluids, in cases of fluids such as compressed air, illuminating or fuel gas, steam &c. Further, that the shape of the meter should be trumpet shaped in both directions, such a meter will measure



volumes flowing in either direction, which in certain localities becomes a useful attribute. The form of piezometer ^{and} connection originally used by me at the venturi or throat, should be used at either end of main pipe (before it joins the meter), also. Any parts projecting into the meter or pipe are

Dam Preservation

The building by the Hadley Falls Company of the first wooden dam, its failure and immediate replacement was discussed in "The Roots of Holyoke Water Power Company,"⁶⁸ the first volume of this history. It will not be repeated here. However, the problems with that second dam during the 1859-1889 period should be mentioned. A cross section drawing of that dam is included herewith.

After the dam had been in service for 10 years, it became evident that major repairs were needed. The energy of the water falling over the vertical face of the dam had eroded the ledge at its base so much that there was danger of its being undermined.

There is also included herewith a drawing showing the sloping portion that was added to the downstream side of the dam in the years 1868, 1869 and 1870 and which filled the hole which had been eroded in the ledge. However, this treatment did not permanently stop the wear on the surface of the wooden structure or the ledge erosion at its base. From 1879 to 1885 there was continued need of repairing holes that were occurring in the surface of the dam. In that latter year a major maintenance job of replacing the entire plank surface of the dam was undertaken.

A detailed discussion of this period in the life of the dam is found in a paper given by Clemens Herschel, hydraulic engineer of the company before the American Society of Civil Engineers in 1886.⁶⁹ He became associated with the problems of the dam in the winter of 1881-82. Two breaks occurred in the dam that year and were repaired. In 1884 the breaks were worse than ever.

In early 1885 plans were readied to make major repairs that year upon the dam. This involved constructing portable coffer dams that could be put in place on the dam and which would unwater sections of its surface. When unwatered, the old planking was removed, the body of the dam filled with gravel, and new planking installed. When one section of dam was completed, the coffer dams were moved to adjacent sections until the entire dam was repaired. The repair was completed that year.

One of the major tasks in the repair of the dam was the procuring and placing of the tremendous quantity of gravel needed to fill the spaces between its timber framing. The local newspaper commented:

"The Water Power Company has laid tracks to the gully above the Jones farm and has an engine in position. A steam shovel will be in working order soon and the work of dumping thousands of tons of gravel upon or into the older portion of the dam will be begun this month."¹²⁰

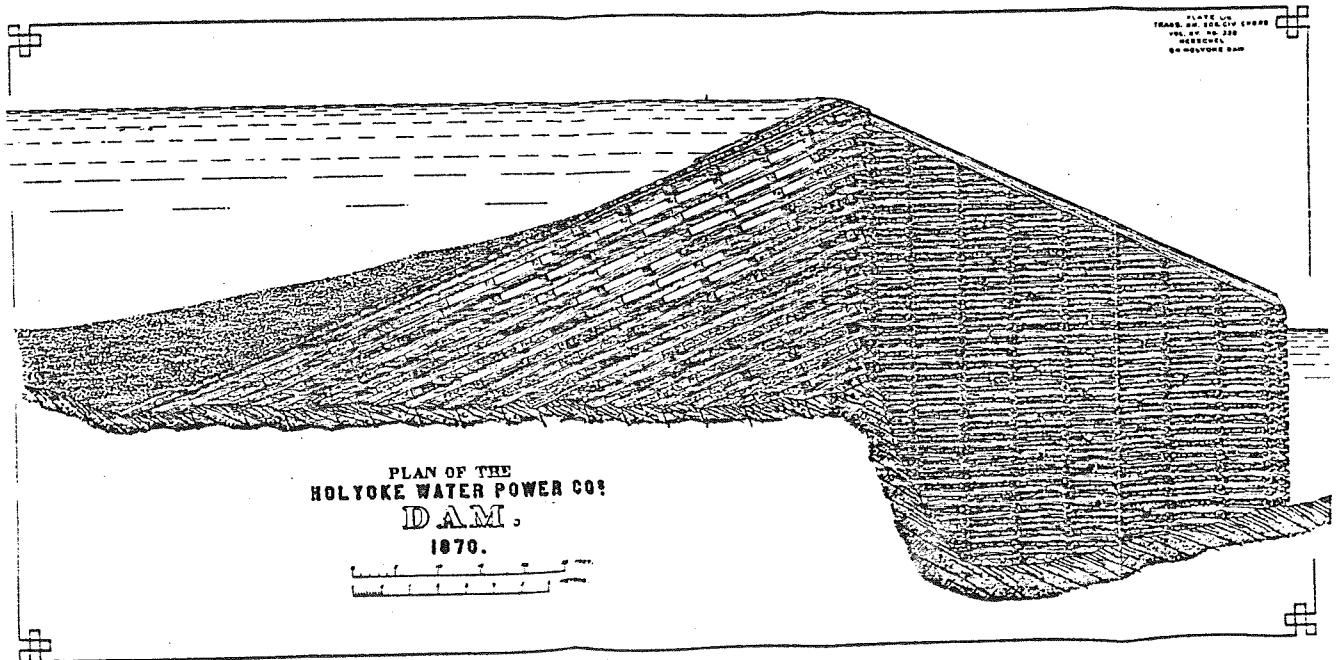
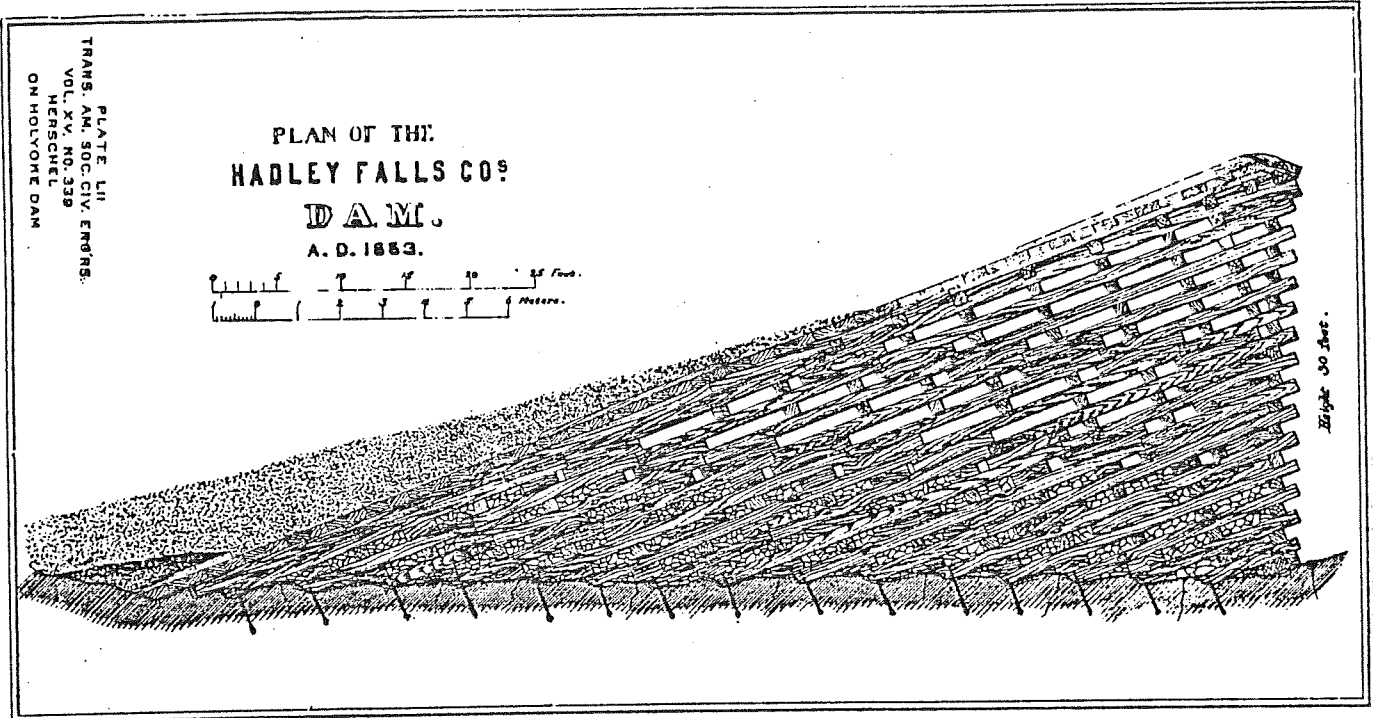
Clemens Herschel, hydraulic engineer of the company at this time, was in charge of the repairs to the dam. In his paper, given before the Civil Engineers concerning the dam preservation, he discussed the process of obtaining and placing the gravel.¹²⁷

In the work, divers were used. Two of them were drowned. The first was lost when he went over the dam. To quote Herschel:

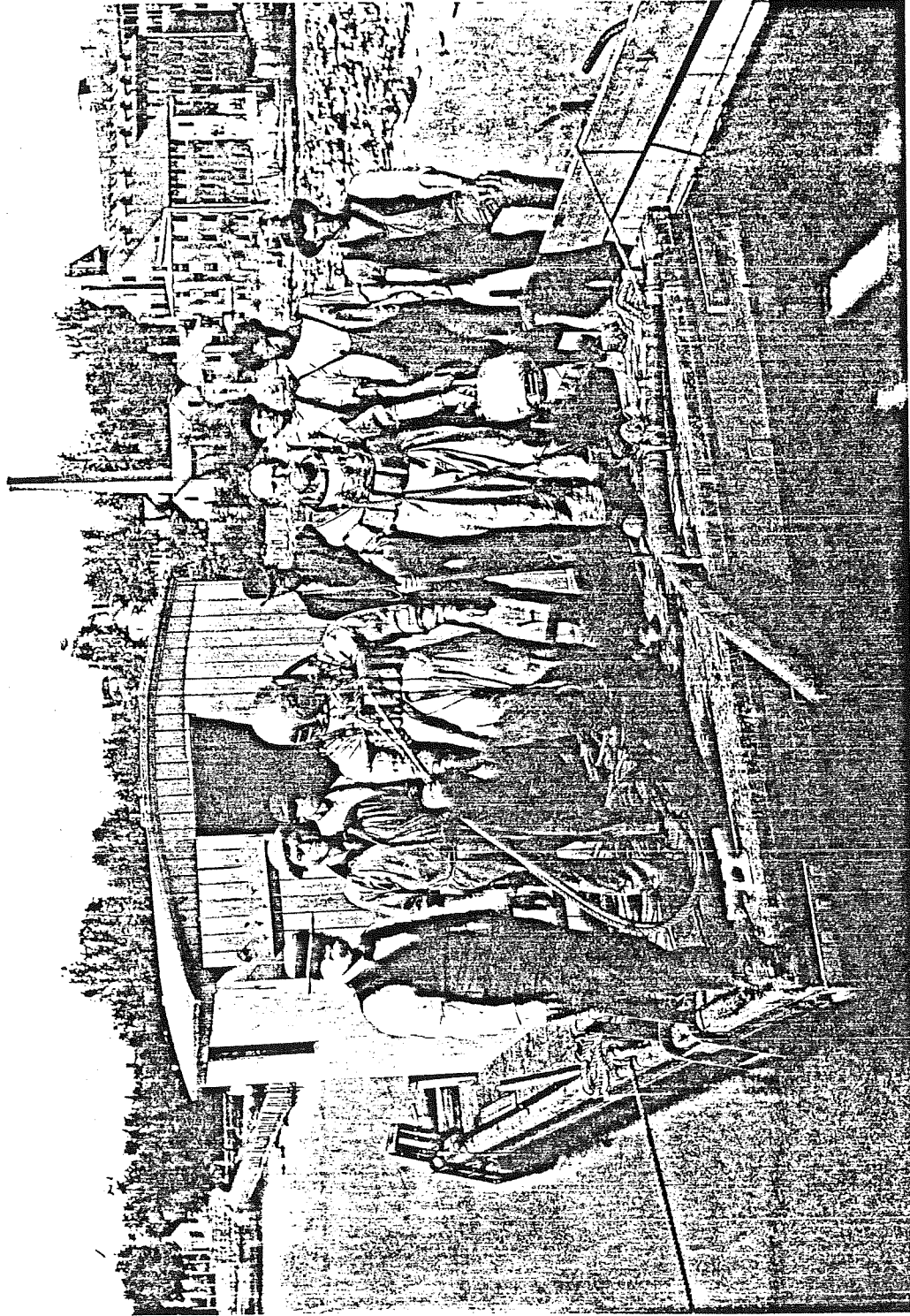
"In going over the dam, the diver was stopped on the apron by his life line, though the air-hose coupling pulled out. Afterwards, through some bungling, he was allowed to slide into the pool at the foot of the apron. He was got ashore in just five minutes from the time the hose parted, with a physician, summoned by telephone, there to receive him, but the man was then dead."

Following is an account by Herschel of the loss of the second diver named Conklin:

"Notwithstanding these precautionary measures, the two divers, Conklin and Mitchell, rowed their scow straight out to the crib, and immediately lowered themselves down a rope, the one directly into a hole in the dam, under 20 feet head of water, whose existence was not known, since which time nothing has been seen of him to this day. Mitchell, the other diver, was called up to see what was the matter with Mr. Conklin. He followed Conklin's line down, but checked himself on getting into the current, and was hauled up. The body was probably wedged far in among the timbers of the dam, and later search also failing to reach it, it is now buried in gravel near the exact center of the dam."



Holyoke Dam as repaired in 1870



WONG GARDNER CO., NEW YORK.

1893.

PHOTOGRAPHED AND PUBLISHED BY W. P. WARNER, NEWTON, MASS.

Submarine Divers on the Holyoke Dam.

—Hampton Co. Mass., U. S. A.—

Electric Business

The first published record of electricity being proposed for Holyoke occurred in the local newspaper in June 1880. A plan was being promoted to floodlight the city with 300,000 candle power lights placed on each of seven 150-foot towers located one-half mile apart around the city. The electricity was to have been produced by water power. The promoter of the idea could arouse no interest in Holyoke.

In February 1881 the first industrial use of electricity occurred in the Hadley Mills where a system of electric lighting was installed. Water power supplied the energy to run the electric dynamo.

HWP through a subsidiary, The Holyoke Electric Light and Power Company¹¹⁸ began furnishing electricity for public streetlighting on October 14, 1884.¹¹⁹ Initially, arc lights were used. The incandescent lamp was invented in 1879.¹⁰⁷ In 1888 it began to be used in Holyoke.¹¹⁹ In the same year the company purchased its subsidiary and took over the streetlighting business. The City Directory for 1889 described the lighting system in Holyoke as having 350 arc lights and 1,000 incandescent lights.

During this period many of the factories followed the example of the Hadley Mills and installed their own electric lighting systems with the dynamos being run by steam power or water power. In some homes electric lights were beginning to supplement gas.

An account of the beginning of electricity in Holyoke will be found among the exhibits accompanying this history. It is titled "Electricity Comes to Holyoke - A Chronology."¹¹⁸ It covers the period from June 1880 through October 1889 and is based upon items in the local newspaper and upon directors' records.

On October 2, 1889, the directors of HWP voted to proceed with the building of a power plant to supply electricity for lighting at a cost of \$104,000.

An account of the growth of the electric business of HWP from 1889 through 1902 is on pages 131 through 137 herein.

Holyoke, Mass., April 8th, 1886.

TO WM. A. CHASE, PRESIDENT
OF THE HOLYOKE ELECTRIC LIGHT & POWER CO.:

You are hereby instructed to run the Electric Lights, on Moonlight nights, whenever in your judgment it is sufficiently cloudy to require them, and also after the full of the moon, to run from dark, until after the moon has risen.

The City to pay for parts of nights, pro rata, according to number of hours run.


Chairman
Committee on Fuel & Street Lights.

(15) cents per light.

Dividends

Holyoke Water Power Company became formally organized on June 15, 1859. The company initially issued 3,500 shares of common stock at \$100 per share making a capitalization of \$350,000. Dividends were paid each year throughout the life of the company except in 1869 and 1870. They were omitted in those years because of the cost of extraordinary repairs on the wooden dam. Five semi-annual dividends of \$4 a share were omitted. However, in July 1872 an extra dividend of \$20 a share made up for the omitted ones.

The first dividend upon the initial stock issue of 3,500 shares was paid in 1860 at the rate of \$6 per share, for a total annual dividend of \$21,000. That rate was increased in increments of \$1 per share until it reached \$10 a share in 1874 at which time the total annual dividend was \$35,000. In 1877, 2,500 additional shares were issued. The dividend continued at the \$10 rate making the annual payout \$60,000. This continued until 1888 when the rate became \$16 a share with an annual payout of \$96,000.

During the first 30 years of the company, from 1859 through 1888, it paid out in dividends \$1,207,500. The capital put into the company during that period was \$350,000 in 1859 and \$250,000 in 1877 for a total of \$600,000.

A tabulation of annual dividend payments is included among the exhibits. ¹²⁶

A Summary 1859 Through 1889Water Power

At the end of this period all the sites on the canal system, with appurtenant water power, had been sold and mills constructed upon them except for the Norman site on the Second Level Canal which was sold in 1892.

The canal system had been essentially completed. There remained to be done only a short section at the end of the First Level Canal and an extension of the Second Level Canal near the present HWP Riverside Station.

The dam had been strengthened by adding a sloping portion to the downstream side and by filling it with gravel.

Net profits from sales of water power had grown to an annual amount of \$96,133.58.

Real Estate

During this 30-year period HWP sold 1,524 parcels of real estate for \$2,883,289. It had built a sizable mill to act as an incubator for small industries and had aided in the construction of several factory buildings. It also built and sold tenements and single family homes. In many of the real estate sales, HWP aided in the financing of them by taking back first mortgages.

Public Water Supply

From 1859 to 1871 the company operated its water supply system which served the community. The water was pumped from the Connecticut River to a reservoir from whence it flowed to the mills and some homes for drinking purposes and fire protection. It was superseded by a publicly owned system in 1871.

Gas Business

The company owned and operated the gas business all throughout this period. The gas was used solely for illuminating purposes. It was a growing business. From 1871 to 1891 it quadrupled in size.

Electric Business

HWP through a subsidiary company began furnishing electricity for streetlights in October 1884. An account from the local press of the first night that electric lights were turned on in Holyoke follows:

"October 14, 1884, boys were playing marbles on the streets of Holyoke at nine o'clock in the evening under the illumination of the electric lights.

"The electric lights, placed about the streets by the water power company, were lighted for the first time last evening and while the novelty attracted much attention, the illumination was highly appreciated by the public. Dark spots were as light as need be wished for the first night in the memory of inhabitants old or young. The lamps burned at the corner of Main and Dwight, Race and Dwight, Railroad and Dwight, first level canal and Dwight and High and Dwight Streets. When the big machine gets here and the system is completed, Holyoke will be as safe a city after dark as it is before sunset for any lady to walk abroad, which has not been the case."¹¹⁹

In 1888, the Directors voted to build an electric power plant run by water power to supply electric lighting.

A more detailed account of the beginning of electricity in Holyoke will be found among the exhibits accompanying this history. It is titled "Electricity Comes to Holyoke - A Chronology."¹¹⁸ It covers the period from June 1880 through October 1889 and is based upon items in the local newspaper and upon directors' records.

1890 - 1910

1890-1910

The years from 1890 to 1910 in the life of the Holyoke Water Power Company were years of growth for both the company and the city. For HWP, it was especially noteworthy for five major events. They were:

- o the building of the stone dam across the river
- o the construction of a hydroelectric and steam electric plant on the First Level Canal to supply electricity in Holyoke
- o the sale of its electric and gas plants to the City of Holyoke
- o legislation permitting the return of HWP to the electric business in Holyoke and South Hadley under restricted conditions
- o the construction of a hydroelectric and steam electric plant on the Second Level Canal

The Stone Dam

The building of the stone dam followed many years of HWP experience with wood dams in the river. Much of that experience has been covered in the first volume of this history and in prior pages of this volume. However, in addition, there is included an article which discusses the wood dams and the stone dam in engineering detail.¹³³

Discussions of building a stone dam began, in the records of the Hadley Falls Company, in 1848 when a decision had to be made concerning the replacement of the failed 1847 dam. The question to be resolved was whether to build another wood dam or to build one of stone. The decision made in 1848 to build another wood dam was arrived at for the following reasons:¹³⁴

- o A new wood dam would be replaced shortly by a stone dam.
- o A wood dam could be completed in one year.
- o A stone dam would require three or four years construction time, a delay which would greatly hamper the plans of the company for creating an industrial community.

- o When a stone dam is built, the wood dam would act as its coffer dam.
- o The cost of building the wood dam and the stone dam in two steps would be no more than the cost of building only a stone dam.

Corporate Decisions

The first indication that the HWP Directors were seriously considering building a stone dam is in the minutes of the October 2, 1884 meeting, 36 years after the above 1848 decision. With consulting engineers, Jonas Kendall and James B. Francis present they:

- o authorized major repairs to the wood dam
- o voted that the matter of a new dam be entrusted to them (the consultants) for plans and estimates
- o voted that the committee of the two consultants be enlarged by one person (That person was Clemens Herschel.)
- o authorized the president to purchase a granite quarry whenever it is desirable to build a stone dam

Engineers' Report

Clemens Herschel, HWP hydraulic engineer, joined Francis and Kendall in answering four questions that had been advanced by HWP. A copy of the engineers' report is included herewith.¹³⁴

The questions asked by HWP have to do with:

- o Should the dam be wood or stone?

There was unanimity among the engineers for stone.

- o Where should the dam be located?

Two engineers advised a minimum of 100 feet below the wood dam. The third opted for 5 to 15 feet. The final location averaged 122 feet.

- o What should be the contour of the dam face? Two engineers favored a design by Francis, one, Herschel, favored his own design. The final design was that of the then HWP hydraulic engineer, E. S. Waters. It is a variation of the Herschel design.
- o When should construction start?

Two engineers said immediately, 1885. The third, Herschel, advised of a delay of several years.¹³⁵ Surveying work for the new dam began in 1891.

Dam Construction

- o Excavation for dam foundations in riverbed ledge was done by HWP forces. It took three years to complete.¹³⁶
- o Plans and specifications for the dam were prepared by HWP and submitted to bidders in 1894. The specifications written for this dam were noted all over the country for the extra quality of the work which they required, and many a contractor remarked that, "It might do very well to put such things on paper, but that no one would furnish material exactly fulfilling the requirements." But the material and the workmanship both met those requirements.¹⁴³
- o Bids were received in February 1895¹³⁷ from twenty-seven contractors located country wide. The low bidder was Fruin-Bambrick of St. Louis, Mo. with a price of \$529,621. The high bid was \$881,900. The "Schedule of Proposals" is included herewith.
- o Construction began in the summer of 1895. It was expected to complete the project in three years.
- o Work was delayed for several periods because of unusually high water.¹³⁸ In 1897 Fruin-Bambrick gave up the job. It was then assigned to A. McMullen, one of the original bidders.¹³⁹
- o The dam was finished on January 5, 1900.¹⁴⁰

Materials

- o Broken stone came from the stone crusher in Westfield.
- o The granite was quarried on Leadbetter's Island near Vinal Haven, Maine.¹⁴² It was cut to exacting specifications. Each piece was given an identification mark so that it could be placed in its predetermined location in the dam. Upon its arrival at Holyoke, each stone was measured to be sure it met its specifications. If it did not, it was either corrected in the field or rejected. Out of ¹⁴⁷1,600 pieces of stone, only 20 were rejected.
- o Rubble for concrete for the interior of the dam was quarried from the bed of the river. The quarry hole known as "China Hole" in later years became a favorite swimming place for boys. The tailrace channel for Hadley Falls hydroelectric station passed right through "China Hole." The excavation costs for the tailrace were thereby slightly reduced.

Transportation

- o Rail

The granite stones arrived in Holyoke by rail. They were stored in a field about a mile below the dam near the present Riverside Station where they were checked for dimensions and quality of workmanship. The stones were stored until needed, then reloaded on rail cars and taken to the construction at the dam.

- o Narrow Gage Railway

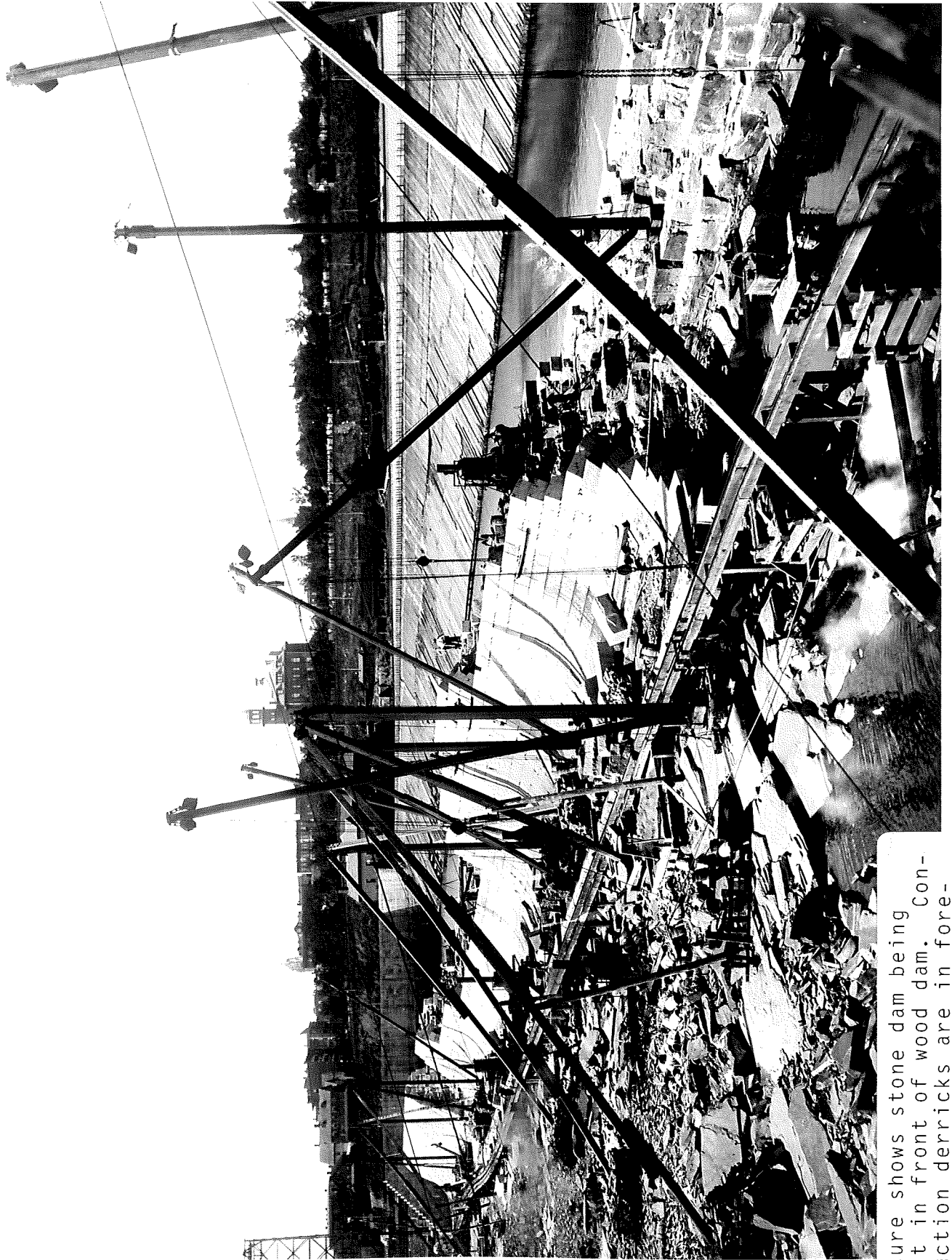
A narrow gage railway track was laid between the "China Hole" quarry and the dam site. The rubble quarried from the riverbed was loaded on skips which were placed on small flatbed railway cars. They were then pulled to the dam by a little steam locomotive. One of the narrow gage railway cars was found in the quarry when excavating the Hadley Falls tailrace. It was placed in the Warehouse Museum in Holyoke.

- o The Cable Way

A unique and ingenious method was developed for transferring heavy materials from the shore to the construction work in the river. This was



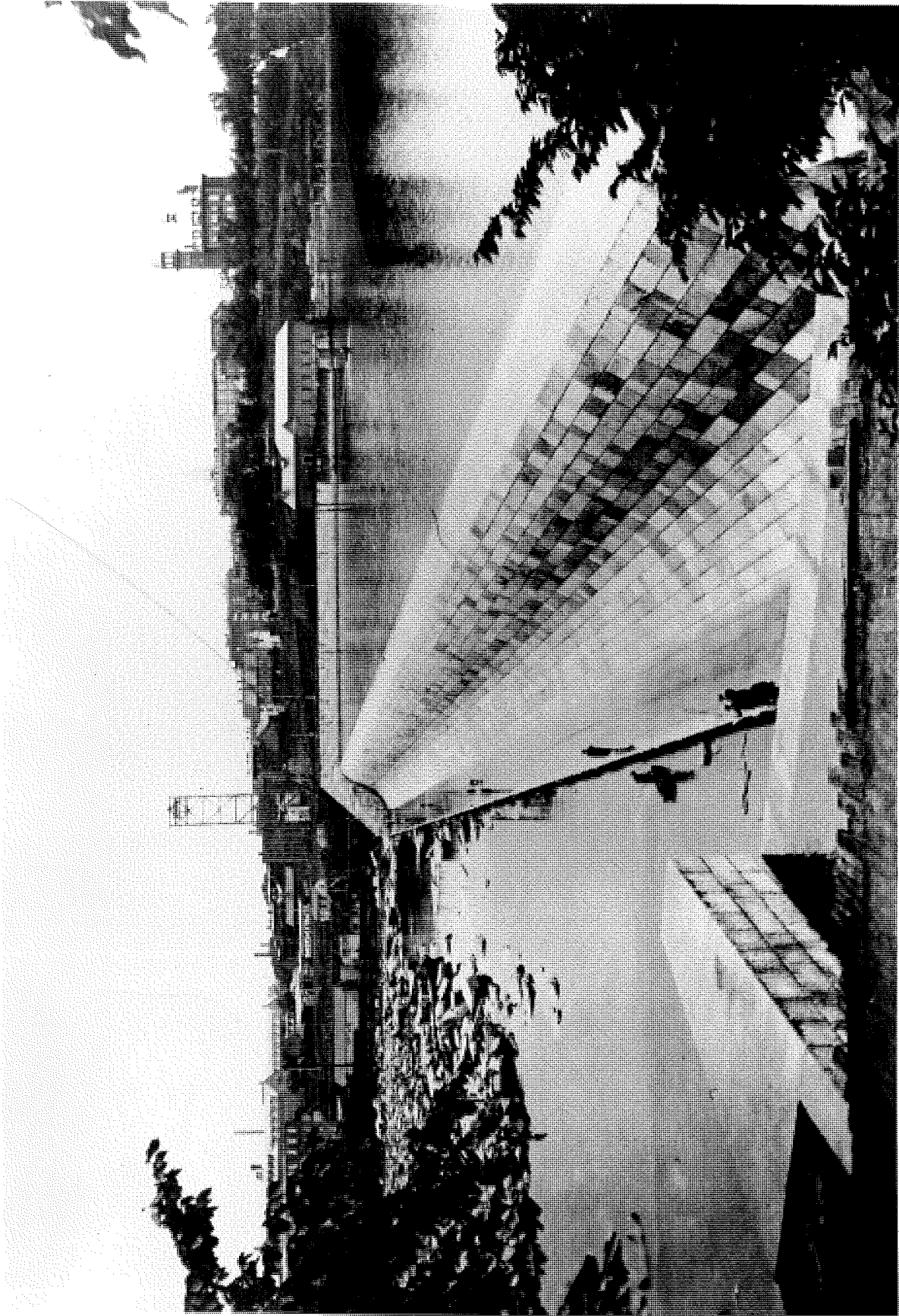
Wood dam showing sloping front added during 1868, 1869 and 1870. Area in front of dam has been cleared for building new stone dam. Cable way to transport construction materials is at upper left portion of picture. Picture taken in 1894 or 1895.



Picture shows stone dam being built in front of wood dam. Construction derricks are in foreground as is the narrow gage railroad.

best described in an article in the "Engineering News" of May 13, 1897, by Sanford E. Thompson. It follows:

"For conveying the materials to their location on the dam there is suspended directly above the work and on a line with the dam a 2-in. cable, furnished by the Trenton Iron Co., of Trenton, N.J. A frame tower is built on each side of the river; the one on the Holyoke side, 120 ft. high, and that on the South Hadley side, 100 ft. high. The base of the former is also 20 ft. higher than the latter so that the slope of the rope between towers, if there were no sag, would be 40 ft. Since all of the material except the rubble is furnished from the Holyoke side, the travel of the load is generally down grade. The base of the Holyoke tower is about 22 ft. above the crest of the dam. It is about 25 x 30 ft. at the base and is a plank skeleton frame well bolted and tied together with diagonal braces. The face farthest from the river is vertical, while that toward the river is built on a batter. It is guyed sideways, and also back to the anchorage. The cable passes over sheaves at the top of the towers, so as to bring the strain upon the tower as nearly vertical as possible, and is anchored to the solid rock at each end. The total distance between anchorages is 2,200 ft. and the span between towers is 1,615 ft. The cable, which is designed for a safe load of from six to seven tons, is the longest for its strength in the world. A 50-HP. engine in the Holyoke tower, with two drums, one of which moves the carriage along the cable and the other hoists and lowers, furnishes the power. The carriage is capable of making a round trip of average length, that is, to the middle of the dam, every ten minutes; this includes time picking up, hoisting and dumping load as well as the time of horizontal conveyance. The wires of which the cable is constructed are of such special shape as to form a nearly solid rope and to present on the outside a smooth cylindrical surface. The makers state that the ropes weigh from 92 to 96% of the weight of a solid steel bar of the same diameter. The carriage and button rope were designed especially for this work by the Lidgerwood Mfg. Co., of New York."



HOLYOKE DAM

Last stone laid Jan. 5, 1900

o The Derricks

The materials, being carried out to the construction work in the river, were deposited near one of the many stiff-leg derricks which were erected in the riverbed at the base of the new dam. The derricks would then pick up the granite face stones and lift them to their predetermined positions where they were fitted into place. Skips of rubble were handled in the same way.

Financing - Special Dam Renewal Fund

At their meeting of November 10, 1887, the directors established a fund to be used for constructing the stone dam. The fund was under the jurisdiction of three directors to invest in substantial securities outside of Holyoke. An initial payment to the fund was made at that time of \$100,000. Additions were made every year through 1895 at which time the fund was \$525,000.¹⁴¹

The Special Dam Fund added to sums from other corporate sources was evidently more than ample to pay for building the dam. Those costs amounted to approximately \$600,000.¹⁴⁴

Extra Dividends

While the dam was still under construction, the company directors realized that more funds had been accrued than would be required. Accordingly, it began to distribute them in the form of extra dividends. There were, at that time, 12,000 shares outstanding and the regular annual dividend was \$10, making the payment \$120,000. Extra dividends were paid in 1899 of \$10 a share, in 1900 of \$20 a share, and in 1901 of \$60 a share. The total of extra dividends amounted to \$1,080,000.

Commentary

This somewhat cryptic account of the building of stone dam by the Holyoke Water Power Company does not do justice to the group of able men who were responsible for this great construction work.

First the Board of Directors of the company, nine men none of whom was an engineer, made the decision to build the dam. It also assumed the responsibility of

paying for its construction. It did this so ably that the work was all financed from current funds and with a sizeable surplus available for extra dividends to the stockholders.

But more importantly, it was just a handful of men on the small HWP staff which carried the full responsibility for the prosecution of the work. These men prepared the plans, wrote the specifications, supervised the construction, and maintained the quality of work. In addition, the company, under their direction and using day labor, excavated the rock from the riverbed and prepared the foundation upon which the dam was built. A copy of the specifications for the dam is a part of this history.¹⁴⁸

At the March 7, 1900 meeting of the Company Directors, it was voted to pay Edward S. Waters \$15,000 for extra services as the designer and hydraulic engineer in charge during the construction of the new dam. The Directors also recognized with extra compensation the services of engineers J. M. Sickman, Robert Ranlet, and W. E. Sawin. Today, almost a century after the dam was finished, it stands as an enduring monument to the extraordinary abilities of these men.

At this writing it is possible to look back over nearly a century during which the dam has stood athwart the largest river in New England. The only major maintenance the dam has needed occurred following an ice jam at the time of the greatest flood on record.

The names of the HWP men, who brought this dam into being with tools and methods which modern engineers would call primitive, are fading into obscurity. However, the structure they built stands as a permanent memorial to them and undoubtedly will do so for centuries to come.

Construction of Hydroelectric and Steam Electric
Station on First Level Canal

The first mention in the Directors' Records of the construction of an electric power plant by HWP on the First Level Canal occurred on October 2, 1889. At that meeting it was reported "that estimates had been made of the cost of works designed for the purpose of furnishing electric lights and that such estimates made a possible cost of \$104,000." Thereupon it was voted: "That the executive officers be empowered to carry on this work and complete it as fast as they think needful."

HWP through a subsidiary, Holyoke Electric Light and Power Company, began selling streetlighting to the City of Holyoke in 1884. By 1888 the company had absorbed the subsidiary and was serving the streetlights directly. The location of the electric power plant is shown on the accompanying plan MP28.

The most complete and accurate account of the electric business in Holyoke from 1884 to December 14, 1897 is to be found in the proceedings of the transfer of the gas and electric business from HWP to the City of Holyoke. The records of the case of Holyoke Water Power Company versus the City of Holyoke before Commissioners appointed by the Supreme Court¹⁴⁹ have been liberally quoted in the following:

The Electric Station

"The business of furnishing electricity for lighting purposes was started in Holyoke by the Holyoke Electric Light and Power Company, a corporation whose stock was in fact owned by HWP. The former corporation began business during October, 1884 in the Cabot Street mill with two dynamos and sold out to HWP in March, 1888. At that time the Company had five or six dynamos, including the two original machines. The Edison direct current machine was installed in 1889 while the Company was in the Cabot Street mill. The tail race was begun in 1888. The present buildings of the electric plant, including the wheel house, were started in 1890 and finished in 1891, the work being done by day labor under the superintendence of J. M. Sickman for the Company, was running by August, 1891. The electrical machinery was moved over from the Cabot Street mill into

the new plant, but the engines were left behind. Among the machinery moved over from the Cabot Street mill into the new plant, were the following dynamos:

1	16-light	Schuyler	dynamo,	bought	in	1884
4	25	"	"	"	"	1884-5
1	40	"	"	"	"	1885
8	30	"	"	"	"	1885-6-7

"In 1891 the Company installed in the new mill the 100 K.W. power generators. In 1896 the 120 K.W. alternating current machine was installed for the purpose of supplying incandescent lights at a distance. The remaining dynamos were installed as follows:

4	50-light	Schuyler	dynamos,	1890
1	"	"	"	1894
2	"	"	"	1895

"The dynamo room is run by water power, supplemented by an auxiliary steam plant.

"The hydraulic plant has four vertical turbines, with a rated capacity of 4 M.P. each, a total of 16, with an efficiency of 75 percent on a 20-inch gate opening of 65 H.P. per M.P.

"Four lines of shafting run through the basement of the dynamo room being carried from the wheel house to the dynamo room through a tunnel under the right of way which the Company desires to reserve and over the penstock leading to the testing flume.

"The auxiliary steam plant was installed new in 1891. This plant has five upright Manning boilers of total capacity of 825 H.P., arranged in two stacks. One boiler is used for heating. The engines are two 400 H.P. non-condensing engines, non-compounded, and there is no complete foundation laid for compounding them.

"Power from the engine passes by belts from the engine room to the shafting in the basement of the dynamo building, and is again taken by belts from this shafting through the floor to the dynamos.

"The Company furnishes four classes of electrical service. (1) Streetlighting--half

1891

CITY OF HOLYOKE

COAL POCKET
CONCRETE WALL 7

H.W.P. CO.
CROCKER
M.C. ELWAIN CO.

PASSAGEWAY

FIRST LEVEL CANAL

BUILDINGS OUTLINED IN WHITE ARE
THOSE BUILT BY HWP FROM 1888-1891
AS ITS ELECTRIC GENERATING STATION

CANAL WALL RESERVED BY H.W.P.CO. 350.75'

RESERVED FOR PASSAGEWAY
NOT TO BE BUILT UPON

DYNAMOS

WATER
WHEELS

BOILERS AND ENGINES

A. W. P. CO.
GEO. R. DICKINSON PAPER CO. D.D.

COAL
POCKET

HOLYOKE WATER POWER CO.

RESERVED FOR PASSAGEWAY
NOT TO BE BUILT UPON

CROCKER
MCELWAIN CO.

RESERVED FOR RAILWAY AND PASSAGEWAY
NOT TO BE BUILT UPON

RAILWAY SPUR TRACKS

CANAL WALL RESERVED BY H.W.P.CO.

SECOND LEVEL CANAL

E. L. S. AN APPROXIMATE MAP

CITY OF HOLYOKE'S ELECTRIC STATION
SCALE: ONE INCH = 40 FEET
SURVEYED BY H.W.P.CO.
REVISED, JAN. 1891

MP
28

arcs; (2) Commercial lighting--full arcs; (3) Incandescent lights; (4) Power. For this service four distinct systems are used, each entirely unconnected with the other. These systems operate as follows: First, a continuous current lighting system for commercial and municipal lighting, consisting of twenty-one Schuyler dynamos; second, a direct current, three-wire Edison system, consisting of two generators run together supplying incandescent lighting within a short radius of the plant; third, a 500-volt power generator for motor service; fourth, an alternating current system supplied by one generator of 100 K.W. capacity.

"Of the Schuyler arc machines eighteen were brought over from the Cabot Street mill to the new plant, and fourteen of these had been purchased of the Holyoke Electric Light and Power Company. The following machinery has been installed second hand:

20 Double Schuyler arc lamps,
 3 Schuyler Dynamos: one 30-light
 9-ampere dynamo, and two 50-light
 9-ampere dynamos.

"The 21 arc generators must further be divided into two classes; one class being used for the commercial arc and one for streetlighting. There are 16 arc machines to help each other out. The Edison direct current machines cannot help out the alternator, nor the alternator the Edison; nor can the arc dynamo help out the power machine.

"The distribution system started on wooden poles. At first the poles carried only one set of wires, namely, that for arc lighting. Later the system was extended and another line of wire was put up for the Edison incandescent system. In 1891 another set of wires was strung to distribute power from the 100 K.W. generator; and still later in 1896 a fourth line of wires was strung to take the current from the alternator to the distant incandescent lamps. These additional systems were strung from the old locations on the old poles. Many of the main lines and most of the services are carried on poles of other companies. There have been only fifty poles replaced out of the entire 1313

mentioned in the schedule during the past three years.

"There are six half arc Schuyler dynamos set up, of a total capacity of 290 lights. These are for streetlighting, and the City at the present time takes 250 lights. There are ten full arc machines in use of a capacity of 290 lamps used for commercial lighting. These supply at the present time 170 lamps. The power generator has a rated capacity of 133 H.P., and is running at its full capacity. Seventy of the 133 H.P. are sold to the City. The Edison three-wire system supplies 600 incandescent lights, and the alternator 1,200 to 1,400. Of the 1800 or more lamps thus supplied 400 are used by the City of Holyoke in the public schools.

"No record has been kept of the electrical output at this plant, but the following facts as to the prices, lamps supplied, and financial operations of the Company are in evidence.

Commercial Arc Lights

No. Nights Used	Jan., 1898	Jan., 1899	Mch, 1899	Rate
6	42	44	40	\$90.00
4	17	15	15	67.50
3	117	108	98	63.00
1	<u>2</u>	<u>2</u>	<u>2</u>	
Total	178	169	155	

"For incandescent lighting the Company's rates are 1 1/4 cents an hour for each candle-power lamp with discount running from five percent to 33 percent, according to number in use. The average number of lights supplied at any one time is 1,800.

"For street lamps, the Company receives \$100 per lamp per annum. The rates for power are somewhat complicated.

"The income from supplying public lights alone amounted in 1897-8 to \$26,261. The total receipts of the Company for the same year were \$56,600. The \$30,339 difference between these figures represents the

Company's receipts for commercial arcs, incandescent lights, and power. But considering the fact that the City uses 400 of the 1,800 incandescent lights, or 22 percent, and 70 H.P. of the 133 H.P. supplied to motors, or more than 50 percent, it is apparent that an abnormally large proportion of the business done at this plant is municipal business."¹⁴⁹

Comments I

In planning this power plant, the HWP engineers followed the conventional methods, then in use in the mills, of connecting the prime mover, waterwheel or steam engine, to the driven equipment by pulleys, belts and shafting. That method was soon to be supplemented by directly connecting the prime mover to the dynamo, a method in general practice today.

At this early time in the distribution of electricity, four different systems were in use in Holyoke. All four systems were on the same pole line. Today, of course, all electricity is delivered with one system, alternating current.

A third marked difference between the early days of the electric industry and today was the complete lack of metering of the amount of electricity generated in the power plant and also at the point of use.¹⁵⁰

Streetlighting

The payment to the company for streetlights was a charge per lamp as illustrated in the following excerpt from the local newspaper. It discusses electric lighting costs as well as the benefits of that kind of illumination.

"The City Council of 1890 evidently thought that there should be light, and steps were early taken, that on expiration of the old contract a new and more advantageous one should be made. After much work on the part of the Committee, a contract for five years was made with the Holyoke Water Power Company for the furnishing of one-hundred sixty lights of the variety known as half arc to burn all night, at a cost of 33 1/2 cents per light, the total lighting capacity of the city being now distributed as follows:

Electric Lights	159
Gas Lamps	86
Naptha lamps	50

"The cost for the last year was \$17,324.88. Well lighted streets are a blessing to the community, augmenting in great measure the protection to life and homes furnished by the police and fire departments, and it should be our aim to keep Holyoke in the front rank in this respect.

"It should be borne in mind, also, that each additional light means an additional cost of \$121.54 per year, and the locations should be chosen with care for the greatest good of the greatest number, and not because any particular person may desire a light near his premises."¹⁵¹

Electric Power Billing

Electricity used for power was sold at costs based upon the size of the electric motors.

The amount of electricity used by customers who used electric motors was determined by an ammeter. The current was measured by having the customer start up all the electric motors in the plant and determining the amperes of electric current drawn. From that quantity, in conjunction with the voltage, must have been computed the total possible horsepower load. This method would not seem to take into account that the electricity drawn by a motor varies greatly according to how heavily loaded it is..

The rate schedule was a sliding scale and was based on 10 hours use per day. It follows:

5 H.P.	\$75.00	per	H.P.	per	annum
10 H.P.	\$67.50	"	"	"	"
15 H.P.	\$62.50	"	"	"	"
20 H.P.	\$57.50	"	"	"	"
25 H.P.	\$50.00	"	"	"	"

The Company had no power customers larger than 25 horsepower. For very small customers of up to 5 horsepower, the charge was \$100 per horsepower per year.¹⁵²

If the purchaser's plant ran 5 hours at night, 50 percent was added to the above prices. This allowed the purchaser to use the service for the 16 hours a day that the company ran its electric generators.¹⁵³

Power Station Shutdown - A Bad Accident

The following article appeared in the Holyoke Transcript circa December 1, 1893:

"Shortly after 3 o'clock yesterday the electric power throughout the city was suddenly shut off and the electric cars became fixtures at various points along the tracks, leaving them stranded for over an hour and severely crippling the service for the rest of the day.

"It was caused by the breaking of one of the large driving pulleys on the main line of shafting in the electric power house of the water power company. The breaking of the pulley twisted about sixty feet of the 6-inch shafting, broke six strand braces and smashed four large pulleys which drive the dynamos. The large belt on the main pulley was badly damaged and the pulleys themselves were broken to atoms. The shafting was bent as though it were made of wire and the braces snapped like frail castings. The largest dynamo in the city, capable of furnishing 250 horse power, was rendered useless and the two 100-horse power motors were also stopped. The street railway power was shifted on a 175-horse power motor, which was used for running the small machinery about the city and a few of the cars were started about 4 o'clock. The 800-horse power engines were rendered useless, as the belts connecting with the line of shafting were broken and water power had to be used to run the motors.

"Electric lights were furnished as usual in the evening and the work of repairing the damage was begun immediately.

"The cars are running on 30-minute time today and it will be several days before they can be run on the old schedule. The damage was more far reaching and disastrous than was first imagined."

Comments II

HWP was in the forefront of the generation and distribution of electricity from a central station source. It was also among the pioneers who were converting the mechanical energy of water power to the more versatile electric energy. It was this generating plant and distribution system that became subject to take over by the City of Holyoke.

The Take Over by the City of HWP Gas and Electric Properties

The Legislation

Legislation enabling cities and towns to go into the electric and gas business became law on June 4, 1891.¹⁵⁴ Important elements of that legislation as pertained to cities were:

- o They could manufacture and sell gas and electricity.
- o Prior approval had to be gained in each of two consecutive municipal years by a two-thirds vote of the Board of Alderman and also approval from the Mayor and then ratified by a majority of voters at an annual municipal election.
- o If at the time of the first vote there was a company already in business selling electricity for lighting, then:
 - a. If that company elected to sell its property, the City had to purchase it.
 - b. If the two parties could not agree as to price and terms, then either party could appeal to the Supreme Court for adjudication of the issue.

The Aldermanic Take Over Votes

In the summer of 1895, the city called for bids to supply streetlights for a five-year period. HWP was the only bidder. The bid was for \$100 per light per year while the price in Springfield was \$85. Public officials had expected that lights in Holyoke should be cheaper than Springfield because of the local water power.¹⁵⁶

The Aldermen discussed the HWP bid and finally voted to accept the HWP terms for three years. Comments in the discussion were "to the effect that as the Water Power Company had the city practically at its mercy, the only thing to be done was to take the three-year contract, get out of its clutches as soon as possible and let the city begin at once to prepare for the construction of a plant of its own."¹⁵⁷

On December 15, 1896, the municipal take over issue surfaced again with an order from Alderman Gervais "for the construction, purchase or lease of a plant for municipal streetlighting."¹⁵⁸ This order was passed, and it became the first step in meeting the city's obligation under the enabling legislation.

On December 6, 1897 at a meeting of the Board of Aldermen called ostensibly to pass the order for the municipal election, the municipal lighting committee presented a report on its yearlong investigation of a city-owned lighting system.¹⁵⁹ The report was in favor of public ownership.

At the meeting, several proponents of municipal ownership spoke. Among them was William A. Chase¹⁶⁰ who had resigned as Treasurer of HWP on March 24, 1887. Some of his comments were:

- o HWP is able to furnish electricity for streetlights much cheaper than it does now.
- o The city would be a great gainer by voting to buy the plant now as there would not be another opportunity for five years.
- o The only way to bring the company to terms was by voting to have a municipal light plant. Then the city will get fair treatment.

The Aldermen voted to place the question of municipal ownership before the citizens at the next election which was on December 14, 1897, only eight days away.¹⁶¹

Pre-Election Campaigning

During the few days available between the Board of Aldermen Meeting and Election Day, the proponents and opponents to municipal take over were active. The two local newspapers carried arguments for and against the take over. Treasurer Waters of HWP was among the opponents, and the press carried a lengthy statement of his on December 9, and December 13, 1897.¹⁶²

The ElectionThe Question

"They will also give in their votes for or against the following question, viz:--SHALL THE ORDER. "That it is expedient for the City of Holyoke to exercise the authority conferred upon Cities and Towns by Chapter Three hundred and Seventy of the acts of the legislature of 1891, or by acts amendatory thereof or supplementary thereto, and by Section One of said Chapter, relative to the construction, purchase, leasing or establishment and the maintenance within the limits of the City of Holyoke, of a plant for the manufacture or distribution of Electricity for furnishing light for municipal use and for the use of such of the inhabitants of the City as may require and pay for the same as provided in said chapter; also that in the opinion of the City Council the City of Holyoke ought to construct, purchase, lease or establish and maintain within its limits one or more plants for the manufacture or distribution of electricity for furnishing light as aforesaid, "BE RATIFIED?"

Holyoke Transcript
December 14, 1897

The Result

MUNICIPAL LIGHTING WINS

For	2,540
Against	1,785
Total	4,328
Majority For	805

Holyoke Transcript Extra
Election Day
December 14, 1897

HWP Actions Triggered by the Vote

The December 14, 1897 vote set in motion the procedures which eventually led to the municipal take over.

Directors' Vote

On December 15, the day following the election, the HWP Directors met and voted:

"That the matter of the sale of the Company's lighting plant be referred to the Executive Committee with authority to sell the same in whole or in part, or refer to the same to a future meeting of the directors."

The nature of the Legislation enabling the City to take over the property of HWP was such that the Company had to be fully prepared in advance for either a favorable or unfavorable vote. If the vote was unfavorable, as it was, then the company was obligated to:

- o Within 30 days notify the city that it elects to sell its plant,
- o File within 30 days a detail schedule of the properties to be sold.
- o State a price that it expected to receive for the property.

In compliance with the law, HWP filed with the City Clerk a letter dated January 8, 1898, which is included herewith. The inventory schedules of the Electric Plant and the Gas Plant are included as Exhibits.¹⁶¹

Reason for Electing to Sell

It was imperative that HWP, at that point in time, meet explicitly the format outlined in Chapter 370 of the Acts of 1891. By so doing and "electing" to sell the property, the city was obligated to buy it.

If HWP had not so elected within the 30-day period, the city would have had no obligation to buy, and could have built its own electric system. That would have left HWP with a competitor controlling all

A copy of the letter to the City of Holyoke follows:

HOLYOKE, MASSACHUSETTS, JAN. 8, 1898.

(Indorsed as follows:)

Filed in the City Clerk's office, Jan. 8, 1898, at 3.20 o'clock P.M.

EDW. A. KANE, *City Clerk.*

HOLYOKE, MASS., Jan. 8, 1898.

TO THE CITY OF HOLYOKE:

The City of Holyoke having voted to install an electric lighting plant, the Holyoke Water Power Company (a corporation now and heretofore — to wit, for more than six years — engaged in the business of making, generating and distributing gas and electricity for lighting purposes in said city) elects to sell to the city of Holyoke the whole of its gas plant, also the whole of the electric light plant, with the lands and buildings and other property suitable therefor and used in connection therewith, situated in the city of Holyoke, a detailed schedule of which is filed herewith, showing the property which it desires to sell, said schedule containing a description of the lands and buildings to be sold in connection therewith, as well as all other property, and the several plans also filed herewith, marked respectively "A," "B," "C," "D," "E," showing the locations of the various buildings and lands to be sold therewith, as described in the schedules,— the location of the mains and gas pipes of the gas plant, and the location of the poles and wires of the electric plant; the Company to give to the City the right to maintain its poles and lines over any of the lands owned by the Holyoke Water Power Company where the same are now located.

The terms to be cash, and the price at which the same are offered is for both plants one million dollars, conveyance of the same to be made by proper deeds and conveyances at the time the purchase is completed.

The Holyoke Water Power Company also offers and desires to sell by lease, in such form as ordinarily used for such conveyances by it in Holyoke, one-half ($\frac{1}{2}$) of one (1) mill power of water, to be used in connection with the gas plant as described in said schedule; also sixteen (16) non-permanent, twenty-four (24) hour mill powers of water, as described in the said schedules, to be drawn from the first-level canal and used in connection with the electric plant, the lease thereof to be in the form ordinarily used for making such leases by the said Company in said Holyoke, said non-permanent mill powers being fully described in the schedules filed herewith; the sum to be paid for rental of said mill powers of water to be fifteen hundred (\$1,500) dollars a year for each and every one of said sixteen and one-half mill powers, payable in semi-annual payments, with proportionate rebate for such time in each and every six months as the water shall not be furnished.

HOLYOKE WATER POWER COMPANY,

By GIDEON WELLS, *President.*

EDWARD S. WATERS, *Treasurer.*

street franchises. Under those circumstances it eventually would have had no customers.

Petition to Supreme Judicial Court

Following the filing on January 8, 1898, with the City Clerk of the notice of electing to sell and the price and inventory of the property to be sold, it was found that the city would not accept the HWP proposal. Therefore, in accordance with the procedure outlined in the legislation, HWP petitioned on March 5, 1898, the Supreme Court to adjudicate the matter. The first hearing of the legal process was held on April 5, 1899.¹⁸³

The City Has Second Thoughts

Sixteen months passed between the vote of the electorate on December 14, 1897, and the opening of hearings on April 15, 1899, before commissioners appointed by the Massachusetts Supreme Court. During that period sentiment in the city seemed to be growing toward seeking a postponement of the taking of the HWP plants.

At the May 2, 1899 meeting of the Board of Aldermen, it was voted to confer with the city solicitor to make some arrangement, if possible, to defer the taking of the HWP plants for a period of five years and to make a contract with HWP for furnishing electric and gas services to the city for five years.¹⁶⁴

The major support for the postponement came from Mr. William Whiting of the Manufacturers Association.

The opposition to the order came from Alderman McLean who "then proceeded to cross-examine Mr. Whiting in a loud voice. Mr. Whiting answered several interrogatories mildly, but when Alderman McLean's questions began to take the form of insinuations against the good faith of the Manufacturers' Association, Mr. Whiting called a sharp halt on the alderman and the latter promptly 'crawfished'."¹⁶⁵

Alderman McLean

The most ardent proponent for the take over of the HWP was Alderman Hugh McLean. A description of him from the local newspaper follows:

"Alderman McLean is an original. Personally he is the soul of honesty. In his business and all private relations he is scrupulously square. He carries this same quality into his politics. He does nothing for his own gain or for a personal end. But his ideas of political honesty are hardly safe ones. He would experiment with the political visions that he rears in his brain, regardless of the cost to the municipality which he is serving. Mr. McLean is in reality more of socialist than a democrat. He believes in holding all sorts of franchises and industries for the common benefit instead of private gain. And when he has dreamed out a possible scheme so that it seems practical and practicable to him,

forthwith he would impose it on the city. Believing honestly in all his schemes and dreams he cannot see honesty in any who differ from him. He is quick to speak and absolutely fearless of consequences. He does not appreciate that a man may be honest and disbelieve all that he cherishes as the nearest to right. Consequently, his many violent and lamentable outbreaks in his aldermanic relations. Such men as Alderman McLean are both helps and dangers in public life. They help because they prevent the ruling side that is apt to take advantage of its opportunities, from maladministration. They watch too carefully to allow that. They are dangers because they run to fancies and theories that can't work. These visions work any amount of mischief and keep affairs in boiling water most of the time. They are in their way, fanatics. Alderman McLean by sticking to party lines gains a following that gives him a power. Alderman Ruther may talk and charge and indulge in all the fireworks at his command. It matters not. He stands by himself. But Alderman McLean on the plea of party loyalty can command a controlling following for all of his ideas. He is a force to reckon with. He might win more frequently than he does if he made a study of tact and tried to keep his temper. Go back to the first statement Alderman McLean is an original. Study him and keep up with him while he waves. That will not be forever." ¹⁶⁶

He was the great uncle of John T. Hickey, Manager of HWP.

City Solicitor's Opinion

In response to the Board of Aldermen query about postponing the "taking," the City Solicitor ruled that the City must take the HWP plants now unless the Legislature gives permission to do otherwise. ¹⁶⁷

Electric Contract Negotiations Between City and HWP

While the hearings before the Commission in Springfield were continuing, negotiations were underway on an electric contract which would also include a postponement of the take over proceedings.

In a lengthy statement of May 15, 1899, addressed to the Mayor and other city officials by E. S. Waters, Treasurer of HWP, the company made a long-term proposal for the sale of electricity to the city. The proposal carried rates for various classes of service and for terms of 7, 10, 15 and 20 years. The proposal was based upon the discontinuance of litigation between the parties.

In the statement, Mr. Waters defended the existing rates for electricity to the city. He said that the past charges to Holyoke users had been more fair than in any other city in the state.¹⁶⁸

Petition to Legislature for Another Referendum

At its meeting on January 30, 1900, the Board of Aldermen voted to petition the Legislature to allow a second referendum on the take over issue.¹⁶⁹

Hearings Before Commissioners in Springfield Postponed

"The hearing on the municipal lighting case which was to have been resumed today, was postponed until the question has been submitted to the people."¹⁶⁹

The Legislative Process

Hearing in Holyoke

A Joint Committee of the legislature came to Holyoke on March 14, 1900, to hold a hearing on the legislation to permit a second referendum on the take over issue. The speakers in favor of the legislation were Mayor Chapin and William Whiting. Both felt that the voters did not have a clear understanding of the obligations the city would have to assume when they last voted.

The opposite point of view was expressed by Alderman McLean and others who felt the people knew what they were doing when they voted to take over the HWP plants.¹⁷⁰

Legislative Decisions

The Joint Committee voted against allowing Holyoke to hold the special election concerning the take over.¹⁷¹ However, the bill was substituted in the House for the committee report and was passed on April 5.¹⁷² Subsequently, it passed the Senate by an 18 to 8 vote¹⁷³ and was signed June 21, 1900.¹⁷⁴

Municipal Lighting Contract

On February 3, 1900, HWP and the Board of Public Works of the city signed an agreement covering the supply of electricity by the company.¹⁷⁵ The main provisions of the agreement were:

- o The term to be 10 years.
- o The city to order from HWP 143 streetlights in addition to the present 257 lights to make a total of 400.
- o The price per light-year of the 400 lights to be \$75.
- o The lights to be the kind known as "half arc" lamps of 1,200 candle power.
- o HWP to furnish all poles, apparatus, fixtures and accessories for the lamps and maintain them.

- o The lamps to be located within a two and one-half mile radius of City Hall at such locations as directed by the Board of Public Works.
- o Proceedings before the Commissioners in Springfield to be discontinued.
- o City agrees that during the contract term it will not establish any municipal gas or electric lighting plant.

Municipal Lighting League

In early March a group of friends of municipal lighting joined together at the request of Alderman Hugh McLean to oppose submitting the take over issue again to a vote of the people. McLean was elected secretary. John J. Kirkpatrick was on the finance committee and William A. Chase on the standing committee. ¹⁷⁶

On June 28, following the passage of the enabling legislation for the referendum, the Municipal Lighting League called a meeting to plan the campaign in opposition to the lighting bill. A committee on rallies and a committee on election were appointed. In addition, a committee of nine or ten members was appointed for each of the seven wards. ¹⁷⁷

The League published a pamphlet titled, "Let There Be Light" setting forth its position on the take over issue. It is included herein as an exhibit. ¹⁷⁸

The Question

On June 22, the Board of Aldermen adopted an order calling for a vote by the citizens as to whether the contract signed by HWP and the City should be ratified. A copy of the order follows:

"To Board of Aldermen:

June 22, '00

Ordered, That meetings of the qualified voters of the City of Holyoke be, and they are hereby called to be held in the several polling places designated and appointed by the Board, on the third Tuesday of July, next, being the 17th day of July, 1900, to vote "Yes" or "No" in accordance with the

provisions of Chapter 390 of the Acts of 1800 on the following questions--"Shall the contract of the City of Holyoke by its Board of Public Works with the Holyoke Water Power Company, for the furnishing of electricity for light and commercial purposes for a period of 10 years from the date thereof, and dated Feb. 3, 1900, be ratified? Ordered. Further that the City Clerk cause notice of said meetings to be published in the local papers, also to be conspicuously posted in the office of the City Clerk. The polls will open at 6 o'clock in the forenoon and closed at 7:15 o'clock in the evening of said day. 179"

ALDERMAN WHITCOMB.

Newspaper Positions

The newspapers in favor of ratifying the contract included the Transcript, Holyoke Daily World, La Presse, Springfield Republican and Free Press. The opposition newspaper was the Holyoke Telegram.

The Result

The contract between HWP and the city was not ratified by the voters. It was defeated by a vote of 2,136 to 1,926, 210 votes.

The Award

The award by the Commissioners appointed by the Supreme Court and who met for the first hearing on April 5, 1899 was handed down on August 6, 1902 for \$708,790.

The Record

The record of this Municipal Lighting Case was deemed sufficiently important that the state had it published. It required twenty bound volumes. 180

The Employees

At the June 14, 1902 meeting of the HWP Directors there were presented demands from the employees in the Electric and Gas Departments.

They were: For all employees working at the Gas Works and for the firemen at the Electric Works a reduction in hours per day from twelve to eight with the same pay per day. For employees "working on the streets" a reduction from ten hours a day to nine hours a day with the same pay per day.

The demands were settled by awarding a twenty-five cent per day increase to all employees but keeping the hours worked the same. At the same time they offered to pay each employee, when the city took over the plants, five dollars for each year of continuous service.

The Directors' Records of the June 14 meeting contain copies of a letter sent to each of the Gas Works employees and to each of the Electric Station firemen. They also include a copy of the circular sent to all employees in the Gas and Electric Departments of the company. They total 38 in number. Without doubt, descendants of some of these men live in Holyoke today. Copies of those Directors' Records are included herewith.

Stockholders

On December 17, 1902, the Directors declared a Special Dividend of sixty-five percent on the capital stock. At that time 12,000 shares were outstanding. This meant a payout of \$780,000.

Property Transfer from HWP to City

The transfer of the gas works and the electric works from HWP to the City of Holyoke took place at the Registry of Deeds in Springfield on December 15, 1902. At that time Mayor Chapin turned over a check for \$706,000 to the HWP officers. In exchange they gave to the Mayor the signed indentures which transferred the properties to the city.¹⁸¹

The electric works indenture is recorded in the Registry of Deeds Book 659, page 408 and the gas works indenture is recorded in Book 659, Page 428.

Letter to Employees
Directors' Records
June 14, 1902

Circular

To the

Employees in the Gas and Electric Light Departments.

In view of the expected acquisition at an early date by the City of Holyoke of the gas and electric light works of this Company, we desire to express to you our appreciation of the long and faithful services, covering in many cases from five to thirty years, which you have rendered this Company. During all these years our relations have been most cordial.

In recognition thereof we now desire to state that at the time when the City shall take over said plants, we shall pay to each one of you who shall then be in the employ of this Company, five dollars for each year of continuous service to our Company up to that time.

In case any of you shall have deceased or shall then be detained from work by sickness, not having previously left our service, we shall make the same payment to you or to your families as may be requested by you.

We also shall trust that the City will continue you in its service as men who are competent and faithful.

The Holyoke Water Power Company,
by Charles E. Gros, its President
and Edward S. Waters, its Treasurer.

Such letter accompanied by such circular was sent to Mich. Rowke, P. F. Shea, John Sheehan, Tom. Kennedy, Jim. Moriarty, Stephen Bresnahan, Jerry Shea, John Martin, Morris Martin, Morris Shea, Mich. Kennedy, Dan Kane, Pat Curran, Wm. Bresnahan, and John Kennedy of the Gas Works and Louis Candron and Michael O'Brien of the Electric Works.

Such circular was sent to F. P. Fairbanks, O. W. Adams, John W. Welch, Tom Shea, Mich. Moriarty, John Moynahan, E. J. Kennedy, James Hurley and Wm. Connor of the Gas Works and Dan Sullivan, Robert Worden, Wm. Coffman, Ralph Church, J. M. Ricker, Thomas Flynn, Thomas Donohy, Arthur Keeney, David Barney, W. J. Smith, Dan Quigley and A. G. Egan of the Electric Works.

Directors' Records
June 14, 1902

The President reported that a demand was made upon the Company by the employees of the Gas and Electric Departments for an eight hour day for all employed at the Gas Works and for the firemen at the Electric Works, with the same pay that had been given for twelve hours work and further demands that the men working on the streets should be employed but nine hours a day and receive the same wages that had been paid them for ten hours per day. The President and Treasurer of the Company had an interview on Saturday morning with several of the men employed at the Gas Works, heard their stories and promised an early reply to their demands.

After some discussion it was voted that the settlement of this matter be left to the Executive Officers with power.

On motion, adjourned.

Attest

Edward P. Waters Clerk.

On June 18th. the following letter was sent to the Gas Works employees and to two firemen at the Electric Works and the following circular to each of the employees in the Gas and Electric Departments.

Holyoke Mass. June 17th. 1902

Sir.

Dear Sir.

From and after 6 P. M. of Saturday June 14th. 1902, your compensation for service has been increased twenty five cents per day of the same number of hours as at present.

Pending the transfer of the gas and electric light plants to the City of Holyoke, it will not be possible to readjust the hours of service

Signed.

Edward P. Waters, Treasurer.

Election ReflectionsOpponents

The Municipal Lighting League was the major opponent. It ran a well organized political campaign using good printed campaign material. Some of the members of the league such as McLean were ardent public ownership advocates. Others such as Chase seemed to have an anti-HWP feeling. Probably others such as City Engineer Kirkpatrick hoped for a management position in the municipal utility. This came true in the case of Kirkpatrick who was a successful manager of the municipal department for many years.

The Holyoke Telegram also opposed the lighting contract and supplemented the work of the Municipal Lighting League.

Proponents

The persons most in favor of the contract, other than HWP, were the Mayor and the businessmen. Mayor Chapin was frequently quoted as favoring the contract. William Whiting, prominent paper manufacturer, and other businessmen felt the contract to be a good one offering substantial rate reductions.

It was the general feeling that the law which forced the city to buy the HWP plants at their value of several years before the actual taking, was defective. They felt it would be changed, a supposition which eventually proved accurate.

With the exception of the Holyoke Telegram, all the local newspapers, including the Holyoke Transcript and the Springfield Republican favored the contract. The most concise statement of the proponents appeared in an article in the "Free Press" of July 14, 1900. It is included in full herein.

VOTE

YES | X

Five Good Reasons

Free Press July 14 1900

WHY ALL CITIZENS HAVING
THE CITY'S INTEREST AT
HEART SHOULD VOTE
YES NEXT TUESDAY

There are many reasons why the City of Holyoke should not go into municipal lighting at present. The five best reasons are: (1) The Water Power plant is a second rate article for which the city will be made to pay a first class price. Once purchased the city would have to discard all the apparatus in the Water Power plant and put in new. (2) The city's financial condition is such that to pay a million dollars for a worn out plant would place the city on the verge of financial ruin. (3) If taken by the City of Holyoke municipal lighting will be nothing more or less than a political machine controlled and operated by politicians to burn the city's money at the expense of the honest taxpayer. (4) The proposed contract of ten years between the city and the Water Power company is a fair and just one. The terms the Water Power gives the city in that length of time are

the lowest of any in the state, besides private consumers get power and light at a reduction of ten per cent, or even more, if the state commission so rules. (5) In ten years the law is certain to be changed whereby cities and towns will be allowed to build and operate their own plants without being compelled to buy second hand material at first class prices. In fact a law to that effect passed the House of Representatives only last month but was killed by a small majority in the Senate. There are many other equally good and important reasons why we should not be too anxious to go into the municipal lighting business at present but the above mentioned ones ought to prove conclusively that the best thing to do at the coming city election is to vote YES on the ten year contract between the city and the Water Power company.

The HWP Dilemma

The position of HWP was an ambivalent one. If the contract was defeated, it meant that the company would lose forever the opportunity to sell electricity for lighting in Holyoke. On the other hand, a defeat of the contract meant that it would be paid the fair market value of its property as of December 14, 1897.

If the contract had been accepted, HWP would have had a ten-year period in which to demonstrate to the people of Holyoke that it was serving them well. By so doing, the thrust for municipal ownership might have been dissipated.

At the same time, there would undoubtedly have been efforts during those ten years, started in Holyoke, to change, in Chapter 30 of the Acts of 1891, the obligation of the city to buy its existing plants. Such obligation is not now a part of the pertinent statute.

If the contract had been accepted in the election, and the law had been changed during the ten-year period, the city would have been free, at the end of the contract, to build a brand new generating station, and new distribution lines and leave HWP with an outdated electric system on its hands.

Chronology of the Municipal Take Over

Summer of 1895 - There was dissatisfaction with HWP and its price for streetlights, and there was talk of constructing a power plant to be owned by the city.

December 16, 1896 - An order was introduced and passed by the Board of Aldermen "for the construction, purchase or lease of a plant for municipal lighting."

Early in 1897 - The Board of Aldermen voted again in favor of municipal lighting and appointed a municipal lighting committee to study the matter.

December 7, 1897 - The municipal lighting committee of the Aldermen reported in favor of the city owning its lighting plant.¹⁶³ The Aldermen voted to place the question on the ballot at the upcoming election.

December 14, 1897 - The electorate voted in favor of municipal lighting by a majority of 805, the vote being 2,540 to 1,735.

December 15, 1897 - The Directors of HWP voted: "That the matter of the sale of the Company's lighting plant be referred to the executive committee with authority to sell the same..."

January 8, 1898 - HWP filed with the City Clerk a statement which said that:

- o It elected to sell its electric and gas plants to the City of Holyoke.
- o The price would be one million dollars.
- o A detailed description of the land, buildings and other property was included.

March 5, 1898 - HWP filed a petition with the Massachusetts Supreme Court requesting the appointment of Commissioners to adjudicate between the City and itself the property to be sold and the price to be paid for that property.

April 5, 1899 - Hearings began before the Commissioners.

May 3, 1899 - Board of Aldermen asked the City Solicitor if it was possible to postpone the taking of the lighting plant for a term of years.

May 11, 1899 - City Solicitor said it was not possible to postpone the taking of the lighting plant.

January 31, 1900 - Aldermen voted to petition the Legislature to allow another referendum.

February 3, 1900 - A ten-year lighting contract was agreed upon by City and HWP - dropping of the litigation was also agreed to.

June 21, 1900 - The law allowing special election on the municipal lighting issue was signed by Governor. The issue was to be the acceptance of a new HWP - City electric lighting contract and the dropping of litigation.

July 17, 1900 - The election was held. The contract was defeated by 210 votes - 2,136 to 1,926.

August 6, 1902 - The Commissioners appointed by the Supreme Court valued the HWP plants at \$708,790.

Return to Electric Business
Legislative Act of 1903

Directors' Vote

On January 1, 1903, the Directors voted "to apply to the Legislature for authority to manufacture in Holyoke and to distribute electricity for power purposes only, upon such conditions as may be arranged with the City of Holyoke." This vote was taken less than three weeks after HWP had transferred its electric power plant to the city. The wording of that bill follows:

"HWP Bill"

An act to authorize the Holyoke Water Power Company to manufacture and distribute electricity for power and lighting purposes.

"The Holyoke Water Power Company, incorporated by chapter six of the acts of the year 1859 is hereby authorized to manufacture and distribute electricity for power and lighting purposes provided, however, that it shall not distribute within the city of Holyoke electricity for lighting purposes nor for power purposes in quantities to one purchaser at any one time of less than --- horse power."¹⁸²

"Amended Bill"

"In preparation for a legislative committee hearing on the HWP bill, to be held in Holyoke February 27, a meeting was held in the Mayor's office on February 24. Those attending were public officials, HWP officers and businessmen. Its main purpose was to establish the minimum requirement in horsepower for an HWP customer. That minimum was decided to be 100 horsepower. However, there emerged from that meeting a bill which was more lengthy and more restrictive than the "HWP Bill." It was called the "Amended Bill,"¹⁸³ and it was substituted for the "HWP Bill."

Four other versions of the Bill were drafted. Each of the five drafts is included among the exhibits accompanying this history.¹⁸⁴ Each version of the bill became more restrictive.

Legislative Committee Hearing at Holyoke

The hearing before the Legislative Committee was held on February 27, 1903, in Holyoke. Remarks of some of those who spoke at the hearing follow:

Mayor Chapin stated, "If the company proposed to cater to the persons we should sell to we should be unalterably opposed to the bill. With proper safeguards for the city, we do not feel opposed."

City Solicitor Avery stated that he "with other city officials had been over the bill and that they felt that the city had been safeguarded in the bill."

Ex-Alderman McLean spoke for the Businessmen's Association in favor of the bill. However, he wanted the sale of the electric power to be confined to Holyoke.

Albert Steiger said he wished to speak as an enthusiast. He believed it would be a "grand good thing" for the City.

President Gross of HWP was before the committee at great length answering the questions of the legislators.

There was no opposition to the "Amended Bill"¹⁸³ at the hearing.

Following the Legislative hearing in Holyoke, it became evident that the bill as it was written was not going to be approved by the committee. There were two objections. One was that the committee felt the City should have more time to own its plant and to "feel confident where it stands on the furnishing of outside power." The other objection was that the committee did not want to give HWP "the right to furnish power all over Hampden and Hampshire counties."¹⁸⁴

"Substitute Bill"

Because of the Committee objections, Mayor Chapin developed a "Substitute Bill" which he sent to HWP for comment and which was strenuously objected to.¹⁸⁵

The "Substitute Bill" added three new elements. They were:

- o It gave the Massachusetts Supreme Court jurisdiction over the Section of the Bill which limited HWP to purchasers who would be required to use the electricity on their own property and in their own businesses.
- o It required the company to have its new electric plant in operation and able to furnish electricity within three years from the passage

of the Act. As will be developed later, this provision created a difficult problem for HWP.

- o It broadened the restriction of 100 horsepower purchasers to include South Hadley.

"New Bill"

On March 19 a delegation from Holyoke met with the Legislative Committee in Boston. On the trip were members of a special committee appointed by the Board of Aldermen, President Gross with Treasurer Winchester of HWP and Mayor Chapin with City Solicitor Avery. On the train to Boston, Mayor Chapin and President Gross had a long discussion about the Bill. Before reaching Boston, Mr. Gross had agreed to the "Substitute Bill" with changes which were more restrictive upon HWP. This now became the "New Bill." The group appeared before the Legislative Committee and asked that the "New Bill" be substituted for the one which was then before the committee. This was granted.¹⁸⁶

The significant added restrictions in the "New Bill" were:

- o The 100 horsepower restriction, which was originally put in the bill to protect the City of Holyoke plant, was now extended to all of the communities in Hampden and Hampshire counties.
- o The right to sell and deliver power in any city or town would cease at the end of ten years if HWP had not obtained the consent of the mayor or selectmen for the erection of poles and wires therein.

The Legislative Hearing

On March 24 a hearing was held on the "New Bill" in Boston. Those present were: Senators and Representatives from Western Massachusetts, Holyoke public officials, Mayor Loomis of Chicopee, counsel for the Springfield Gas Company, President Gross and Treasurer Winchester of HWP and Mayor Chapin and City Solicitor Avery. The local newspaper reported, "Holyoke Delegation and the W. P. Officials Solid in Their Support."¹⁸⁷

Legislative Process

The legislation passed the House and Senate; however, on its way through the Legislature, additional conditions were added which further restricted HWP. These were:

- o HWP must make a written contract with every purchaser of electricity which provides that it will use it only in his own business and only upon his own property.
- o Section 3 of the Act was broadened to give the Supreme Court authority to enjoin HWP, as well as a purchaser of electricity, if either violated its provisions.
- o Section 4 of the Act was originally Section 5 of the "New Bill." When first written, it stated:

"Unless said company shall have its plant in operation and be able to furnish electricity under the provisions of this act within three years from the passage of this act its rights under this act shall cease" (underlining mine).

The wording of Section 4 as made into law stated: "Unless said company shall install a plant and furnish electricity under the provisions of this act within three years after the passage of this act, all rights granted herein shall cease" (underlining mine).

The elimination of the words "be able to" meant that, in addition to building a plant, the Company now had to find a 100 horsepower customer, get a written contract from him, build a distribution line to his plant, and begin delivering electricity within three years. This latest requirement proved to be difficult as will be discussed later.

A copy of the bill as finally enacted on May 15, 1903, is included herewith. ¹⁸⁶

Legislative Costs

At the June 10 meeting of the Directors, the President reported the passage by the Legislature of Massachusetts of an Amendment to the Charter of the Company permitting it to engage in the manufacture and sale of electricity for power purposes and also that in securing such legislation, the following sums had been expended:

Expense of City Solicitor Avery at our request	\$217.50
Expense of President of Business Men's Ass'n.	75.00
Expense of Secretary of Business Men's Ass'n.	46.00
Expense of Alderman Holley, attending hearings before Legislature	30.00
Expense of Treasurer	43.43
Services of the Press	75.00
Sundries	14.43
Total	<u>\$501.36</u>

The 100 Horsepower Restriction

The issue of the 100 horsepower restriction in the 1903 Act is rooted in the history of lighting in Holyoke. As has already been told herein the first use of gas in the city was to replace oil lamps as the source of illumination in homes and factories. Later gas was used for streetlighting purposes.

In 1884 the Holyoke Electric Light and Power Company began supplying electricity for lighting the city streets. The electricity was generated, distributed and used at the same voltage. As its name implied, the company also sold electricity for power uses. In this case, the electricity was generated, distributed and used at a higher voltage than the electricity for lighting. In this way, electricity for lights and electricity for operating machines came to be regarded as two separate products with no interchangeability. In fact, electricity for lights and electricity for power were distributed by separate circuits on the pole lines.

The first draft by HWP of the 1903 bill made provision for determining the size of customers who would be eligible to purchase HWP power. The company suggestion was 65 horsepower which was equivalent to one millpower, a measure of water power which was locally well known.¹⁸²

The local newspaper reported that in the meeting in the Mayor's office on February 24, Manager Snow of the municipal plant said that "the City will never be able to advantageously furnish at a profit to the City

more than 65 horsepower from the city plant whereas the said company will be restricted from furnishing less than 100 horsepower."¹⁸⁹

At the meeting held in the Mayor's office on February 24, 1903, and at the legislative hearing held in Holyoke on February 27, significant comments concerning the 100 horsepower restriction were made as follows:

HWP Treasurer Winchester: He "thought the restriction of 100 horsepower too big a burden for the company. One millpower it was explained consisted of 65 horsepower. The National Blank Book Company and the White and Wyckoff Company do not use in total over 50 horsepower."¹⁸⁸

Mayor Chapin stated that "If the company proposed to cater to persons we should sell to, we should be unalterably opposed to the bill. But, as it is, we are limited to 16 millpowers (of water power from HWP = 775 kW). * We cannot buy any more of it. The officials of the city and the experts do not think we can furnish over 100 horsepower to private concerns."¹⁹⁰

City Solicitor Avery stated that he "with other city officials had been over the bill and that they felt that the city had been safeguarded in the bill. There is no building in the city that comes within a gunshot of using 100 horsepower."¹⁹⁰

Chronology of HWP 1903 Bill

1. On January 2, 1903, the HWP Directors voted to apply to the Legislature for authority to manufacture and distribute electricity for power purposes.
2. On February 6, the local newspaper published the desired "HWP Bill."
3. On February 24 a group of City officials, HWP officials and businessmen met with the Mayor to draft a bill to present to a meeting in Holyoke of the Legislative Committee. The "Amended Bill" was longer and more specific than the "HWP Bill."

* explanation in parentheses supplied.

4. On February 27, the Legislative Committee met. There were no local objections. However, the Legislative Committee was dissatisfied with the "Amended Bill."
5. The Mayor drafted a "Substitute Bill" which was published by the local newspaper on March 19.
6. On March 19, a delegation from Holyoke appeared before the Legislative Committee in Boston. En route by train, Mayor Chapin and HWP President Gross made further changes in the "Substitute Bill." It now became the "New Bill." The Legislative Committee agreed to allow the "New Bill" to be the Bill presented at the Legislative hearing.
7. On March 24 at the Legislative hearing in Boston there was solid local support and no opposition.
8. On May 15, 1903, after passing the House and the Senate, the Bill was signed by the Governor.
9. However, the Bill, as passed, included additional restrictions upon HWP which were not in the "New Bill" when it was heard by the Legislative Committee and which have been commented upon herein.
10. On June 10, 1903, at the Directors' Meeting, the President reported passage of legislation permitting HWP to manufacture and sell electricity for power purposes.
11. The matter of fact reporting in the Directors' minutes gives no intimation of the rocky road the bill traveled during the intervening six months.

Commentary

Following are some comments concerning the preceding account of the legislative process which took place in the passage of Chapter 350 of the Acts of 1903.

- o Five different bills were drafted as the legislative authorization for HWP to go into the electric business was being sought. Each of those bills which had public hearings had solid local support. There was never any local opposition.
- o Each successive bill, however, added more restrictions upon HWP. The sources of these restrictions seem to have been Mayor Chapin and the Legislature.

- Mayor Chapin had not been in favor of the City of Holyoke taking over the HWP property. However, after the voters decided otherwise, he undoubtedly felt that, as the City's chief executive, he was now duty bound to protect to the limit in the 1903 Act, the properties newly acquired from HWP.
- The Legislative Committee early on did not want HWP to have rights to distribute power throughout Hampden and Hampshire counties. In the bill which became law those rights were greatly limited.
- The electric business was in its early years in 1903. Electricity was direct current and was produced by generators of different voltages and was distributed over separate electric lines depending on whether it was for lighting or power uses. Thus, electricity for lighting and electricity for power were considered by the public as two separate products. Electric companies were called Electric Light and Power Companies. When alternating current came into use along with the transformer, the concept of different kinds of electricity, depending upon its uses, no longer was justified.
- There was a general feeling in Holyoke that the City would not seek power loads. This conclusion was reached because electricity was largely being generated by water power and the water power owned by the city was limited.
- It is doubtful if anyone, including those at HWP had any realization of how fast the demand for electricity was about to grow. Neither did they realize how fast the demand for firm power was going to surpass the ability of water power to satisfy it. Coal, oil, gas and eventually nuclear were to be the major sources of energy in the future.
- Over the years, the concept that the municipal plant would not be able to profitably sell power in over 100 horsepower amounts proved false. Fossil fuel electric plants became the source of base load power, and hydro supplied less and less of load growth.
- Other factors such as 100% debt financing and freedom from taxes of all kinds, made the municipal plant a potent competitor to HWP for the over 100 horsepower business. At the same time, the Act of 1903 gave the municipal plant a monopoly in the residential and commercial sectors and in the small power loads under 100 horsepower.

- o A further disadvantage of the 100 horsepower limitation has been that, if a new power customer should come to the city with a load of say 75 horsepower, HWP could not serve it. HWP could serve it only after it grew to 100 horsepower. But most customers would be reluctant to change suppliers unless there was a significant saving in cost to be made.
- o In addition, the problem of getting street franchises to run distribution lines in competition with the municipal plant was a difficult one.
- o HWP had very little leverage in the legislative process. The Directors had instructed the HWP management to apply to the Legislature "upon such conditions, as may be arranged with the City of Holyoke."¹⁹¹ Mayor Chapin and the Legislature combined to be very capable opposition.

COMMONWEALTH OF MASSACHUSETTS

— In the year One Thousand Nine Hundred and Three.

An Act To Authorize the Holyoke Water Power Company to Manufacture, Sell and Distribute Electricity for Power Purposes.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. The Holyoke Water Power Company, incorporated by chapter six of the acts of the year eighteen hundred and fifty-nine, is hereby authorized to manufacture electricity for power purposes, within the city of Holyoke and the town of South Hadley, and to sell and distribute the same in any of the cities and towns within the counties of Hampden or Hampshire, upon receiving the approval of the mayor and aldermen of any such city or of the selectmen of any such town: provided, however, that it shall not sell or deliver electricity to anyone purchaser in a quantity less than one hundred horse power at anytime, nor until it has made with such purchaser a written contract providing that such purchaser shall use such electricity in his own business only, and upon his own property, except that it may sell to any city or town within the counties of Hampden or Hampshire which has established or may hereafter establish a municipal lighting plant, and any such city or town may purchase of said company electricity in any quantity and for any purpose for which such city or town can legally use the same.

SECTION 2. The supreme judicial court and the superior court shall have jurisdiction in equity upon application of the mayor of any city or the selectmen of any town in which electricity shall be sold as aforesaid by the Holyoke Water Power Company to enjoin the said company from violating any provision of section one of this act, or to enjoin a purchaser under such written contract from violating the terms of said contract.

SECTION 3. Said Holyoke Water Power Company may erect and maintain necessary poles for the support of wires and may string and maintain wires thereon, in, through or over any streets or highways, subject however to the provisions of sections one to five, inclusive, of chapter one hundred and twenty-two, and of sections twenty-six and twenty-seven of chapter one hundred and twenty-one of the Revised Laws, and of all other general laws now or hereafter applicable thereto. And said company may lay its wires or any part thereof underground, upon obtaining the same permissions which are required for overhead lines by the foregoing provisions of the Revised Laws. Said company shall in all respects, except as otherwise provided herein, be subject to all general laws now or hereafter in force applicable to corporations engaged in the manufacture or sale of electricity for power, except street railway companies.

SECTION 4. Unless said company shall install a plant and furnish electricity under the provisions of this act within three years after the passage of this act all rights granted herein shall cease.

SECTION 5. The right to sell or distribute electricity under the provisions of this act shall cease at the end of ten years after the passage of this act, in every city or town in which said company shall not have entered upon the supply and sale of electricity for power in accordance with the terms of section one hereof.

SECTION 6. This act shall take effect upon its passage.

House of Representatives, May 12, 1903.

Passed to be enacted. S/James J. Myers Speaker

In Senate, May 13, 1903.

Passed to be enacted. S/George R. Jones— President.

May 15, 1903.

Approved. S/ John L. Bates

1. The underlined portion of this bill was added during its passage through the legislature after the last hearing on the bill.

2. At the same time, the words "and furnish" were substituted for "and be able to furnish."

Both of these changes were burdensome to Holyoke Water Power Company.

Generating Electric Power Again

The authority for HWP to return to the business of generating electricity was made possible by the passage of the enabling legislation which became effective May 15, 1903. It was Chapter 350 of the statutes of that year. The legislation required that the electric station be generating, distributing and furnishing electricity within three years.

Hydroelectric Plant at the Dam

At the June 10, 1903 meeting of the Company Directors, it was reported that the State Board of Harbor and Land Commissioners had been petitioned for permission to erect an electric plant in the bed of the river near the southerly abutment of the dam.

At the September 24 meeting, it was reported that, after having visited the site, the Commission on September 11 had granted a license to erect the plant.

By December 1903 the Engineering Department of HWP had prepared drawings for the power plant at the dam. It was to be a combination hydroelectric and steam electric station with an initial capacity of 750 kilowatts and with expansion opportunity for a total of four units or 3,000 kilowatts. A montage of these drawings is shown on a plan included herewith. Three areas of that drawing have been numbered 1, 2, and 3. Explanations of them follow.

General Description

The construction of the stone dam and its granite abutment wing walls was completed on January 5, 1900. The new power plant was to be located at the Holyoke end of the dam. It was to take water from the pond behind the dam through a headworks made by lowering the abutment wall and thus creating a forebay from which the water would flow to the generating units. It would then be discharged to a raceway or tailrace in the riverbed.

Area 1 is a cross section through the power plant showing the forebay, penstock, waterwheels, generator and reciprocating engine. The penstock was to be metal. The waterwheels were a horizontal pair of Francis type units discharging through a conical draft tube to a tailrace. The generator was of the horizontal type. On the far end of the shaft connecting the waterwheels with the generator was a reciprocating steam engine.

There must have been a clutch arrangement on the shaft to separate either the waterwheels or the engine from the generator. Both could not be connected to the shaft at the same time. The waterwheels also had to rotate in the opposite direction from the output shaft of the engine.

Area 2 is a plan view of the generating station. It was initially proposed to install only one 750 kW unit. The drawing in solid lines indicated a building and discharge channel for expansion to two units. The dotted lines indicated an expansion to four units or a total of 3,000 kW. As this is being written, there is a total of 30,000 kW of hydroelectric power being generated at this site.

The discharge channel was to be 600 feet long and 40 feet ¹⁹² wide for two units and eight or nine feet deep.

Area 3 is a plan view of the boiler house. The solid line indicates boilers to supply steam for two engines. However, only four boilers were to be originally installed. These were Manning vertical type boilers and were hand fired.

This drawing shows the railroad track which would bring coal to the site and shows the coal storage area. It also shows a track entering the power house over a trestle for delivery of the power station equipment.

At the July 6, 1904 Directors' Meeting, it was voted: "That in the opinion of the Board it is desirable to avail ourselves of the franchise, by the establishment and erection of an electric plant at the south abutment of the dam."

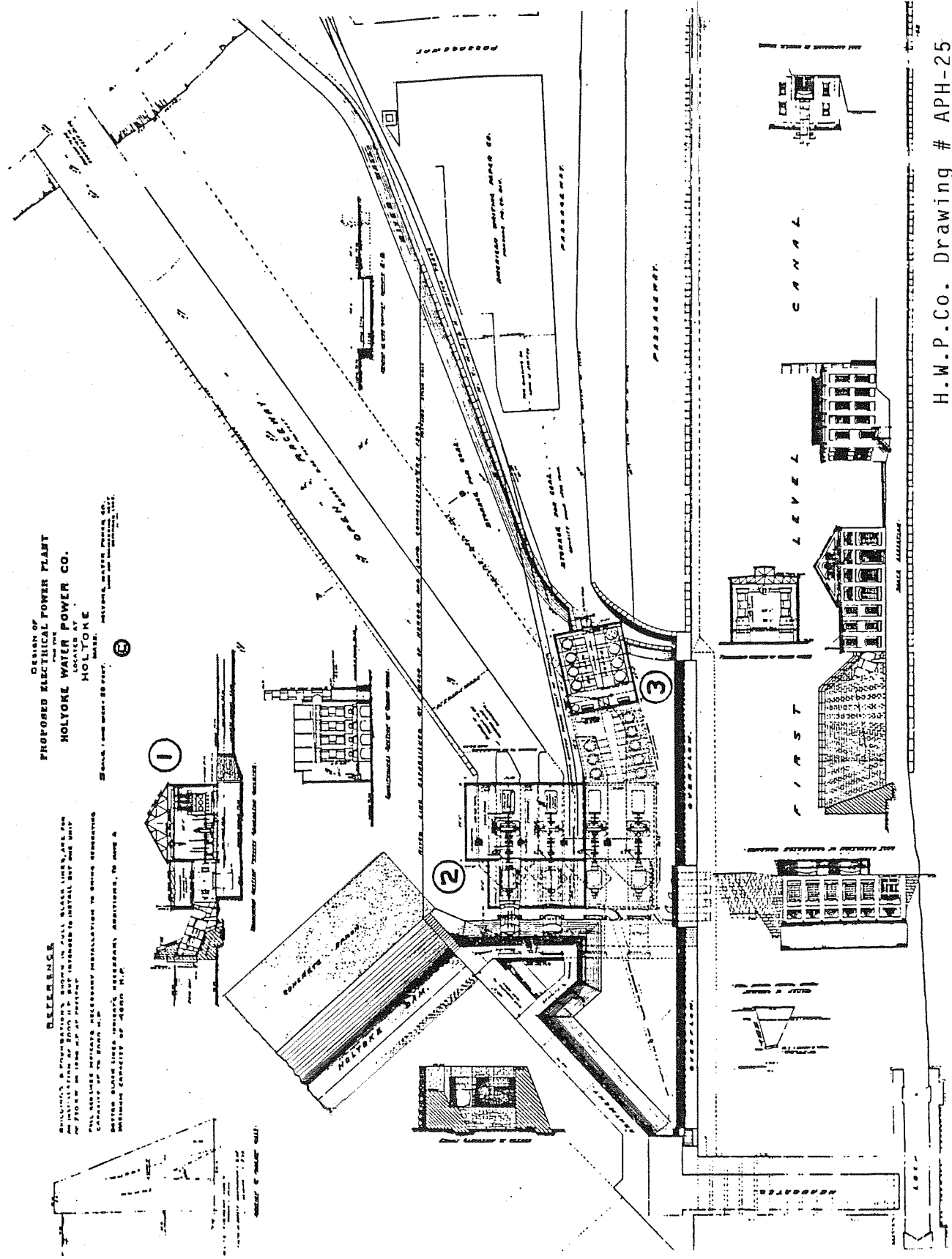
Flash Boards on the Dam Become an Issue

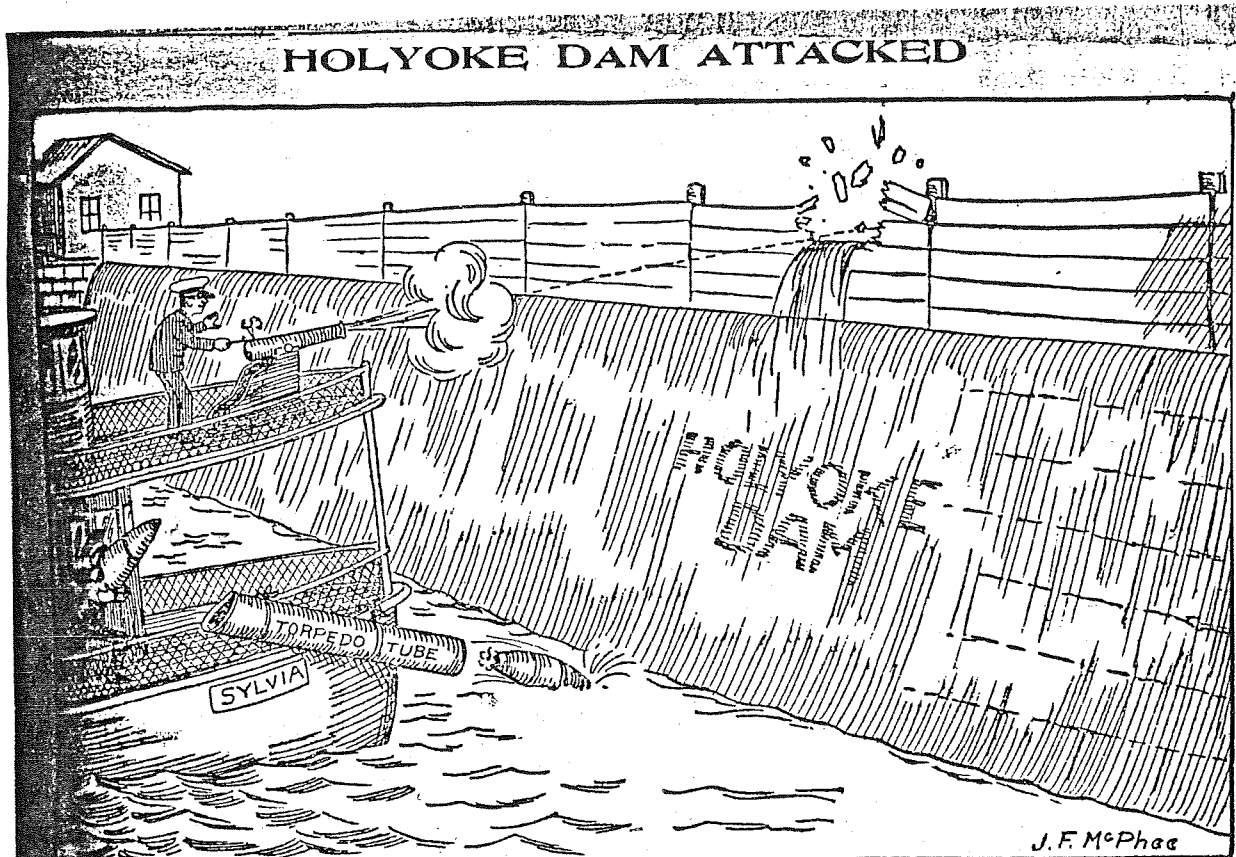
At the Directors' Meeting on September 14, 1904, it was reported by the President that a Captain Smith who ran a small excursion steamer on the river near Springfield had raised a question as to the right of HWP to maintain flashboards on the dam during periods of low water.

The President also reported that consulting engineers had been employed to make an exhaustive report upon the plans for the electric power plant at the dam. Their report as well as the studies by HWP engineers had been based upon the retention of water by flashboards during periods of low river flow.

DESIGN OF
PROPOSED ELECTRICAL POWER PLANT
 FOR THE
HOLYOKE WATER POWER CO.
 LOCATED AT
HOLYOKE MASS.

REFERENCE
 DRAWINGS & SPECIFICATIONS FOR ALL WORK SHALL BE THE PROPERTY OF THE HOLYOKE WATER POWER CO. AND SHALL BE KEPT AT THE OFFICE OF THE ENGINEER AT HOLYOKE MASS. ALL NECESSARY NECESSARY INSTALLATIONS TO BRING GENERATORS TO THE PLANT SHALL BE THE PROPERTY OF THE HOLYOKE WATER POWER CO. NECESSARY ADDITIONS TO BRING A PLANT TO THE CAPACITY OF 20,000 K.W.





(By Wireless from Holyoke.)

The converted cruiser Sylvania made an attack on the dam today and after getting the range Admiral Smith poured in a heavy fire, supplemented by damaging torpedo work by Commodore Broop and the crew. The Sylvania directed its fire against the flashboards, but withdrew before accomplishing utter destruction. "I'll get those dam flashboards down if it takes all Summer," the admiral as he retired to South Holyoke. The city is stirred up some.

The Holyoke Water Power Company is also in trouble, more fancied than real, however, in another quarter. Captain Smith, of the little pleasure yacht Sylvania, that plies between Springfield and Riverside Grove, Mass., and occasionally comes up to Holyoke, has through Charles E. Hoag, of Springfield, an attorney, made complaint against the flashboards being on the Holyoke dam, and made formal demand that they be taken off. In case this is not done, resting his case on the fact that the Connecticut River has been declared to be a navigable stream, he will demand of the United States Government that the boards be taken off. He alleges that putting on the boards keeps back the water and thereby interferes with his business upon the river. The Holyoke Water Power Company management is not losing any sleep over the matter, as they believe that they are clearly within their rights in the case. There is no navigation at the point where the dam is erected, and as for the flash boards they tend rather to keep the stream steady.

He also said that, pending the determination as to the right to use flashboards, it was impossible to decide upon the installation of a power plant at the dam.

At the Directors' Meeting on January 19, 1905, it was voted: "That in the opinion of the Board it is deemed to be inexpedient at this time to apply to the Legislature or to the Harbor and Land Commissioners for any new legislation or order affecting, or in relation to, said dam or flashboards."

Plant Location Changes

It was further voted: "That the executive officers be and they are hereby directed to have plans prepared and estimates obtained for a small temporary plant to be erected ready for operation previous to May 1, 1906, for the generation and distribution of electricity under the franchise granted to this company by an act of the General Court of Massachusetts approved May 15, 1903."

A portion of the minutes of the Directors' Meeting of March 23, 1905 reads as follows:

"Two preliminary plans of an Electric Power Plant to be erected in connection with a waste canal and overfall from the Second Level Canal to the Connecticut River, were exhibited and explained by Mr. A. F. Sickman and Mr. W. E. Sawin.

"Plan "A" locating plant west of the right of way of the Holyoke and Westfield R. Company, and plan "B" between said right of way and the Connecticut River.

"On motion it was voted: That the Executive Officers be and hereby are authorized to erect a power plant and waste canal with overflow, at such location as they may deem for the best interest of the Company, (plan "B" being preferred,) at an expense not exceeding three hundred and fifty thousand dollars."

Directors Authorize Construction

Thus, on March 23, 1905, the HWP directors authorized the company officers to build a power plant and have it operating and delivering electricity to a

100 horsepower customer all within 14 months. The assignment was tremendous in scope with an extremely short time schedule. The work consisted of:

- o Obtaining permission from the Massachusetts River and Harbor Commission for a proposed new river line on the Holyoke shore to accommodate the new plant.
- o Securing from the city government street franchises to allow the distribution of electric power.
- o Designing, constructing and equipping a new power plant.
- o Finding a 100 horsepower customer.
- o Building a transmission line to the customer.

An Appeal for Cooperation

Following is an editorial from the Holyoke Transcript which comments upon the decision of HWP to build a new power plant.

Holyoke Daily Transcript
May 22, 1905
A Case of Helping Hand.

"The promise that the extension of the power possibilities by the Holyoke Water Power company gives to Holyoke is too great to be lightly opposed. The gist of it is this: The Holyoke Water Power company, always able to look well after its own interests by the way, is going to expend a quarter of a million dollars or more to build a great power plant and get this power into the market. It is not going to expend this money for nothing or wait for people to happen along and make use of it. It is going to get the power ready and then it will do its tremendous best to get men and firms here to use this power. By the minimum limit placed on the lots of power to be sold there can be no competition with the Holyoke municipal power industry. The power of the future will be electrical. It will cost more than the old contracts for water power, but still will be very low in price. Indeed the old prices for water power here are

practically perpetual and were made at bargain counter rates. It was these low rates that built up Holyoke in a generation so that it was transformed from a few farms to one of the liveliest smaller cities in the East. The Holyoke Water Power company intends to make Holyoke grow just as much into the future as it can, since such growth is vastly for its own interests as well as for Holyoke. There will be no opposition to the request by the water power company for permission to send the power which it will have to sell through the streets. The holders of permanent water power privileges will ask to have their interests protected as they have every right to do. But they will wish to see the water power company extending its possibilities and Holyoke's possibilities to the utmost. Holyoke is going to go very fast into the future and it is to the great interest of every man with a dollar invested in Holyoke to see to it that all hands are extended for such material growth here, as is offered by this new power industry. It will help us all as it will help Holyoke."

River and Harbor Commission

A public hearing was held in Boston on April 26 by the River and Harbor Commissioners. Evidently there was no opposition because in late May the needed permission arrived in Holyoke. The Springfield newspaper reported on June 1 that upon receiving the news, "the whole engineering force was turned loose on the proposed site yesterday to do the preliminary work to the digging."¹⁹³

Street Franchises

On June 15 HWP appeared before the Holyoke Board of Aldermen in a public hearing requesting the right to erect poles and wires on certain public streets. The only opposition from the Board of Aldermen to the petition came from one Alderman who objected to the company having a right to cross the Willimansett bridge to Chicopee. He did not wish electricity generated in Holyoke to be used to build up that city.

The petition of the company included not only receiving street franchises from the city but also included obligations upon the company to give rights to gas line locations and to also sell electricity to the city under certain circumstances. A copy of that agreement is among the accompanying exhibits.¹⁹⁴

At the meeting of the Board of Aldermen on June 21, the petition of HWP to erect poles and string wires on certain public streets was granted.

Power Plant Construction

The plans for the new power plant were made public on April 11 and were published in the Holyoke and Springfield newspapers.¹⁹² A drawing showing the location of the proposed canal and power plant is included herewith.

It is believed that the construction of the project was divided between that which HWP did itself and that which was done by contractors. The Branch Canal was undoubtedly done by the company because of its past practice of building all the canals with its own labor force. The concrete foundation work, penstock installation and machinery erection was also probably done by HWP. Its employees had needed those skills when they built the electric power station on the First Level Canal.

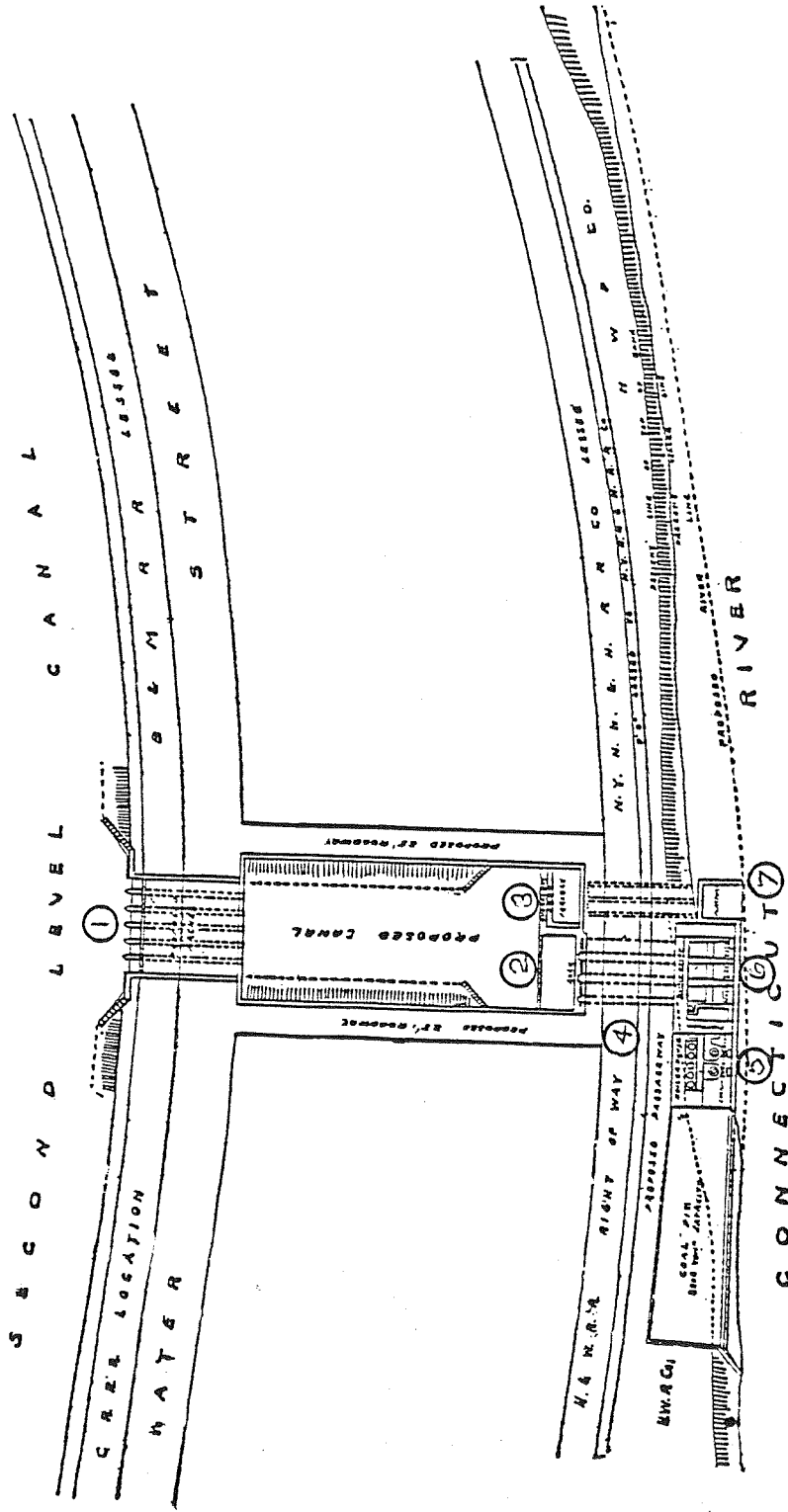
On August 21 a contract was let to Casper Ranger, Holyoke contractor, to build the power station, do the required stone work on the project and to construct the cofferdam.

Progress of Construction From Newspaper Reports

Holyoke Daily Transcript
August 21, 1905

THE POWER PLANT CONTRACTS
CASPER RANGER GETS THE MAIN CONTRACT. - WORK
TO BEGIN AT ONCE - WATER WHEELS TO J. & W. JOLLY

"The contract for the new power plant building of the Holyoke water power company has been let to Casper Ranger, who began immediately upon the work, and will push it as rapidly as possible until it is completed. The new building is to be built almost wholly of fireproof materials: the only wooden parts being the window frames and the doors; most of the rest, aside from the brick will be of concrete and iron. It will be a one-story building, 60 by 160 feet in size on the land side, and will be nearly 50 feet high on the river side. The contract for the



PLAN OF HOLYOKE WATER-POWER COMPANY'S PROPOSED NEW POWER PLANT.

Explanations

1. Masonry arches under railroad and roadway. Grooves for stop logs on canal side so that branch canal could be unwatered.
2. Racks for intake to waterwheels with stop log grooves for each penstock to allow its unwatering.
3. Overflow with four gates and flashboards for discharging waste water from the canal to a forebay and thence via arched waterways and under the railroad to a concrete bed and to the river.
4. Three penstocks leading to hydroelectric generators.
5. Steam electric portion of the plant consisting of six Manning hand fired vertical boilers and one 1,000 kilowatt steam turbine.
6. Hydroelectric portion of the plant with two 600 kilowatt generators and provision for a third.
7. Discharge of overflow to the river.

big brick chimney, 175 feet high and with a seven-foot flue, has been let to Dennis Landers. The foundation, 26 by 28 feet, is being built by the water power company.

"The contract has been let, for the water wheels to J. & W. Jolly of Holyoke, the McCormick turbine wheels being selected. There are to be two pairs of 42-inch wheels, horizontal pattern, with cases and fittings; and one 18-inch vertical wheel. Cases will be put in and connections made so that an additional pair of turbine wheels may be put in later if desired. Each pair will develop 1,035 horsepower. The grill work, the puddling and much of the concrete work will be done by the water power company, which will also put in the head gates, though Casper Ranger will do the stone work about them.

"The steam boilers remain to be let. The building is to be completed and machinery installed by December 1, according to contract. Contractors have agreed to push work with all speed, and within a few months the water power company hopes it will be able to furnish electrical energy in large and small quantities."

Holyoke Daily Transcript
August 24, 1905
BUILDING THE COFFERDAM

"Gang of Men Under Casper Ranger Getting Ready for the Water Power Company's New Power House.

"A large gang of men is at work, under Casper Ranger, building a cofferdam on the bank of the river just below where the new power house for the Holyoke Water Power company plant is to stand. They are building it out in the stream preparatory for the erection of the wall for the power house. Work is being rushed as the contract calls for the finishing of the job by December 1.

"The site takes up part of the old slaughter house site near the old pest house and is a busy scene just now with hundreds of men at work on the different jobs there. Many are working putting the finishing

touches on the brick work of the arches over which the Boston and Maine tracks will run, the water flowing from the second level canal through five mammoth arches, now practically completed and then through an open canal which has partly been dug before it falls through the big eleven foot penstocks creating the power which will be generated from the power house to be erected as told above.

"The foundation for the chimney is being put in. It is a solid one as is necessary from the fact that the chimney rises 175 feet above the foundation when completed."

Springfield Republican
September 6, 1905
Cofferdam Still There

"Owing to a misunderstanding in conversation with Contractor Casper Ranger, the statement was made in yesterday's Republican that the cofferdam at the new power plant of the Holyoke water-power company had been carried away. The cofferdam was damaged at the upper side and a large amount of gravel was washed in, but it is still there doing business at the old stand. It will be quite a number of days before work can be resumed upon the foundation at that place, as where the men were working Friday night is now 16 feet under water. A large amount of silt has also been washed in. Meantime the water-power company will take up other work, so as not to lose time, placing in position the three big penstocks, which they hope to lay Thursday. The brick arches that are to carry the roadway and the tracks will be completed Thursday also. Louis Tessier, who has been in charge of important work at South Hadley, at Mount Holyoke college, has been transferred to the water-power job.

Holyoke Daily Transcript
March 28, 1906

Water Let in Penstocks

"One of the new penstocks of the new water power plant had the water let partly into it yesterday for the purpose of finding the places where it leaked. There were but few of them and they were calked up this morning. The other two penstocks were also tested today in the same manner. It was the first time water had been admitted to them."

Holyoke Daily Transcript
April 5, 1906

Begin Supplying May 1

The New Power Plant of the Water Power Company Proceeds Well--Poles Being Set.

"The officials of the Holyoke Water Power company expect to have the plant in condition for the supplying of the power inside of another month. The plant itself is nearly ready now, the tests having all proven satisfactory. Work has begun on setting the poles for the first customer of the company, which will be the Pearl City Paper mill of J. Lewis Perkins. That is a two hundred and fifty horse power order and others will be attended to soon after. The new plant is counted on as giving a great boon to mills off the canals largely, and to be of great benefit to the city.

"At the power station itself all three of the water wheel sets have been tested out and work smoothly and almost noiselessly. As there is no gearing, the 500-kilowatt generator being coupled direct on to the water wheel shaft, they move with surprising quietness. They will revolve at a speed of 150 revolutions when running full power, which is quite a contrast with the speed of the steam generator and turbine set, which will revolve at 1,800 revolutions--12 times as fast. The steam set rests upon a truncated cone-shaped hollow base of concrete weighing 25 tons and the turbine and generator weigh 25 tons. Altogether with piping, etc., there is a total of 60 tons on the concrete floor. The three Manning

vertical boilers of 200 horse power each are in and there remains but the making of the connections. The feed water system is through brass piping and is quite elaborate, allowing water to be taken from the canal, from the river, or from the city water. The work on the switchboard is also well along."

Holyoke Daily Transcript
 April 30, 1906
 Power Plant in Operation.

"Power was used for the first time Saturday afternoon between 2:35 and 3:20 o'clock in the new electric plant of the Holyoke Water Power company with satisfactory results. Power exceeding perhaps a total of 300 horse power was distributed over the municipal lighting department wires in order to test the availability of furnishing the city power when occasion demands as well as to try the practicability of the new plant. R. C. Winchester, treasurer of the water power company, said this morning that, beyond the satisfactory distribution recorded, there were no new developments. The plant is due to be in operation tomorrow for a permanency and the prospects are excellent for the future. The B. F. Perkins company is one among those to first use the water power company's power from the new plant."

The company met the deadline date of May 15, 1906, for installing its plant with about two weeks to spare.

First Customer

The problem of furnishing electricity to a 100 horsepower customer was difficult. No customer with that power requirement could be found in Holyoke.

The preceding Transcript article of April 5, 1906, says that the first customer was to be the Pearl City Mill of J. Lewis Perkins. To reach that customer required building a transmission line six miles long. That was done in time for the May 15 deadline. However, the mill was not ready to use the power.

The man in charge of constructing the line was William Karle who subsequently became superintendent of the power plant. He often told how he solved the problem of lack of load at the mill. He built a large

electric heater which he placed in the brook supplying water to the mill. The heater used sufficient electricity in heating up the brook to meet the 100 horsepower requirement.

Open House

On September 27, 1906, HWP invited public officials, manufacturers and citizens of Holyoke and South Hadley to visit the new power plant. An account of the affair as told by one of the local newspapers is included herewith, along with editorial comment.

HWP took great pride in having such great Holyoke input into the construction of the plant. On the printed invitation to its guests it listed the local firms which had been major suppliers. A technical description of the power plant was also supplied to its guests. The list of the suppliers and the plant description are also included herewith.

NEW PLANT A BEAUTY

Electric Power Station Viewed

Holyoke Business Men Guests of The Water Power Company.

Scores on scores of business men, manufacturers, officials and guests of the Holyoke Water Power company went home last night after inspecting the company's new power plant and talked of the wonderful manufacturing possibilities it opens to Holyoke. Men who had never given it much consideration before talked it over among themselves or with their families. The new project just completed is now standing ready to furnish power to any plant in the city requiring 100 horse-power or over.

The very conception of the reception or inspection was a good one. It gave manufacturers and users of power a truer idea of what is at their disposal than sermons or descriptions or weeks of business interviews. The inspection was more than the word signifies. It was what the word means and more. It was also a social function for busy business men, one of those rare occasions when manufacturers come together in the afternoon very much as women sometimes met to drink Russian tea and indulge in those innocent pastimes, "The very latest."

Holyoke Telegram
September 29, 1906

President Gross of Hartford, Treasurer Winchester and Clerk Slickman of the company did the honors by way of circulating among their guests and making each feel welcome. In addition the other official force of the company took the guests over the plant explaining its workings and its possibilities.

The inspection lasted from 1 until 4, during which hours it is safe to say that every one of the larger business concerns of the city was represented. These must have been pleasant hours to the hosts, too, if deserved compliments and thanks bring pleasure. Heightening the social side was a most delicious buffet lunch served by the Bowlers and an after lunch cigar table on which cigars of every Holyoke make were arranged.

The plant itself beggars description. The story of it printed in last night's Telegram gives but faint idea of the structure itself or of the elaborate machinery there installed. Possibly the most striking features after all, were the little things about it. Every detail even to the oil cans and the oil trays are of the very nicest. The machinery shines like so much polished silver and the entire structure from top to bottom is as neat as a drawing room. Even the engine room with its stock of coal is immaculate.

Holyoke's another company, The Water Power, set Holyoke a good example and illustrated it yesterday at the opening of its new power plant. It gave us all a lesson on patronizing home industries. Everything that great plant contains which could reasonably be bought here at home or of our near neighbors was so purchased. There was no breaking of this rule. Everything from the building itself to the cigars the company served its guests was Holyoke made. Here is a beautiful example which ought to be taken home to every Holyoke heart. It is thoughtfulness of this kind, thoughtfulness for home companies, thoughtfulness for those with whom we live and have our business relations that helps build Holyoke.

CONSTRUCTION

General Contractor, MR. CASPER RANGER, Holyoke, Mass.

Brickwork, incl. Chimney, by Mr. D. J. Landers, .	Holyoke, Mass.
Cement, by Messrs. Prentiss, Brooks & Co., . . .	" "
Roofing and Water Proofing, by Mr. E. H. Friedrich,	" "
Plastering, by Mr. Frank Miner,	" "
Foundation Timbers, by Merrick Lumber Co., and Ely Lumber Co.,	" "
Penstocks, by Walsh Boiler Works,	" "
Boilers and Breeching, by Holyoke Steam Boiler Works,	" "
Water Wheels and Cases, by Messrs. J. & W. Jolly,	" "
Pumps and Condenser, by Deane Steam Pump Co.,	" "
Steam and Water Piping, by Holyoke Valve and Hydrant Company,	" "
Castings, by Holyoke Machine Company and Mr. E. H. McHugh,	" "
Hardware Supplies and Bridge Steel, by Messrs. J. Russell & Co. and G. E. Russell & Co., . . .	" "
Plumbing, by Mr. C. F. Sullivan,	" "
Boiler and Pipe Covering, by Mr. C. F. Sullivan, .	" "
Governor Belting, by Holyoke Belting Co., . . .	" "
Oil Tanks, by Chase & Cooledge Co.,	" "
Electrical Equipment, by General Electric Co., .	Boston, Mass.
Crane, by Whiting Foundry Equipment Co., . . .	Chicago, Ill.
Water Wheel Governors, by Lombard Governor Co.,	Ashland, Mass.
Track, by Mr. C. W. Hunt,	New York, N. Y.
Feed Water Heater, by National Heater Co., . . .	New Haven, Ct.

Excavating started June 9, 1905.

Current supplied from the Plant on and after April 28, 1906.

Construction

The Legislation authorizing HWP to be in the electric business required that it build a generating station and be in business within three years, or by May 15, 1906. The Company had spent nearly two years in trying to get a plant at the dam underway. On January 19, 1905 the Directors voted to abandon that idea and order that a plant be constructed and in operation at another location before May 15, 1906. HWP beat that deadline by about two weeks.

The building and equipping of this power plant took an elapsed time of 323 days. Assuming a six-day work week, with no work being done on Sundays, the construction time including canal excavation was 279 days. The plant contained two 600 kW hydroelectric generators and one 500 kW steam turbine. Much of the construction work had to be done in winter weather. Modern mechanical construction equipment was unknown at that time.

Much credit must go to the HWP management in 1905 and 1906 for being able to construct such a major project within so short a time.

Commentary

As we review the period from 1895 to 1905 in this history of HWP we are struck with the great abilities with which this small company met and coped successfully with such major issues.

During this period the company built the stone dam. For its time it was a very major construction project requiring five years to complete. Engineering and construction skills of a high order were needed.

The dam was hardly finished when the company faced the political battle of trying to continue in the electric and gas streetlighting business which they had developed in the city. After two votes by the electorate the company lost. Then came the long and critical legal case before the Supreme Court appointees to determine fair value for their properties. In this they were successful.

Next in 1903 came the effort to go back into electric power business on a limited basis. This right was granted although the limitations placed upon the company were severe.

Finally came the successful effort, in 1905 and 1906 of building a combined hydroelectric and steam electric plant, including extensive canal construction, and a six-mile transmission line, all in a 11-month period.

As one who carried the full responsibility of operating HWP for 29 years, this writer stands in awe at the management skills of the small group of men which ran the company during that 10-year period.

1909 Charter Amendment

The first public announcement in 1909, that HWP would ask for changes in its charter, came in the local newspapers of January 16 and 17. Those changes would allow the company to sell electricity in less than 100 horsepower quantities to tenants in its own mill buildings.

The decision to seek this modification was evidently spurred on by one of Holyoke's then largest manufacturers, the Farr Alpaca Company, which wished to expand its operations on to HWP property. There were 14 small manufacturers located on that site in HWP buildings.¹⁹⁵

HWP Proposal

The proposal of the company was to add a section to its 1903 Act as follows:

"That it may sell electricity in any quantity to and for any use on the premises of any tenant or tenants occupying the whole or any portion of any building or buildings in Holyoke which said Holyoke Water Power company has constructed or acquired since the first day of January, 1909, or which it may hereafter construct or acquire, and any such tenant may purchase of said company electricity in any quantity and for any use on his premises, but this right shall continue only so long as said Holyoke Water Power company shall continue to own or have an interest by virtue of mortgage in said building or buildings."¹⁹⁶

Real Estate Transaction - HWP and Farr Alpaca

Concurrently with the announcement of the proposed new legislation there came word concerning the consummation of the real estate arrangements between HWP and the Farr Alpaca Company as follows.

"BIG DEALS CLOSED.
WATER POWER CO. WILL BUILD MILL"

"Asks City for Privilege to Sell Electricity to Tenants - Farr Alpaca Co. Will Build New Mill and Water Power Co. Will Build for Tenants on Present Tract."

"Today brought to pass some of the biggest real estate deals which have taken place in Holyoke in many years. It is stated on good authority that the Farr Alpaca company has purchased the big strip of land on Bigelow street, between Appleton and Cabot streets, which was referred to in The Transcript several days ago. The Farr company will take over this property and the fourteen concerns which are now doing business there will have to move.

"But they will not have to leave Holyoke as the Holyoke Water Power company has decided to build a large mill for light manufacturing purposes and will house the tenants. The deals were closed today. Mayor Avery received a communication from the water power company asking the aldermen for permission to amend their charter by including the right to sell electricity in any quantity to tenants in buildings which they own or on which they hold a mortgage. The privilege is asked to begin with January 1. The rights will cease when the company relinquishes the ownership of the building.

"Asked this afternoon if the water power company had decided to erect a new mill for manufacturing purposes, R. C. Winchester said that the company had to do something to house its tenants and would build a mill. He was not ready at this time to give the dimensions or location of the new structure. He stated that his company had applied for the right to sell electricity to its tenants in the city. At the present time the company is not allowed to sell less than 100 horsepower under its charter.

"The sale of the big strip of property on Bigelow street to the Farr company means that the present brick structures on that strip of land will be razed to make room for the new mill which the Farr company proposes to build in the spring. The water power

company will take the matter of building a large mill for small concerns on its small shoulders providing of course that it can get the right to sell electricity for power and lighting to its tenants. If this privilege cannot be obtained, of course, the company will not build and the tenants of the company on Bigelow street will have to look elsewhere for locations."¹⁹⁷

Public Support Sought - Bill Becomes More Restrictive

The company sought the support of the city government in this charter revision and met with the municipal lighting, and trades and industries committees of the Board of Aldermen as well as with the City Solicitor. In that process the bill became somewhat more restricted. The original bill allowed HWP to acquire in any manner and at any time industrial buildings and to sell electricity to the tenants in them in any quantity.

The revised bill allowed the company to acquire buildings in that manner only from January 1, 1909 to July 1, 1909. The bill also allowed HWP to sell in less than 100 horsepower amounts to tenants in mill buildings that it had constructed since January 1, 1909 or which it had thereafter acquired through foreclosure proceedings.

However, such right to sell electricity in small quantities would continue only so long as the company continued to own the property or have an interest in it by virtue of a purchase money mortgage.

Hearing Before Board of Aldermen

The bill as modified was heard before the Board of Aldermen on January 25. The audience of over 300 was so big that the large city hall auditorium had to be used. There was very strong support for the HWP bill from the business community. Organized labor was opposed.¹⁹⁸

Major support for the bill then came from J. Metcalf, the Treasurer of the Farr Alpaca Company who wrote a letter to Senator Mahoney who was opposing the bill. That letter was published in one of the local newspapers.¹⁹⁹ The letter explains the need of his company to expand on to property owned by HWP on which several small industries were located. The HWP bill would make possible the relocation of those industries.

List of Firms to Be Displaced"Water Power Tenants"

"Below is a list of the companies which are now in buildings owned by the water power company and which will be obliged to move at the expiration of their leases if the Farr Alpaca company purchases the land contemplated. The floor space they use and the leased horse power each one has is also given. This power at the present time is furnished by the Holyoke water power company.

Holyoke Belting Co., 19,114 square feet floor,
9-10 hour h. p. leased.

C. Elmer Paper Co., 7,002 square feet floor,
47.5-24 hour h. p. leased.

Thaddeus Cahill, 9,854 square feet floor, 15-10
hour h. p. leased.

Holyoke Bar Co., 13,165 square feet floor, 40-10
hour h. p. leased.

Ezra L. Deane, 2,561 square feet floor,
10-10 hour h. p. leased.

Mary F. O'Connor, 2,871 square feet floor, 5-10
hour h. p. leased.

Frank William, 2,280 square feet floor,
8-10 hour h. p. leased.

Boston Saw & Tool Co., 646 square feet,
2-10 hour h. p. leased.

John H. Lee, 875 square feet floor,
5-10 hour h. p. leased.

Barlow Manufacturing Co. 13,744 square feet
floor, 15-10 hour h. p. leased."²⁰⁰

Leasing of Mechanical Power

The list of occupants in the HWP properties who would be displaced by the HWP-Farr Alpaca transaction is given because it illustrates the manner in which the tenants contracted for their mechanical power.

The source of that power was the waterwheels owned by HWP on the site. The output of the waterwheels by means of gears, pulleys and belts was carried to main lines of steel shafting running through the mills. Each industry made its own arrangements to connect its belting to the main shafting. That belting then led to further shafting and pulleys connected to its machinery.

Industries which needed power for only one shift operation leased 10 hour power. A mill with continuous operation such as a paper mill, leased 24 hour power. The preceding list gives the number of 10 hour horsepower or 24 hour horsepower that each tenant had leased along with the square feet of space occupied. Today, we have no knowledge as to how the tenants paid for the power. We can only assume that they paid for the right to use the stated number of horsepower, and that the payment was made monthly at a set number of dollars per horse power, regardless of the actual use of the energy.

Crippling Amendments Offered

A conference concerning the proposed legislation was held on February 22, with Mayor Avery, Senator Mahoney and Treasurer Winchester of HWP. At that conference, Senator Mahoney opposed the bill and suggested that its passage be contingent upon a referendum in its favor by the voters of Holyoke. Mayor Avery then suggested an amendment to the bill that would give the Mayor and Board of Aldermen the right to pass on the question of the sale of electricity, in any building in the city that was rented, before HWP could equip and use it.²⁰¹

Opposition to the Amendments

There was strong opposition in Holyoke to the crippling amendments being proposed by Senator Mahoney. Most prominent was a petition signed by the leading industries in the city. They were the following:

"Farr Alpaca Co., J. Metcalf.
 American Thread Co., C. W. Ryder, Asst. Agent.
 Casper Ranger.
 American Writing Paper Co., G. B. Holbrook,
 Treasurer.
 Valley Paper Co., C. B. Prescott, Treasurer.
 Whiting Paper Co., W. F. Whiting, Treasurer.
 William Skinner Manufacturing Co., William
 Skinner, president

Judd Paper Co.
 Ely Lumber Co.
 Powers Paper Co.
 Merrick Lumber Co.
 Eureka Ruling and Binding Co.
 White and Wyckoff.
 B. F. Perkins & Sons.
 Japanese Tissue Mills.
 Parsons Paper Company.
 Bullard Thread Company.
 Germania Mills.
 Holyoke Warp Company.
 Beebe-Webber Company.
 Holyoke Machine Company.
 Deane Steam Pump Company.
 Holyoke Valve & Hydrant Company.
 Whitmore Manufacturing Company.
 White Paper Box Company.
 Holyoke Plush Company.
 American Pad & Paper Company.
 National Blank Book Company.
 Geo. W. Prentiss Company."202

Treasurer Winchester of HWP issued a strong statement opposing the amendments. It follows:

"The Holyoke Water Power company will not agree to any more amendments to this bill. The bill has been amended by Mayor Avery and the city solicitor and it has been adopted by the board of aldermen, the Business Men's association, the manufacturers and other citizens interested in the future of Holyoke.

"There isn't one single thing in the bill which will injure Holyoke but there are many things which will be of great benefit to the city. We expected that the bill would pass the Senate last week and become law by March 1. If the Farr Alpaca company is to have the land on Bigelow street for an addition the present tenants must vacate by April 1. If this is to be done the bill must go through now.

"If the bill does not pass, the water power company will not be responsible for the failure of the new mills locating in Holyoke. We have the money to build mills and the company has voted to do business with live concerns. We will build mills for any company which can show us that they mean business. In doing this we are growing and

Holyoke is prospering. We have the money and the land and will build but we must have the right to sell power in order to carry out our plans. The company has a heavy interest in the development of Holyoke. We have a large electric plant and we are paying heavy taxes. We could go ahead and build a mill and install a power plant in it without any bill being passed but we desire to generate the power from our big plant. But this bill must pass as it is without any more amendments or the company does not want it."²⁰³

Power Bill Passed

(Bill As Submitted)

The legislation amending the HWP charter was signed into law on March 8, 1909. It was passed without further changes. A comparison of the wording of the bill as submitted, and as passed, follows:

"That it may sell electricity in any quantity to and for any use on the premises of any tenant or tenants occupying the whole or any portion of any building or buildings in Holyoke which said Holyoke Water Power company has constructed or acquired since the first day of January, 1909, or which it may hereafter construct or acquire, and any such tenant may purchase of said company electricity in any quantity and for any use on his premises, but this right shall continue only so long as said Holyoke Water Power company shall continue to own or have an interest by virtue of mortgage in said building or buildings."¹⁹⁶

(Bill As Passed Except for Grammatical Changes)

"That it may sell electricity in any quantity to, and for any use on the premises of, any tenant or tenants occupying the whole or any portion of any mill or factory building or buildings in Holyoke which said Holyoke Water Power company has (a) acquired or may acquire between the first day of January, 1909, and the first day of July, 1909; (b) of any such mill or factory building or buildings which said Company has constructed since the first day of January, 1909, or may hereafter construct; (c) of any

such mill or factory building or buildings which said company may hereafter acquire through foreclosure proceedings, or under a foreclosure sale, or a real estate purchase money mortgage in which said Company is the mortgagee.

"Any such tenant or tenants of any such building or buildings may purchase of said Company electricity in any quantity and for any use on such tenant's or tenants' premises; but this right shall continue only so long as said Holyoke Water Power company shall continue to own, or have an interest by virtue of a real estate purchase money mortgage in said building or buildings so acquired or constructed by it as aforesaid."²⁰⁴

The passage of the legislation was met with enthusiasm in Holyoke. The local press carried banner headlines and forecast a "Boom" for Holyoke.²⁰⁵

HWP Policy Concerning Buildings for Industry

At the conference with Mayor Avery and Senator Mahoney, Treasurer Winchester, as reported in the press on February 1, set forth the plans of HWP for meeting the need for industrial space. The account of his remarks follows:

"Treasurer Winchester announced to the committee that the company does not propose to erect a new building at present. It proposes to acquire a building already constructed to house the small industries that will be thrown out of quarters by the enlargement of the Farr Alpaca company. Treasurer Winchester said that should it come about however, that reputable and responsible concerns need capital for new buildings, the water power company will lend its financial aid or build the mill wanted. Of course under such circumstances, it will be expected that the concerns benefited will secure their electric energy from the Water Power company in the event of the present bill as amended being approved by the Legislature.

But there will be no 'Cabot street mill building' erected in expectation of securing small industrial tenants."²⁰⁶

Actions Triggered by Passage of 1909 Bill

HWP

On March 18, ten days after the passage of the 1909 Bill, the Directors made several decisions which were inspired by the charter change. These were:

The purchase of a mill on Winter Street from Casper Ranger for \$55,000 and the lease of it to the Holyoke Belting Company, one of the companies displaced by the Farr Alpaca land purchase.

The sale of land to another of the displaced companies, the Holyoke Bar Company, for the erection of a factory building. HWP took back a mortgage for the cost of the land plus one-half the cost of the building.

The erection of a factory building on Winter Street for the Smith Tablet Company. That company leased the building for five years and then purchased it.

The sale of land to the Goetz Silk Company for the erection of a factory building located at the corner of Jackson and South Canal Streets. HWP received a mortgage amounting to the cost of the land plus 55% of the cost of the building.

Farr Alpaca

As soon as Holyoke Belting Company moved to Winter Street, the company tore down its building on Bigelow Street to make way for new weave sheds. The sheds were built to accommodate between 500 and 600 new looms.

The company started the construction of a new mill on Jackson Street which was 216 feet long and 65 feet wide and four stories high. It was to be used as an addition to its dyeing and finishing facilities.

On another parcel of land on the east side of Bigelow Street, the company began the construction of a warehouse building 150 feet long and 50 feet wide. This site was formerly owned by HWP and on which several small industries were located. These had to be moved before construction could get underway.

New buildings were built on Race Street by the company for John H. Lee and Barlow Manufacturing Company who had been displaced by its land purchase.

The Treasurer of the company said that the new construction then underway would mean employment for 1,000 additional people and an added payroll of hundreds of thousands of dollars.²⁰⁵

1910 - 1920

1910 to 1920

The years following the 1909 amendment were turbulent ones. The euphoria in Holyoke, with its anticipation of a boom economy, changed to criticism of HWP when an influx of new industries did not occur.

Agitation to Repeal the 1909 Legislation

On February 7, 1911, less than two years after the passage of the charter amendment, one of the local newspapers was taking HWP to task. It claimed that the company had promised a vigorous campaign for the building up of Holyoke industries and the immediate erection of a large building suitable for housing small industries. Mayor White said that HWP "had obviously failed to fulfill promises made publicly at the time..."

The newspaper further commented that "investigators have decided to introduce an order before long in the Board of Aldermen calling for the repeal of the act passed two years ago and to present the matter before the 1912 session of the Legislature."²⁰⁹

Response of HWP

On February 8, 1911, Treasurer Winchester replied to the article through the columns of the other local newspaper with "emphatic and unqualified denials of the charges." He said that every firm which had been forced to vacate the mill site purchased by Farr Alpaca had found new quarters. They had either moved in buildings made available by HWP, the Farr Alpaca or which they had found on their own. He said that the company had originally planned to construct a large general mill on Commercial Street for those firms. However, there was now no need for such a general mill.²¹⁰

The reply of Mr. Winchester seemed to lay to rest the movement to repeal the 1909 charter amendment.

Charges of HWP Charter Violations

On March 4, 1912 a special meeting of the Holyoke Board of Trade was held to discuss matters of concern to the business community. Among the speakers was Mayor John J. White. At the conclusion of his comments he said that for years complaints have been made

against the Holyoke Water Power Company which, it has been claimed, has retarded the growth of the city. He said that documents have been filed with him which would tend to show a violation of its charter and that those documents are to be placed in the hands of the Attorney General with a request that action be taken.

Response of HWP

At the directors' meeting of the company on March 21, the Mayor's alleged charter violations were discussed. The directors considered the charges by the Mayor to be extremely serious. There ensued four letters concerning the matter which were published in the local newspaper by request of the company. They were:

- o A letter from HWP giving the votes of the directors which requested the Mayor to file his charges with the Attorney General promptly or give the company a definite written statement of the alleged violations. This was delivered to the Mayor by hand on March 23.
- o The Mayor's reply which was not sent to the company but which was given to the newspaper for publication on March 23. The reply repeated his earlier charges.
- o A letter from HWP to Mayor White dated March 25 in which the company offered to supply him with any contracts or deeds which he might need in his investigations.
- o A letter from HWP to Mayor White dated March 27 which included, and commented upon, a letter which the Mayor had sent to hydraulic customers of the company. That letter advised them that he, the Mayor, was about to inform the proper State authorities of certain facts concerning the HWP's charter rights. He advised them not to conclude any pending contractual negotiations with the company until the State authorities had taken action on these matters.

In this letter to Mayor White, President Gross referred to the Mayor's letter to the water power lessees as a "high handed interference with our rights and business." He wrote that "such a statement is libelous." He concluded with the following sentence: "We therefore demand that you at once notify in writing each and every party to whom you have sent your circular letter and this

company also, in what way you claim that this company has acted illegally or has violated any provision of its charter, or else that you retract each and every statement which you have made to them, and any of them, and to the public generally."

- o A letter from Mayor White to President Gross dated March 25 and received on March 28 reiterated his charges of charter violations²¹¹ and gave no change from his original position.

Newspaper Criticism and Response of President Gross

An editorial critical of HWP appeared on the same date which read as follows:

"Fire from the Anvil"

"The Holyoke Water Power Company evidently intended to make its issue with Mayor White a personal one. Their wide publication of a challenge and a threat to that gentlemen today is characteristic of corporations the country over when they feel that they have the whip hand in any situation that arises. But the water power company might as well realize now as at some future date that it is a community that it is lined up against and that if they succeed in eliminating Mayor White that there will be other men ready and willing to step forward and carry on the fight provided there is any ground to make a fight on."²¹²

The other daily newspaper on the same day as the publication of the preceding letters and editorial, carried an announcement that Mayor White would seek re-election. In talking about the controversy between himself and HWP the Mayor said: "There is a sentiment throughout the city that the power company has been responsible for retarding the city's growth and there is a strong feeling against the company by many of the citizens."²¹³

President Gross of HWP spoke to a meeting of the Holyoke Board of Trade on October 14, 1912. It was thoroughly covered by the Holyoke Transcript, the Holyoke Telegram, the Springfield Union and the Springfield Republican. Among the many subjects covered by the President was the charter violation issue.

Following is an excerpt from a local newspaper of October 15 in which Mr. Gross refers to recent correspondence with the Mayor about the matter.

"Mr. Gross read four letters, one dated Sept. 23rd, in which he asked the Mayor to make public announcement of the fact that he had been misinformed as to the point of illegality in the manner of their conducting business. To this he stated that Mr. White had made no reply. Another letter was sent October 10th and the reply was dated the 11th of October in which the Mayor said that it was very probable that Legislative action would be required in the case. The final letter from the Water Power company, to the Mayor was dated the 12th of October."²¹⁴

The issue of charter violation surfaced once more on April 1, 1913 at a Board of Aldermen meeting. It was reported in the local press for April 2 that Alderman Long had filed an order requesting Mayor White to place before the Board all evidence that HWP had violated its charter. Alderman Albert Archambault said the charges "are one big boomerang. They are simply a neck saver for His Honor. I think we are duty bound to investigate these charges and discover their truth or lack of truth."

President of the Board Bosworth ruled that the order did not come within the province of the Board. He said, "We have no right to dictate to the Mayor."²¹⁵

No further mention of the charter violation issue has been found in the company records or in the newspapers.

Eminent Domain - Industrial High School Land

One of the rare instances when the City of Holyoke resorted to eminent domain proceedings to procure land from HWP occurred in 1912. The city was anxious to procure a site for a building to house an Industrial High School and a gymnasium. The site chosen was across Sargeant Street from the then High School.

On December 17 Mayor White went before the Board of Aldermen to explain why he was urging eminent domain proceedings. He said that the assessed value of the site was \$7,000 and that the asking price was \$45,000. He saw no use in dickering for a lower price because it was so far above the assessed valuation. The Board passed the eminent domain order that night.²¹⁶

The Company had received unfavorable publicity in the local press concerning its asking price. An editorial in one of the local newspapers carried such comments as:

"All the pupils of our High School and the citizens interested in the High School gymnasium in this way have brought home to themselves the plight in which people desiring to build homes or manufacturing sites in Holyoke find themselves because of the high cost of land."

"The Water Power Company may well grin and say to the High School pupils and citizens who want to improve the health conditions at the High School. 'That's our price; now what are you going to do about it.'"

"Is Holyoke to be clutched powerless in the grip of such a hard bargainer?"

"Or is Holyoke ever to find a fitting freedom from such a bondage?"²¹⁷

Three years later, in December, the eminent domain case was settled out of court. The price agreed to by the City and the company was \$45,000. This was the original asking price of HWP."²¹⁸

Absentee Landlordism

In 1911 and 1912 HWP was being accused of preventing the industrial growth of the city. Examples were given of firms which were growing and needing land to build on. It was claimed that they were forced to move elsewhere because of high costs of HWP land. Portions of two editorials from a local newspaper expressing concern over HWP policies follow:

Holyoke Telegram

Between October 6 and December 10, 1911
"Get Together"

"Every citizen should be personally concerned in the causes that lead to Holyoke's growth or retards its growth.

"The declaration made many a time and oft, that the Water Power Company is the greatest single cause for the retardation of Holyoke's growth receives new life from the fact that our Mayor again declares this to be a fact.

"The Telegram declares that the growth of Holyoke and the growth of its corporations as

well as its citizens should go hand in hand wherever possible. But the growth of the city itself should not be retarded by any corporation or citizen or group of citizens.

"The general interest of the entire city must be held greater than that of any corporation.

"Reuben C. Winchester the fine gentleman and present efficient local manager of the Water Power Company, if his powers were extended doubtless would give to Holyoke as many liberal concessions as good business judgment for his company would warrant, but his power is so limited and defined that the Holyoke spirit which actuates him, cannot be put into action.

"The majority of the directors and stockholders of that concern live outside of our city, don't share the Holyoke spirit, possibly believe that the Company's past liberality has been sufficient and will point to the things done in the by-gone days by the Water Power Company. It is but natural for them to be more concerned in the Company's earnings than in the city.

"However, the city's healthful growth demands sites for new enterprises, demands both electric and water power for new manufacturing and demands that both land and power be furnished at a rate to make them attractive to prospective Holyoke enterprises.

"When the failure of efforts of our Board of Trade to acquire new business industries to come into Holyoke is commented upon we meet the invariable answers which might all be condensed into one and would be that when it came to offering inducements to the new concerns the Board of Trade went up against a stone wall and that stone wall was the Water Power Company.

"That Company should not assume the 'What you are going to do about it' attitude, but

the officials of the city and the Water Power Company should get together for the best advantage of both and help make a more enterprising city of Holyoke."

Holyoke Telegram
"Absentee Landlordism"
August 20, 1912

"Citizens interested in the welfare and progress of Holyoke are looking at the action of the Church Manufacturing Company as an example of the conditions surrounding small manufacturing in our city.

"The one thing that induced them to prefer to leave Holyoke is the high cost of manufacturing sites in Holyoke.

"Those responsible for the high cost of manufacturing sites are the owners of manufacturing land in Holyoke.

"In Holyoke the Water Power Company is almost the exclusive owner of those land sites.

"The Water Power Company holds the key to the situation and it seems to be up to them for the present to decide whether Holyoke shall thrive with a new growth or whether Holyoke shall see even little Willimansett grow while Holyoke is standing still.

"Everyone knows that Holyoke's larger growth could be better developed by getting new and varied industries into Holyoke instead of driving the varied manufacturing interests out of Holyoke.

"Mr. Winchester, the present efficient head of the Water Power Company, should be given greater power to exercise his own best judgment and the Telegram is confident that if he were given extended power, conditions would be changed vastly from the present policy which looks at only the present dividend yield to the company.

"That policy neglects the future of Holyoke as well as the future of the Water Power Company.

"What is wronged Holyoke going to do about it?

"What are the citizens interested in the larger growth and life of Holyoke going to do about it?

"Some remedy must be found to prevent the growth of Holyoke being retarded by any corporation.

"Perhaps the prices that are asked for land would be interesting to the tax assessor of our city.

"Perhaps the annexation of Willimansett would put a land competition in the field now extensively controlled by the Holyoke Water Power Company.

"At any rate the Holyoke public should not sit idly by and allow the city's growth to be stunted by absentee landlordism."

President Gross' Response

At the October 14, 1912 meeting of the Holyoke Board of Trade at which Mr. Gross spoke about the charter violation issue he also responded to the editorial criticisms as follows:

"From time to time criticism has been directed through the press or by certain individuals against the action or the lack of

action of the Holyoke Water Power company. It is not my plan to tell of the things that we have done in the past or intend to do in the future, but, I will go into a history a little to show that if there exists any misunderstanding on the matter, that it is on your part and not on ours.

"I believe all historians of Holyoke have admitted that if it had not been for the Connecticut money invested in Holyoke, that it would never have been a city as it is. In 1857 the Hadley Falls company failed. The receivers of the company tried every means within their power to raise the money to keep up the work but in December of 1858 the Supreme Court of the state of Massachusetts ordered the sale of the property. Then the three receivers and one other were incorporated as the Holyoke Water Power company and they attempted to raise the money to take over the company but they could not do it as the country was only just recovering from the panic of 1857.

"At that time Alfred Smith, a Hartford lawyer, had become interested and enthusiastic over the possibilities of the development of power at Holyoke and he went to work among his personal friends in Hartford and raised \$234,500 and this was in February of 1859. He came to Holyoke, and only one man who invested \$300, was willing to assist in the venture. In South Hadley he raised \$1,200 and in Springfield \$19,000, while in all the rest of Massachusetts the amount secured was \$101,000, of which two relatives of Mr. Smith contributed \$35,000.

"Returning to Hartford, James Goodwin subscribed \$65,000, a fortune in those days. On the board of directors at the present time there are four men representing the original stockholders. Is it a crime for us to represent that stock? We are greeted with the cry of absentee landlordism which means something in Ireland, but has no meaning at all in Holyoke.

"The presidents of the Holyoke Water Power company have always been non-residents of Holyoke. The treasurers have always been residents of the city. It has been the policy of the board of directors never to have a

director from Holyoke because they felt that it would create a feeling of jealousy among the lessees of the Holyoke Water Power company if one of their number was made a member of the advisory board.

"The keynote of our success as a business organization has been the absolute judicial fairness of our policy of treatment of all with whom we have business dealings. We do not deal with the mills individually, but collectively and the same conditions that are imposed for one holds for another situated alike and enjoying the same advantages.

"Returning to the matter of stockholders, in 1899, there were eight Holyokers who held stock in the Holyoke Water Power company. In January of this year there were 84, holding a total of 695 shares and including many of your most prominent citizens."²¹⁹

Legislation to Place HWP Under the Massachusetts Public Service Commission

At the Board of Aldermen meeting on October 6, 1914, Alderman Daniel Long introduced an order requesting that an aldermanic committee be appointed to draft legislation that would place HWP under the jurisdiction of the Massachusetts Public Service Commission. A committee of three aldermen including Alderman Long was appointed.²²⁰

The Bill

The bill drawn up was worded as follows: "The Holyoke Water Power Company is hereby placed under the supervision of the public service commission and said commission shall regulate the charges for the use of its water."²²¹

The Hearing

Those speaking in favor of the bill were members of the Aldermanic Committee of which Alderman Long was a member and chief spokesman.²²² His remarks were quoted at length in the local press. The Holyoke Central Labor Union president also spoke for the bill.

The opposition to the bill by HWP was given by its attorney W. H. Brooks. He told of the formation of the company. He said it is not a public service corporation nor a quasi public corporation. It is a plain business corporation. Mr. Brooks said that it was clear to any legal mind that the bill was unconstitutional.²²²

The Decision

On April 2 the Legislative Committee on Public Lighting gave the bill leave to withdraw.²²³ On April 6 the House of Representatives, without any debate, gave the report of the committee leave to withdraw. Then a Representative asked for unanimous consent of the House to have the report be considered as not having been accepted. There was objection from the floor, the report stood and the issue was ended.

State Water Power Bill

The year 1919 brought with it a bill in the Massachusetts Legislature which affected all of the users of water power in the State. As such it struck fire in Holyoke and particularly at HWP.

The Bill

A synopsis of the bill as reported in the local press follows:

1. To authorize and encourage mill owners to improve and utilize fully the water resources of the Commonwealth.
2. To provide that after a reasonable lapse of time the Commonwealth may acquire at cost such improvements.
3. To provide in case of the failure of the mill owners to act within a reasonable time, for the development of such water resources by the Commonwealth for the public good.
4. To authorize cooperation with other states in and through which the rivers of Massachusetts rise and flow, or having power which might be made available to the industries of the Commonwealth.²²⁴

The Bill was filed in January 1919 and became Senate No. 298. The preceding synopsis gives the highlights of the Bill. Other points of interest are:

- o The State Commission on Waterways and Public Lands would have ultimate control over the development of the power resources of the river.
- o The mechanism for developing the river was to be a private corporation made up of mill owners below each dam. The corporation would then be funded by selling stock, the proceeds of which would be used to develop upstream storage.
- o The corporation was to be authorized to collect tolls from the water power users downstream of the proposed storage project.
- o The corporation could be authorized by the Commission to take property by eminent domain.
- o The corporation would be required to obtain approval from the Commission of its plan for any reservoir, to transfer shares of stock from one owner to another.
- o The operation of any reservoir would be subject to the supervision of the Commission.
- o The Corporation was to be prohibited from generating electricity.

The Hearings

The hearings on this bill began on March 18. The proponents spoke first. Among them was Henry J. Harriman, president of New England Power Company. He said he felt that sites on the river taken by eminent domain should be taken by the electric companies. "In explaining why he thought this, he said it was because he felt that 95 percent of the plants rising on the rivers would be electric generating plants." Attorney Nathan P. Avery, former Mayor, represented HWP, but because of lack of time his appearance was postponed.²²⁵

Resumption of Hearings

When hearings resumed on March 26, Mr. Avery was one of the leading opponents.²²⁶ He made the following points concerning the Bill:

- o It is unconstitutional.
- o It is an effort of a great power monopoly to gain complete control of not only the water power in Massachusetts but in Vermont and New Hampshire as well.

- o The New England Power Company is the center of the monopoly.
- o There are interlocking directorates among the large power companies.

The Holyoke mills represented at the hearing were Farr Alpaca, American Writing Paper Company and American Thread Company.

The Third Hearing

The third hearing on the Bill was held on April 2. Former Mayor Nathan P. Avery of Holyoke representing HWP at the Legislative hearing accepted a challenge to make good his charges that the big water power interests in this state are allied. The challenge was made by Representative Monk of Watertown, a member of the Committee on Waterways and Terminals, at the prior hearing held by the big water power bill. Representative Monk said that charges that a monopoly is attempting to control the water power of the state by means of the bill have been made recklessly and that it is up to authors of the charge to prove their case.

Accused of having made false charges that a "giant monopoly" is scheming to control the mill sites and water power of all the principal streams of the New England states, Mr. Avery said to the committee:

"I feel it to be a public duty to make answer to the interests which by direct statement and innuendo have made it appear that we have advanced false and misleading statements. I shall state to you the basis of the charges.

"President Edgar of the Boston Edison Illuminating company is now a director of the New England Power Company. The New England Power Company and the Turners Falls Power Company got together recently and formed a new corporation known as the Connecticut River Conservation Company and both companies own all the stock in the new company. The New England Power Company holds 60 percent of the stock and the Turners Falls Company 40 percent.

"The Connecticut River in New Hampshire and Vermont is largely controlled by the New England Power Company. Much of the water power in this state is controlled by the Turners Falls Power Company. Their aim is to

create storage reservoirs in the head waters of the rivers and to levy heavy assessments upon the 'little fellows' who now have rights in the rivers and ultimately upon the industries which buy from them."

In the questioning of Chairman Weed of the Gas and Electric Commission, who advocated the Bill, Senator Beck asked, "Isn't it a fact that the cost of developing the water power could be made so enormous that the 'little fellows' would be unable to pay their proportionate share and that then the 'big fellows' would stand by and wait until the 'little fellows' were forced to sell?"

"That is possible," replied Chairman Weed.

W. Rodman Peabody, Counsel for the Turners Falls Company denied that it has any interlocking directorates with any of the other power companies.²²⁷

Additional Hearings

Another hearing on the Bill was held on May 15 before the House Ways and Means Committee. A solid front of opposition was put up by millowners from Holyoke and throughout Western Massachusetts.

A further hearing was held on May 29 after changes had been made in the bill to meet some of the manufacturers objections. Strong opposition to the bill remained from Holyoke manufacturers and HWP.

At this hearing W. Rodman Peabody of the Turners Falls Power Company characterized the revised Bill "as a child's first step" and said, "It is so feeble in its present state it is hardly worth considering."

At a recess of this hearing President Gross of HWP was among several speakers who stated their views. He "said the entire proposition is impracticable and impossible. He told how 40 years ago the Connecticut Lakes were purchased to be used as reservoirs by HWP. The scheme was tried out and was found to be impossible and the property disposed of. He said, "It is impossible to determine at the Holyoke dam when any surplus water arrives that has been released from a storage reservoir 50 miles away."²²⁸

On June 5 another legislative hearing was held on the Bill. Attorney Avery appeared again for HWP and explained the adverse effect upon the company if the bill should become law. His comments follow:

Squeezing the Water Power Company

"How the legislation that the Turners Falls Company and the New England Company seek would squeeze the profit out of the Water Power Company and even make its existence impossible was well explained by Mr. Avery when he said yesterday: 'The Holyoke Water Power Company has sold all its water except the little surplus occasionally available by deeds and covenants which cannot be altered. The hydroelectric companies desire to compel them by law to pay for storage reservoirs in Vermont and New Hampshire. Such storage could not in anyway benefit the Holyoke Water Power Company but would put them to great expense with no returns.'"

Owned Connecticut Lakes

"From 1881 to 1910 the Holyoke Company tried the storage experiment for during those years it owned the Connecticut lakes in Canada and Northern New Hampshire and it produced no additional profit. The present storage of the New England Company at Somerset, N.H. has had no effect at Holyoke, the most it delivers there is 130 cubic feet a second for four months in the year and Holyoke uses at least 700 cubic feet in the same time. It is infinitesimal still under the proposed law the Holyoke Water Power Company would be assessed large sums for such storage. The result would be that the company would be paying large sums for helping the electric monopoly with its dams at Bellows Falls, Vernon, Vt., Turners Falls and Deerfield River, in this state, to produce electric power to be sold in distant points in New England and New York.'"

Could It Stand It?

"The Holyoke Water Power Company could only remain a competitor in the sale of power in this city so long as it could meet the demands for up river "betterments" fixed by its rival if the proposed legislation and proposed contract passed. The question is how long could it stand it, with its income fixed

by deeds and covenants which never contemplated such a condition."²²⁹

The Bill Defeated by Legislature

On June 11, after debate, the House of Representatives voted to refer the matter to the next General Court. The vote was near unanimous. The Holyoke Water Power Company through its counsel, Nathan P. Avery, and its water power lessees were the only exceptions to complete agreement on the bill then before the Legislature.²³⁰ However, the testimony in opposition by these two Holyoke groups at the several public hearings was sufficiently effective to defeat the powerful forces which were advocating its passage.

Electric Power Turmoil in Holyoke

Offer to Purchase HWP

The first intimation that certain parties were interested in buying the Holyoke Water Power Company is found in the minutes of the Directors for June 5, 1918. A desire had been expressed to purchase either a majority of the stock - or the entire shares - provided a price could be agreed upon.

The Directors elected a committee of four directors to meet with the prospective purchasers to ascertain the terms of their offer.

At the Directors' Meeting of December 18 the President reported that the parties who had met the special committee at Springfield in June, with reference to the purchasing of at least a majority of the stock of this company were still favorably inclined.

At the meeting of the Directors on March 21, 1919, the Special Committee appointed at a meeting of the Board, held June 5, 1918, made a verbal report with reference to a proposition made by the Turners Falls Power and Electric Company for the purchase of the Electric Power Plant and 40 nonpermanent millpowers appurtenant thereto.

After a thorough discussion it was:

Voted: "That in the opinion of the Directors, it is not advisable to accept the proposition of said Turners Falls Power and Electric Company."

It was also voted: "Not to make a counter proposition to said Turners Falls Power and Electric Company."

Public Statement

The first word to become public of the offer made by the Turners Falls Power and Electric Company(TUFCO) to purchase part or all of HWP came in the local press of June 6, 1919. It quoted Attorney Nathan Avery speaking for HWP in opposition to the State Water Power Bill on June 5 in Boston. He said, "The Turners Falls Electric Company has offered to buy the Holyoke Water Power Company. That would give them an absolute monopoly of all power but the Company has refused to sell."^{229a}

Turners Falls Power and Electric Company Offers Electric Contract to Holyoke Gas and Electric Department(G&E)

A proposal by the G&E to purchase all its electricity from the TUFCO was presented to the Board of Aldermen in a lengthy letter by Manager John J. Kirkpatrick on June 3, 1919. The letter was accompanied by a report from a consulting engineer Samuel Mildram. This report gave favorable cost comparisons of purchased energy as opposed to continuing its local manufacture. The plan also called for the selling of the existing steam-electric generating station and retaining the hydroelectric facilities.

Mr. Kirkpatrick concluded his letter to the Aldermen with the following:

"We transmit this proposition to you with an absolute knowledge that there is no central station in Massachusetts purchasing guaranteed power under more favorable terms and with the earnest hope that it will receive favorable consideration."²³¹ The Aldermen voted to hold a public hearing on the matter on June 17.

Public Reactions

The publication of the electric power proposal of Manager Kirkpatrick brought quick response from the local press and the public. The Holyoke Transcript took an inactive role in its editorial columns. The Holyoke Telegram, in its editorials, was very critical of the purchase power plan. The Chamber of Commerce held a public meeting on June 11 with over 200 people in

attendance. The result of that meeting was a decision that the Chamber and the Alderman each appoint five persons to a committee to pick a consulting engineer to make appropriate recommendations concerning the purchase power plan.

At the Chamber meeting Manager Kirkpatrick was asked when he first got an offer from TUFECO. His reply was "1916." He said the present offer was received on April 1, 1919. He further said that on October 24, 1918, a representative of the fuel administration had asked him to see what could be done about buying water made current and saving coal. "I made inquiries that lead up to the offer on April 1, 1919" said Kirkpatrick.²³²

On June 17 a public hearing was held by the Board of Aldermen on the purchase power plan. Manager Kirkpatrick was the only speaker because the issue had been thoroughly discussed at the Chamber meeting. He urged cooperation with the Chamber committee. He also said that this was the third proposal made by TUFECO and that it was the only one he felt was worthy of presenting to the Board.²³³

Committee Formation

Following the Chamber of Commerce public meeting its president appointed a committee of five to join with a like number of appointed Aldermen to engage a consulting engineer and to study the power issue. At the first meeting of the committee on June 20 it was the sentiment of the group that the TUFECO proposal should be rejected and that the city should develop its own power resources.²³⁴

At the second meeting of the joint committee on June 27 it was decided to interview an engineer to study the power issues. It also received word that HWP was prepared to sell its power station to the city and also grant it rights to develop a hydro station at the dam.²³⁵

Board of Aldermen Meeting

At a meeting of the Aldermen on July 1 the Board appropriated funds to employ as a consulting engineer Samuel M. Green, an engineer experienced in local industrial matters, to investigate the power situation. In addition it received a report from the joint committee concerning its activities, a proposal from HWP and a lengthy preliminary report by Mr. Green. In that

report Mr. Green listed three areas which he proposed to investigate. They were:

1. Continued operation and expansion of the present city-owned electric plant. His early judgment was that no major expenditures should be made for expansion at that site because of its limited area.
2. TUFCO proposal. He felt the proposal should be given careful thought. The main question is whether the City would get electricity cheaper than they could make it.
3. HWP proposal. He felt it would be to the greatest advantage to the City to thoroughly investigate the proposition which HWP might be disposed to make.

HWP Proposal

The mention above by Mr. Green of a proposal by HWP referred to a communication to the Board of Aldermen which was received at its meeting from President Gross of HWP. A press account of it follows:

"A nine-page communication was also received from Charles E. Gross, president of the Holyoke Water Power Company, in which he outlined the proposition of the company to dispose of its power plant to the city. He said in part:

'We believe that it will be inimical to the interests of the city to 'scrap' the steam power plant and to take its power from some outside party, with whom it can only now make a contract for a limited number of years, and which city will be at the mercy, so to speak, of said outside party at the termination of the first contract.

'If the city should see fit to look into the matter we will tell you upon the terms we will sell you our hydro-electric plant and the water powers appropriate thereto. We will also sell for a normal price this company's interest in a tract of the western abutment of our stone dam and our No. 1 overflow, with the right to take water under reasonable conditions, which shall have passed our wooden dam, with protection of all the water users along our canals under their contracts, and in

the use of surplus water with a graduated scale of prices per mill power taken by the city after a specified term, during which no revenue shall be charged therefor, and thereafter under a graduated scale of price which will undoubtedly be commensurate with the increased use of electricity by the citizens of Holyoke.'"

"He stated no price but expressed willingness to place all information at the disposal of the engineers and agree on a price later."²³⁶

The proposal of President Gross was amplified on July 25, in a lengthy letter to Mayor Ryan by Treasurer Sawin.²³⁷ The letter contained a caveat which because of its importance is quoted here:

"I desire to say Mr. Mayor, that this letter is written to you more for the purpose of suggesting the opportunity which is before Holyoke, than of making any definite proposition in connection with the rights above suggested, for this reason. Our president is away on his vacation in the northern part of Maine. I have only had the opportunity of taking this matter up with him briefly through correspondence. I have not been able to refer the matter to our Board of Directors, and, therefore, I am giving you my individual opinion, but I believe that, if the matter commends itself to you and to the citizens in general, an arrangement can be made satisfactory and beneficial both to the city and to the company."

The Sawin Plan

The plan suggested by Treasurer Sawin was:

- o The sale to the City of the HWP hydroelectric plant on the Second Level Canal including the steam plant which had a book cost of \$254,302 exclusive of land and water power. It was assessed for \$131,930. That valuation also included the site and 16 non-permanent millpowers.
- o Because the City could only pay 25 percent above assessed value without court action, the price asked by HWP would be \$160,246.

- o HWP would go out of the electric business and the City would agree to assume all contracts which were outstanding for the delivery of electric current.
- o Although the power plant had been using only 16 non-permanent millpowers, there were 40 such millpowers assigned to the site. Therefore, HWP would expect the City to acquire the additional 24 millpowers. This would add \$66,000 to the price making a total of \$226,240, still considerably below the book cost of the power plant alone.
- o The City would pay the annual rental (\$1,500 per year per millpower) for those actually used with a minimum of 20 millpowers being paid for each year.
- o HWP would grant to the City in perpetuity for an annual rental of \$10 per year, all its interest in a tract of land lying between our Holyoke abutment and our No. 1 overflow from the First Level Canal, together with the rights in the riverbed for tail races; also the right to take water into a forebay for the operation of a hydroelectric plant, which water will be only that which has passed our wooden dam and is wasting.

The HWP proposal of Mr. Sawin in July did not receive ready acceptance. It seemed to be one more addition to the several elements which already were making the electric power situation a complicated one. Further complications occurred when Mr. Sawin dropped dead in early November.

Death of HWP Treasurers

During the seventeen-year period from 1902 to 1919, three HWP Treasurers died. They were:

Edward S. Waters	December 26, 1902
Reuben C. Winchester	September 12, 1913
Wallace E. Sawin	November 7, 1919

Upon Mr. Sawin's death the hydraulic engineer and assistant treasurer, A. F. Sickman, became acting treasurer.

S. M. Green Report

Engineer Green made his recommendations concerning the electric power issue on December 9 to the joint committee of the Board of Aldermen and the Chamber of Commerce. They were:

- o Abandon the present steam electric generating station and build a new one. The new plant to be built along the river either above the dam at the "Saw Mill" site of HWP or below the Willimansett Bridge.
- o Disapproval of purchasing electricity from the Turners Falls Power and Electric Company.
- o Disapproval of the purchase of the HWP power plant for more than \$50,000. The HWP price was \$225,000.
- o Enter an agreement with HWP for buying 40 millpowers of electricity to be generated at HWP's station and sold to the City at 4 mills power kilowatt hour. This would save the City \$15,000 a year.
- o The offer to the City by HWP of the hydro-electric site at the dam is of no value.

The joint committee then appointed a committee consisting of the Chairman of the Board of Aldermen, the Mayor and Manager Kirkpatrick to negotiate with HWP for either its electric plant, its electric current or the saw mill site.²³⁸

Street Railway Electric Plant

Another suggestion as a possible solution to the City power issue was brought forth in mid-December. The Holyoke Street Railway had a generating station at the south end of the city which was supplying electricity for the streetcars. The idea advanced was to have the city buy this plant, expand it for its own use, and to supply the street railway with electric power.²³⁹

The suggestion was termed not feasible because the railway system was direct current and the municipal system was alternating current.

Discussion of HWP Proposal

As this ten-year period came to a close, the issues surrounding the generation of electricity in Holyoke were far from settled. The G&E, TUFCO and HWP were all playing major roles. The Street Railway Company was a minor participant in the drama.

Of all the issues in which HWP became involved during the past ten years, the one least able to be understood by the writer, is the rationale for the offer it made to go out of the electric business, sell to the city its power plant and lease to the city into perpetuity its hydroelectric site at the dam for \$10 a year.

During the prior 10-year period, HWP had laid the foundation for its electric business with the passage of the Act of 1903, the building of its new power plant on the riverbank and by the Act of 1909. With this successful effort, why would the management of HWP so quickly offer to divest itself of its electric plant at less than its cost? Why would it give away its hydro site at the dam?

This proposal seems all the more difficult to understand because:

1. The inventory of real estate, the sale of which provided significant income to the company was becoming continually less and less. It must have been evident that, if the earnings of the company were to be maintained and increased, something would have to be developed to replace real estate sales.
2. In like manner, there was no growth to be found in increased water power sales. The manufacturing sites on the canal system were practically all sold. There was no more opportunity for growth in hydraulic customers.
3. The flow of water in the river which could sustain all year round use by industry, called permanent power, was all allocated. The other classes of water power, non-permanent and surplus, were less valuable to hydraulic customers because they had to be supplemented in the mills with other energy such as by their steam engines or with purchased electricity. The sale of water power had no opportunity for increasing HWP income. In fact, the rates for permanent powers were fixed into perpetuity.

4. Even though hindsight is always perfect, it is hard to understand today why HWP offered to go out of its electric business and sell its electric power plant. That was the only real growth area the company had at the time.
5. How fortunate it was that the offer to give a perpetual lease to the city of the hydraulic site at the dam was not accepted. Today, 30,000 kilowatts of HWP hydro capacity are situated there.

1920 - 1930

1920-1930

The previous ten years ended with the matter of electric power in Holyoke being in a state of turmoil. Many different entities were involved as the issues were being addressed. Those participants most directly concerned were: Holyoke Water Power Company, Holyoke Gas and Electric Department, Holyoke Street Railway Company, Turners Falls Power and Electric Company, Board of Aldermen and Chamber of Commerce.

The problem of most immediate concern to HWP was caused by the death of its Treasurer, W. E. Sawin, on November 19, 1919. In Massachusetts, at that time, the Treasurer of business corporations was most often the operating head of the company, while the President was more akin to today's Chairman of the Board of Directors. HWP was facing serious local problems and the person most able to deal with them was no longer available.

The HWP directors moved swiftly in their search for a replacement of Mr. Sawin. On January 15, 1920, they elected Robert E. Barrett, an engineer with the Turners Falls Power and Electric Company, as Treasurer.

The announcement of the choice of Barrett was carried in the local press. One local newspaper in its account said, "The selection of Mr. Barrett revives the belief that the Turners Falls Power Company is aiming to the control of the Holyoke Water Power Company."²⁴⁰

Barrett took office on February 1 and assumed the active management of the company. He came to HWP following many years of experience as an hydraulic engineer.²⁴¹

On January 2, 1923, President Charles E. Gross sent a letter of resignation to the HWP Directors. It was accepted at their meeting of January 27. At the same meeting, Robert E. Barrett was elected President. He continued to be Treasurer as well.

Mr. Gross' first connection with HWP came in 1886 when he represented George M. Bartholomew in his problems with HWP. Bartholomew had been President of HWP for twenty-six years. In 1886 he fell into financial difficulties and fled to Canada. Gross worked out a settlement arrangement for his debts to HWP.

Gross became Director and President of HWP in 1898 and served as such for 25 years.

The resignation of Mr. Gross stemmed out of differences within management as to the role that the generation of electric power would play in the future of the company. Mr. Gross felt that the water power operations of the company were its primary function and that the production of electric power was subsidiary. He felt that electricity should be produced only sufficiently to take care of the needs of water power users at times when the river flow could not supply their needs.

The more prevalent view in the company was that HWP should install hydro and steam electric generating capacity to supply the needs, not only of the water power users, but of all parties which could legally be supplied by it. This latter position was held by the Board of Directors. ^{241a}

This was the first time since the incorporation of the Hadley Falls Company in 1849 and of the Holyoke Water Power Company in 1859, a period of 74 years, that the complete operating control of the company was in Holyoke. Up to this time the company had operated with a local person, having the title of Agent or Treasurer, and with a President domiciled in either Boston, Hartford or Springfield. The President was a member of the Board of Directors, the Agents and Treasurers were not. When Barrett came to HWP he came as Treasurer and also as a member of the Board of Directors.

The decision by the Directors to place the complete operating control of the company in a Holyoke resident met with strong local approval as the two newspaper editorials included herein show.

The organization structure of having one person fill the offices of President, Treasurer and as a Director continued from 1923 until 1967 when HWP became a subsidiary of Northeast Utilities.

Barrett devoted his early efforts at HWP to increasing the electric generating capacity of the company and trying to resolve the complicated jurisdictional problems of the four electric power producing entities earlier mentioned. In addition, he sought to increase the number of HWP electric customers.

President Barrett of the Holyoke Water Power Company a Revolution

Something like a revolution has taken place in the industrial and economic life of Holyoke—it may even be said in the political, the social, the philanthropic and life generally with us. The election of Joseph Skinner, a lifelong resident and beloved citizen and counselor of Holyoke to the board of directors of the Holyoke Water Power Company amounted to a near revolution. A complete revolution was the election of Robert A. Barrett, also a resident of Holyoke, to be president of the Holyoke Water Power Company. This great company that is so closely tied up with every drive of every wheel in the city of Holyoke becomes in its management for the first time a home concern. Since its very beginning the Holyoke Water Power Company has been in the way of an absentee landlord. There was no one on the sand lots of Holyoke with money to develop that water power that had been running away to the sea ever since it had buried the dinosaurs. There was no one with the money to invest who have had the time or desire to come and live in the new Holyoke. Therefore it grew into the established custom that some one who lived elsewhere should direct the destinies of one of the most important phases of Holyoke's life. That is never a happy circumstance. No matter how hard the absentee landlord tries to be loved he fails of getting love. Perhaps a brilliant Hartford lawyer, devoted to his home town and looking upon Holyoke as still in the sandlot class, didn't want the love of Holyoke. He never went out for it very visibly and he certainly never won it. These are mighty new days in the world of industry. When men of every chapter of science get together in any part of the world they plead for the preservation of every form of energy for its God appointed use by man. Conserving the energies of the moving waters is a highly specialized matter for scientists to deal with. Engineers must handle that side of the problem. There is the other side—the adapting of the possible power thus generated to the needs and uses of the community it serves. This is not second at all to the engineering side of the problem. Robert E. Barrett began the engineer's effort to make the possible water power do its complete service. Hardly had he taken up his task than Holyoke realized that here was a trained engineer who understood the engineering side of his tasks and had another ideal with it. Holyoke recognized Mr. Barrett at once. It hasn't been an easy thing to take a great power concern out of its self satisfied rut and set it to a larger task. But it has been done and let it be realized that all the discussion and semi-friction of the past few months must serve its purpose. Its present definite service for Holyoke is the expression of genuine Holyoke interest on its board of directors and the residence in this city of the president of the concern.

That Mr. Barrett is also a man of high civic consciousness that he does desire to serve his community and to make the great company he serves and the fine city to which he offers all allegiance and where he has made his home, both of greater importance in a world where water power is going to mean more than it ever meant before, is the good fortune of us all at the present time. Mr. Barrett has a tremendous opportunity and responsibility ahead. Holyoke accepts this revolution as something that promises larger things and will both welcome and assist measures for the general betterment and larger growth of this community.

Holyoke Telegram Editorial January 23, 1923

HOLYOKE NOW REPRESENT- ED

The election of Robert E. Barrett to the presidency of the Holyoke Water Power Co., and Joseph A. Skinner to the Board of Directors is an event of prime importance to the City of Holyoke, its citizens and industries. It augurs well toward the marking of a radical internal change in the history of the company.

In the 64 years of its existence, no Holyoke man ever served on its Board of Directors until Mr. Barrett's election to the Board a year ago. And during that time, no Holyoke man had ever been president of the company.

It was a Holyoke industry in theory but not in fact. It was looked on by a great many citizens of Holyoke as a striking example of absentee landlordism.

Since the coming of Mr. Barrett, three years ago as treasurer, a different attitude in the policy of the company has been very noticeable. Mr. Barrett is a very estimable gentleman. He is liked and trusted by those with whom he comes in contact. He has the faculty of taking the people into his confidence in his dealings with them as representative of his company. In his three years residence here (Mr. Barrett has entered into the spirit of things Holyoke and has become a real Holyoker. He has done much to create and promote a better understanding for his company. But what is more important, he has wanted to create that better understanding, whereas in the past it was pretty much the same sort of policy that wrecked the New Haven Road—"public be damned" policy.

Joseph A. Skinner needs no eulogy. His deeds speak for themselves and are too well known to need recitation. He is a Holyoker born and bred. His interests are the interests of Holyoke. And we feel that he will inject that spirit and interest into the Board of which he now becomes a member. Holyoke interests will be better safeguarded.

Saturday's action was a big step towards localizing the Holyoke Water Power Co. In the past, it has been a great company for its stockholders. The question as to whether it has been a great Company for the City of Holyoke has been strenuously debated. If it has not been, was it not due to the fact that it was controlled entirely by those with other interests than that of the City of Holyoke at heart?

Less than a year ago, a prominent and successful business man of this city made a remark to the writer which is well worth repeating. He said that if there were any wealthy men in Holyoke who really wanted to do something big for the city that they could do nothing more beneficial than to secure control of the Holyoke Water Power Co., and make it a Holyoke institution. Here is a step in that direction.

Congratulations to Mr. Barrett and Mr. Skinner. May they be able to do what we hope and expect them to do.

Expansion of Electric Generation

Prior to 1920

HWP was authorized by an Act of the Legislature in 1903 to return to the electric business. The company was restricted to serving customers requiring over 100 horsepower. In 1905 it installed two 600 kilowatt hydroelectric generators and a 500 kilowatt steam turbine generator at Riverside Station. In 1915 it added a 1250 kW steam turbine.²⁴² The hydro generators were each driven by a horizontal pair of Francis-type waterwheels in a cylindrical wheel case. These units are still operating.

Boat Locks

When the canal system was laid out and built by the Hadley Falls Company provision was made for boats to enter it from the pond above the dam and to travel on the First and Second Level Canals. At the gatehouse a lock was built so that boats on the fluctuating level of the pond could enter on to the constant elevation of the First Level Canal.

A lock was also built at what is now Boatlock Station, between the First and Second Level Canals allowing boats to travel between those two canals which were separated by a height of 20 feet.

There is no record of boats actually ever using the locks, although the possibility of such use existed when they were built. The locks were used, however, to float lumber into the First and Second level Canals for use in mill construction.

An account of the locks, from an 1853 publication of the Hadley Falls Company²⁴³ follows:

"There is a direct connection between the upper and lower canals by means of guard-gates and a lock so that timber can be floated on either canal for convenience in building; and the upper canal may be continued by a curve to the river below the rapids, so that at any future time, if the canal around the falls on the opposite side of the river should be discontinued, there will be a passage for boats on the western side."

Overflows

The basis for the control of water flowing into the canal system from the river, and then through the mills and power plants, is the maintenance of constant elevations of the three levels of canals. The elevation of the First Level Canal is maintained at 100.0, the same elevation as the crest of the dam. The Second Level Canal is kept at elevation 80.00 and the Third Level Canal is maintained at elevation 68.0.

The method of control, as originally designed, consisted of overflows which were dams located on each level of the canals. On the First Level Canal one of these was located at the Gatehouse, No. 1 Overflow, which discharged to the river and another, No. 2 Overflow, which was located at the present Boatlock Station and which discharged into the Second Level Canal.

On the Second Level Canal there were three overflows, #2 Lower Overflow discharging to the river, #3 Overflow located at the southerly end of its westerly leg and discharging into the Third Level Canal, and #5 Overflow at the southerly end of its easterly leg discharging into the Third Level Canal.

On the Third Level Canal there was one overflow called #4 which discharged to the river.

At each overflow there were two methods of controlling the canal elevation. The first was a system of flashboards on the crest of the dam that could be removed, and replaced, manually and which raised or lowered the canal elevation. The second was by the use of wicket gates in the lower part of the dam. These could be manually operated. They were also used when the canals needed to be drained for maintenance purposes.

Overflows #2, #3 and #4 were manned 24 hours a day as was the gatehouse. No. 1 Overflow was operated by the gatehouse man and #2 Lower Overflow by the man at #2 Overflow. No. 5 Overflow did not require manual operation because the operation of #2 and #3 Overflows gave adequate control.

The question may well be asked as to why such extensive regulating system was needed for the operation of the canals. The reason was that the company had no control over the use by the large number of waterwheels in the mills. The mill owners could normally start and stop their waterwheels or vary the output from them at will. Each such change in demand increased or decreased the use by the mill of water from the canals.

So long as the gatehouse operator and the overflow men maintained the level of the canals under their jurisdiction at the required elevations, the fluctuating requirements for water by the mills were automatically satisfied. The phrase which is used to describe this control function is "balancing the canals."

All of the water being used for balancing the canals and which passed from canal to canal, or canal to the river, was wasted as far as its energy producing ability was concerned. Accordingly, the new management chose the #2 overflow, between the First and Second Level Canals as the location for a new hydroelectric power plant. Concurrently, it expanded the hydroelectric capacity at Riverside Station by converting the overflow, which had been built there in 1905, into the site for another hydro unit. These hydroelectric units at both Boatlock and Riverside Stations thereafter performed the canal balancing function and generated electricity while doing so.

At the time of this writing, the balancing of the First Level Canal is done by the Gatehouse operator. The level of the Second Level Canal is controlled by the Riverside Station operator. He maintains the correct canal elevation by adjusting the output of the hydroelectric generators under his control at Riverside and by adjusting those at Boatlock by remote control. The Third Level Canal is automatically maintained at elevation 68 by float control which activates control gates at #3 and #4 Overflows.

Boatlock Station - Hydro

The new management of the company started immediately to expand the HWP hydroelectric generating capacity. The first installation used the boat lock on the First Level as the location for a 500 kilowatt unit. It began operating the next year, 1921. This was immediately followed by two 1,200 kilowatt units which began operating in 1924.

Riverside Station

At the same time that the first Boatlock unit was being built, an 880 kilowatt unit was being installed in an unused wheel case at Riverside. In addition, a new vertical hydroelectric unit of 1,560 kilowatts was added to Riverside Station. This latter unit was able to utilize portions of a former overflow that had been constructed when the power plant was first built in 1905. These two new units at Riverside began operating in 1921.

Riverside Station - Steam

At the same time that the company was installing hydroelectric generators, it was also increasing its ability to generate electricity from steam turbines. Two Edgemoor boilers at two hundred pounds pressure were installed in 1921 and two more in 1922. The fuel was coal.

A 5,000 kilowatt steam turbine was installed in 1922 and a 7,500 kilowatt turbine was added in 1924.

Comments

The design and supervision of the construction of the hydro and steam plant expansions were done by the permanent staff of HWP. As different trades were needed, such as carpenters, electricians or steel workers, the company hired the foremen. The foremen then hired the needed workmen, all of whom would go on the company payroll. Such persons were hired only as needed.

Comparison of Generating Capacity (kW) 1920-1924

	<u>1920</u> ²⁴²	<u>Total</u>	<u>1924</u> ²⁴⁴	<u>Total</u>
<u>Hydro at Boatlock</u>				
1 @ 500			500	
2 @ 1,200			<u>2,400</u>	2,900
<u>Hydro at Riverside</u>				
2 @ 600	1,200		1,200	
1 @ 880			880	
1 @ 1,560		1,200	<u>1,560</u>	3,640
<u>Steam at Riverside</u>				
1 @ 500	500			
1 @ 1,000	1,000		1,000	
1 @ 5,000			5,000	
1 @ 7,500		<u>1,500</u>	<u>7,500</u>	<u>13,500</u>
Total		2,700		20,040

Electric Power Situation in Holyoke

Early on, the new HWP management found itself as deeply involved in the power situation in Holyoke as was its predecessor. The main participants were: Holyoke Street Railway (HSR), Turners Falls Power and Electric Company (TUFCO), Holyoke Gas and Electric Department (G&E) and Holyoke Water Power Company (HWP).

Holyoke Street Railway Company (HSR)

HSR, which had originally started in the public transportation business with horse drawn cars, converted to electric trolley cars in August of 1891. The first electric cars ran down Dwight Street to Main Street and then turned south reaching Prew Avenue in Springdale.^{244a} HSR had built its own electric generating station on the river bank in South Holyoke. By 1920 that plant had become obsolete and was going to need new equipment if it was to continue operating.²⁴⁵

In August of 1920 the Treasurer made a special report to the Directors about the electric power situation in Holyoke. Among the items discussed was HSR. The following suggestions were made:

1. HWP to deliver electricity to HSR during periods when electricity was made from surplus water and to receive electricity from HSR in times of low river flow. This plan would have been difficult to consummate because it would have required equipment to convert the alternating current of HWP to the direct current of HSR and vice versa.
2. Lease or buy the HSR power plant and install a motor generator set to solve the alternating current versus direct current problem and then enter into a long-term contract with HSR to supply the electricity.²⁴⁶

During the months and years which followed, there were many conferences with HSR endeavoring to work out satisfactory arrangements. Details were nearly completed when TUFCO made a proposal to HSR to furnish its electric power.²⁴⁷

That proposal involved the proposed sale to TUFCO by HSR of its power plant and the purchase of electricity from TUFCO. This proposal brought immediate

opposition from many groups in Holyoke which did not want a third power company, domiciled in Holyoke, which was prepared to compete with both HWP and G&E. From October 1924 to March 1926 the efforts of the Holyoke community to block TUFECO's efforts to enter the city made many headlines in the local newspapers.

The proposal of TUFECO required that it build a transmission line across the river from its lines in Chicopee to the HSR plant. To do so required that it cross over land of HWP. HWP was not willing to grant to TUFECO a right to cross the land because it did not want to have another competitor in Holyoke besides the G&E.

TUFECO applied to the Massachusetts Department of Public Utilities (DPU) for the right of eminent domain to obtain an easement across the HWP land on January 20, 1925. The DPU held a public hearing in Holyoke on February 20, 1925 with much opposition to the TUFECO petition. Among the opposition were the City of Holyoke, the G&E, the Board of Aldermen (B.A.), the Central Labor Union, the Real Estate Owners Association, Chamber of Commerce and two former State Senators and HWP.

The position of HWP was that the crossing of its land was not necessary for TUFECO to reach HSR and three alternate routes were described to the DPU. These routes required the building of a TUFECO substation in Chicopee with a low voltage river crossing to HSR. HWP demonstrated to the DPU that the alternate routes were much cheaper for TUFECO both from the investment of capital and for operating costs. However, from the HWP and G&E point of view the alternatives kept TUFECO out of Holyoke as a competitor.²⁴⁸

The DPU took no action on the case for over a year. Finally, it set March 1, 1926, for another hearing on the matter. Two of the three commissioners had been replaced during the year and the new members desired this rehearing.²⁴⁹

The Settlement

On February 16, 1926, the lawyers and staff of HWP and TUFECO met and worked out a plan for settlement of the issues between the parties involved. That agreement was as follows:

1. HWP would be the supplier of the electricity to HSR.²⁵⁰

2. HWP would purchase from TUFECO the same amount of power which it sold to HSR.^{250a}
3. HWP would purchase the HSR power plant.^{250b}
4. HWP would install two 1,500 kW motor generator sets to supply HSR at its Boatlock Station.^{250c}
5. TUFECO to pay \$110,000 toward the cost of electrical equipment to be installed by HWP to serve HSR.^{250d}

The agreement between HWP and TUFECO was approved in Boston by HSR on March 5, 1926. The Massachusetts Department of Public Utilities was then requested to dismiss the petition of TUFECO asking for authority to bring transmission lines into Holyoke to serve HSR. Thus came to an end the issue of HWP serving HSR which was first brought to the HWP directors in August of 1920.

Electric Sales to HSR

HWP began serving HSR late in 1926. The sales for that year amounted to \$8,568. In 1926 they were \$101,862 and in 1928 they were \$132,932. However, that service was to be short lived. Although its demise occurred beyond the time span of this section of the history, it seems appropriate to conclude the connection of HWP to HSR herewith. In December 1934 HSR filed a petition to reorganize under the Federal Bankruptcy Act, it being unable to meet its financial obligations as they matured. Sometime later buses began to replace trolley cars and, in many streets, tracks were torn up. June 1938 was the last month that HWP billed HSR for electric power.²⁵²

It was perhaps well that buses supplanted trolley cars as far as HWP was concerned because the settlement with TUFECO was an expensive one as the following tabulation shows. It will be noted that the major expense item to HWP was evidently having to pay TUFECO more for electricity than it received for it from HSR. However, in the long run, it was undoubtedly better for both HWP and G&E not to have a third electricity supplier operating in Holyoke.

Losses Sustained by HWP Because of
TUFCO and HSR Matter²⁵³

Operating Losses

Interest on cost of HSR plant	\$ 7,620.00
Depreciation	1,600.00
Taxes	2,700.00
Interest on legal expenses	2,380.85
Net costs of energy purchased from TUFCO for HSR	63,380.85
	<u>\$ 77,681.70</u>

Capital Losses

Cost of HSR plant less sale of machinery	\$127,000.00
Expenses	39,680.85
	<u>\$166,680.85</u>

Turners Falls Power and Electric Company (TUFCO)

As early as 1916 TUFCO had attempted to become the supplier of electricity to the Holyoke Gas and Electric Department (G&E).²³² On April 1, 1919, the G&E received a written proposal from TUFCO suggesting that it abandon its steam electric plant, retain only its hydro plant and purchase all additional electricity. This proposal was presented to the Board of Aldermen on June 3 with the recommendation of the G&E manager that it be accepted.

Public hearings on the TUFCO proposal were held by both the Chamber of Commerce and by the Board of Alderman (BA). A joint committee of both the Aldermen and the Chamber membership was formed to consider the TUFCO offer. At the first meeting of the committee, the sentiment was that the proposal should be rejected and that the G&E should develop its own power resource.²³⁴ The proposal was disapproved by the BA and later withdrawn by TUFCO.

A second written proposal by TUFCO was submitted later to the G&E at increased rates and with such different conditions that it met the disapproval²⁵⁴ of both the G&E Manager and the Board of Aldermen.

The preceding section, which discussed the electric power problems of HSR, pointed out the major role of TUFCO in that issue. During approximately the same period, discussions were taking place between HWP and TUFCO about interconnecting the electrical systems of the two companies. In April of 1924, committees of Directors and staff of HWP and TUFCO met in Hartford to

discuss what mutual benefits there might be by interconnecting the two electric systems.

Following the April 1924 meeting, TUF²⁵⁵CO submitted a report outlining the advantages which should accrue from the proposed connection.

One paragraph of that proposal points out the financial advantages that could accrue to both companies if they were maintained as separate corporate bodies but single operating units.

It follows:

"We desire to call attention especially to the fact that this memorandum is in regard only to the advantages to be obtained by the construction of a connecting transmission line; it is not intended to cover the financial advantage which might accrue from the maintenance of the plants of the two companies as a single operating unit. There are obviously many financial savings which could be made if the two plants were managed as part of a single hydroelectric system which are not possible in the case of two independent corporations, each with its own staff of engineers and operating officials, each with its independent and distinct operating and financial problems, and each necessarily in ignorance of the plans of the other company. Savings of this character could be determined only by persons having intimate knowledge of the affairs of both corporations."

The concept of coordinated operations of electric companies outlined above became the foundation of the Connecticut Valley Power Exchange (CVPE) which began functioning on March 1, 1925 and which coordinated Hartford Electric Light Company (HELCO), Connecticut Power Company (CPC), TUF²⁵⁶CO and United Electric Light Company of Springfield (UEL).

The New England Power Exchange (NEPEX), which coordinates today the operation of all the electric companies of New England, is continuing with the same principles as set forth by TUF²⁵⁶CO in 1924.

In February of 1926 HWP, TUF²⁵⁶CO and HSR, as earlier discussed herein, completed an agreement for supplying the electric requirements of the railway. Part of that agreement included a commitment by HWP to build a connection to the TUF²⁵⁶CO system.

A 66,000-volt substation downstream of Riverside Station and a transmission line crossing the river, connecting to the TUFECO system, was built. Thus began a relationship of HWP to the interconnected transmission system of the New England electric companies which has been maintained for over 60 years to the mutual benefit of all concerned.

At this point we refer back to the earlier account in this history of meetings between committees of Directors from HWP and TUFECO which occurred in 1918 and 1919. At that time, TUFECO was interested in purchasing a majority of the HWP stock or the electric power plant of the company.

In January of 1929 the President wrote a report of the progress of the company from 1920 to 1929 and its future prospects.^{254a} In that report there occurs the following paragraph:

"The writer came to the Company in February 1920, as its Treasurer. It had been my good fortune to have previously made an examination of the property of the Company for the purpose of valuation, but my conception of its value was greatly underestimated, largely because it takes time and an intimate connection with such a property to fully appreciate its possibilities."

Barrett, while employed by TUFECO, had evidently been involved in preparing material for its directors when they sought to purchase part or all of HWP.

Holyoke Gas and Electric Department (G&E)

The new management of HWP early found that it was necessary to concentrate much of its efforts to problems involving the G&E.

HWP Act of 1903

A major cause of the difficult relationship between the two concerns was embodied in the HWP Act of 1903 which among other restrictions limited the customers of HWP to users of not less than 100 horsepower, approximately 75 kilowatts. The reasons for that restriction have been discussed in depth in previous pages of this history.

Because of the 100 horsepower restriction, HWP is authorized to supply electricity to the larger industrial customers only. The G&E can serve any user

of electricity in Holyoke. It thus has a monopoly in serving the residential, commercial and small industrial customers. The G&E can also compete with HWP for the large industrial customers.

A second point of conflict arose from the wording in the 1903 Act by which HWP "is authorized to manufacture electricity for power purposes." Prior pages of this history have explained that the first use of electricity in Holyoke was for lighting, replacing gas lights. It was direct current and at the voltage of the lights, which were first carbon arc lights and later incandescent.

When electricity began to be used for power to run motors, a higher voltage was used. This required circuits, separate from the lighting circuits, to be run along the streets to the industries.

At the time of drafting the 1903 legislation, the concept of electricity for lighting and electricity for power were considered to be two separate uses. This led to the early electric companies being called "electric light and power" companies, indicating they served both kinds of uses.

The development of alternating current and the transformer made it possible for electricity to be used at any voltage. As a result, the use of direct current disappeared along with the need of separate distribution lines for lighting and power.

The new management soon found that in one way or another, the operations of HWP and G&E were crossing paths very frequently. Accordingly, the account of that relationship will follow in abbreviated diary form.

Saw Mill Site

As earlier noted, a proposal by TUFECO to be the electricity supplier of G&E was turned down by the City in 1919.²⁵⁴ Following that disapproval the G&E obtained an option from HWP for a 10-acre site at a sale price of \$100,000²⁵⁴ on the Holyoke side of the river above the dam as a location for a new 20,000 kilowatt steam electric plant. That site, called the Saw Mill lot, was located in the vicinity of the present Mueller Bridge which goes between Holyoke and South Hadley. G&E then sought authority from the Legislature to issue \$2,000,000 in bonds to construct

and equip the plant. The bill received a favorable committee report, but it died in the Legislature. The option expired in June of 1920. The G&E then started to expand the power plant at its existing location on the First Level Canal.²⁵⁷

Increasing Size of Electrical Connection Between HWP and G&E

By August of 1920, discussions had begun between HWP and G&E concerning an adequate electrical connection between the two systems so that sizable amounts of hydro power could be taken to save burning coal at the city plant.²⁵⁸ In November of that year a joint petition to the Board of Aldermen was signed by the G&E and HWP requesting a power transmission line on Hamilton Street to make a direct electrical connection between the two plants. On May 17, 1921,²⁵⁹ the Board of Aldermen unanimously refused the request.

HWP then decided to use its canal berm lands as the location for transmission lines to reach many of its customers and the G&E. Those lands, normally about 15 feet wide, gave sufficient width for double pole transmission structures. Those structures, with four cross-arms, were capable of carrying six three-phase circuits. However, it was two years later on May 18, 1923, before HWP and G&E agreed to connect their two power plants together.²⁶⁰

G&E and HWP Presentations to Chamber of Commerce Committee

In the fall of 1922, HWP and the G&E were asked to present written public statements concerning the status of electric power production in Holyoke. An initial presentation was made to a Chamber Committee by President Charles E. Gross on September 20. In order that no misunderstanding could be made of his remarks, they were also given in a printed pamphlet form.²⁶¹ Those remarks were answered with a lengthy statement of the G&E Commission on October 25.²⁶² HWP then responded to G&E with a statement on November 17.²⁶³ On December 16, the G&E "fired a new broadside at Water Power Company."²⁶⁴

Chamber of Commerce Report

On January 19, 1923, the Chamber Committee presented a lengthy report giving its assessment of the power situation in Holyoke along with its recommendations.²⁶⁵ An editorial commenting upon the report appeared in one of the local newspapers.²⁶⁶

The next day the HWP management commented upon the report to the press as follows:

"The committee of the Chamber of Commerce should be commended for the painstaking manner in which it has analyzed the power situation in Holyoke. Their report opens the way to a better understanding between the two power generating agencies of the city, and the wisdom of their findings will become more apparent to the public as the years go by and the use of electricity for power and home consumption in Holyoke, becomes more general."

"John J. Kirkpatrick, member of the Gas and Electric Department, has no comment to make as he had not finished considering the report." ²⁶⁷

The recommendations of the Committee were as follows:

"We commend the action of the Manager of the Gas and Electric Department and the Treasurer of the Holyoke Water Power Company in effecting a temporary physical connection between the two plants. We recommend a permanent connection at the earliest possible moment, for the protection of both plants, and particularly, for the protection of the clients of both plants, many of whom are entirely dependent, along with hundreds of employees, upon uninterrupted electrical energy, for the continuation of their business enterprises.

"We recommend the maintenance of the municipal electrical generating plant in as high a state of efficiency as possible and its development to the limit of the possibilities of its present location.

"The Water Power company should not only be permitted, but should be wholeheartedly encouraged to develop its facilities to the limit of its possibilities, and we recommend consideration of ways and means to foster a spirit of understanding and friendliness between the company and the City.

"The Water Power Company should not be restricted in the enjoyment of its franchise rights, which are today an established fact, regardless of whatever opinions might be held relating to the advisability of having granted these rights. They should not be hampered in furnishing electric energy to any of their hydraulic power clients or in reaching any land owned by the company which may become the location of future power clients.

"A large increase in the use of electrical energy, both for domestic and power purposes, should be anticipated by the Municipal Department in accordance with our recommendation, and, by the Water Power Company, through continual development to the limit of their facilities."^{267a}

HWP - G&E Negotiations After Chamber of Commerce Report

Options of G&E

During this period, G&E had three options concerning its future power supply.²⁶⁸

- o Abandon its existing plant and construct a new one at an estimated \$2,000,000 cost.

This plan had to be abandoned when the Board of Alderman turned down the G&E request for authority to issue \$1,000,000 of bonds.

- o Modernize and expand the existing generating station.
- o Purchase power from some source to distribute to its customers.

HWP was aware that other power companies were, during this period, making known their interest in the Holyoke power situation. It was believed they were the Turners Falls Power Company and Electric Company and Hartford Electric Light Company.²⁶⁹

Meeting of G&E and HWP

On May 18, 1923 a meeting was held between the G&E Commission and staff, and the HWP management.²⁷⁰ At that meeting, the following agreements were made:

- o HWP and William Skinner and Sons, local textile manufacturers agreed to sell to G&E lands needed for coal storage and for erection of a coal conveyer to move coal from storage to the power plant.
- o By vote, the G&E Commission agreed to a cooperative arrangement for an electrical connection between the two power plants.

Following the May 18 meeting, the G&E purchased the necessary transformers for the connection between the two plants and HWP purchased the five steel towers needed for the transmission line. The transmission line went south from Riverside Station, crossing over the Boston and Main Railroad, the Willimansett Bridge, and Main Street in South Holyoke, and then along the Second Level Canal to the G&E plant.²⁷⁰

In the November report to the Directors, it was reported that the G&E had purchased a 10,000 horsepower (7,500 kW) steam turbo-generator.

A comment in the report said, "The purchase of the new generator by the City, and the connecting of the two power plants, we feel, removes many of the uncertainties regarding the power situation in Holyoke."²⁷¹

The electrical connection between the two plants was a sizable effort for HWP which consisted of the five steel towers, 140 Western Cedar poles and about 11.5 miles²⁷² of transmission wire, all built at company expense.

Hartford Electric Light Company

Shortly after the agreement with G&E made on May 18, 1923, HWP received proposals from Samuel Ferguson, President of Hartford Electric Light Company to purchase power from his company. The electricity would be transmitted to Holyoke by way of the transmission lines of TUFCO. Because this proposal had no advantage to HWP, it was not accepted.

Subsequently, Mr. Ferguson urged upon HWP the purchase of all electricity from TUFCO which could not be produced from the generating equipment then installed by the Company. This suggestion was also turned down by HWP as having no economic advantage to HWP.^{272a}

United Electric Light Company

In the summer of 1925 discussions were held between HWP and the United Electric Light Company of Springfield concerning the advisability of connecting the two systems together.

However, the agreement between HWP, TUFCO and HSR in February 1926 which interconnected HWP with TUFCO made any other connections moot. ^{272B}

South Hadley Electric Light Department (SHED)

In 1914 a municipal electric light department was formed in South Hadley. It purchased an electric plant which had been owned by a group of private owners. The electric plant consisted of a steam engine driven generator and three waterwheel driven generators. When the electric requirements of the Town outgrew the generating capability of the Department, it purchased its additional requirements from the Holyoke Gas and Electric Department.

As early as April of 1906, HWP had begun selling electricity to a mill of the American Tissue Mills in South Hadley Center. In 1923 Mount Holyoke College, also in South Hadley Center, was converting its campus from gas to electric illumination. The HWP electric transmission system was located on the street adjacent to the college property. HWP was asked by SHED to submit a proposal for delivering to it, at the College, the latter's electric requirements. SHED apparently intended to sell that electricity at a markup to the College.

During the summer, an arrangement was completed so that the College had electric illumination, instead of gas, when it opened in the fall.

In December of that year, HWP was asked to submit a proposal to SHED for supplying the entire requirements of the Town. During the following year, a contract was worked out at a rate \$.0165 per kWh which was considerably lower than \$.0217 which it had been paying G&E. It was signed in January 1924. HWP then became the main supplier of electricity to South Hadley for over 60 years.

The negotiations between SHED and HWP aroused the ire of Manager Kirkpatrick of the G&E. He threatened to have the City of Holyoke acquire the plant of HWP by eminent domain "if it persists in its efforts to take away customers." ²⁷⁴

On November 12, 1924, in the Holyoke Telegram, James L. Tighe, one of the G&E Commissioners, made the following statement: "So far as the Town of South Hadley is concerned, I can conceive no reason why it should be interfered with in securing electric energy from any firm that will give the most advantageous bargain."

The response of HWP was printed in all the local papers. That which was in the Springfield Daily News of November 12 is given herewith. It points out that HWP was legally required to sell to South Hadley in accordance with the terms of its street franchises.

Springfield Daily News

Holyoke, November 12--The Holyoke Water Power company today issued a statement in which it takes to task John J. Kirkpatrick, manager of the Holyoke gas and electric department, in which he criticized certain negotiations between the company and the municipal light board of the town of South Hadley. It follows.

"This criticism may have been made under a misapprehension.

"In 1905 the town of South Hadley granted to the Holyoke Water Power company a franchise to erect poles and string wires thereon for the transmission of electrical power.

"This franchise was granted under certain conditions, among which was the following: 'This franchise is granted upon the following conditions: That said Holyoke Water Power company shall sell electricity to said South Hadley at a price equal to the lowest price per H.P. at which it shall at the time be selling electricity in 100 H.P. quantity to any purchaser for use during the same hours or times as stipulated in said agreement.'

"On June 1, 1923, our company executed an electrical contract with the town of South Hadley for the delivery of energy which has been used at Mount Holyoke college, although the contract contains the following provision: 'All electrical energy delivered under this contract shall be used by the consumer and sold by it for any purpose for which said town can legally use or sell the same.'

"Sometime ago, without our solicitation, the municipal light board of the town of South Hadley requested this company to state the terms under which it would furnish electrical energy to it for distribution.

"We were pleased to be of service to the town of South Hadley. Under the terms of the franchise granted to our company, we were legally obliged to comply with the request of the municipal light board of the town."

A brief history of the South Hadley Electric Light Department and its relationship to HWP was written for a meeting of company management and the Department Commissioners in November 1985. It has served as a source for much of the foregoing information.²⁷⁵

Riparian Lands in South Hadley and Chicopee

At this time in South Hadley there were several persons who claimed ownership of lands along the shore of the river in South Hadley between the County Bridge and the dam. As riparian owners they claimed their titles extended to the center of the river. At its meeting on March 25, 1925, the Directors authorized the management to try to buy these properties.

The reasons for wanting to buy the lands were:

1. These riparian rights would be needed by HWP if it was ever to build a hydroelectric plant at the South Hadley end of the dam.²⁷⁸
2. There was a sizable amount of land between the river's edge and the northerly border of the lands which was considerably below high water but which could be filled to make land for industry.

At the August 31 meeting the management reported that it had been successful in purchasing the property of two of the riparian owners, Ruth Bardwell²⁷⁹ and Robert Brainerd. Both of these were purchased on September 2, 1925. A third property owner was the Roman Catholic Bishop of Springfield. That property was purchased by HWP on September 20, 1946.

In 1929 and 1930 the company negotiated with the owners of the Hadley Mills in South Hadley to purchase its property. The company was in financial difficulty and eventually was in the hands of a creditors' committee and was sold at public auction. The purchaser was an agent of HWP.

The Hadley Mills property had an assessed value of \$213,500 and was purchased for \$43,000. The acquisition comprised of:

Four millpowers of 16-hour water power
 Textile machinery
 A large area upon which were located various buildings, steam power plant, machine shop, etc.
 Two-story brick store house
 Three-story boarding house
 Two vacant lots

The machinery was sold off and the buildings razed to save taxes.

The same situation occurred downstream of the County Bridge along the South Hadley and Chicopee shores. At their meeting on September 25, 1925, the Directors authorized the management "to gradually acquire on behalf of the Company, lands in Chicopee and South Hadley adjacent to the Connecticut River, between the Willimansett Bridge and the County Bridge, leading from the Town of South Hadley, as a protection to our riparian and hydraulic rights and as possible industrial sites for the use of our electric power."

Over the years these areas have been acquired so that the lands along the east side of the river from the County Bridge to the Willimansett Bridge are now nearly all in either public or HWP hands.

1927 Flood

As a result of extraordinary rainfalls over the greater portion of the Connecticut River drainage area during the first few days of November, the greatest flood on record, up to that time, was experienced on November 5-6, 1927.

By the evening of November 4, the river was rising at the rate of six inches an hour at Holyoke and it became evident the past flood heights would be greatly exceeded. The entire crews of the company were called out to fill sand bags which were used to prevent water from entering the windows of the Headgate houses.

The most serious condition occurred at daybreak on November 5 when a large stream of water found its way down the main tracks of the Boston and Maine Railroad. This was water which then could enter the canal system out of HWP control and which had the potential of causing great damage.

The trains on the railroad were stopped and a sandbag dam was built across the right of way which stemmed the flow.

The river crested on November 5 with 14.75 feet of water flowing over the dam. This was more than two feet above the next highest floods of 12.70 feet which occurred in 1869 and 1913.

When the river receded the temporary sandbags were replaced by permanent concrete masonry walls. ²⁸²

Holyoke Power and Electric Company

In 1925 HWP incorporated the Holyoke Power and Electric Company (HP&E) as a public utility.²⁷⁹

In 1926 the company attempted to clarify the legal situation of HWP in so far as its sales of electricity in Holyoke were concerned by introducing legislation to transfer its sales of electricity in Holyoke and elsewhere to HP&E. This move was opposed by Holyoke officials.

A bill was finally passed which left the status of electric power distribution of HWP in Holyoke unchanged. HP&E was authorized to sell electric power without restriction outside of Holyoke. This bill is Chapter 147 of the Acts of 1926.²⁸⁰

HWP then transferred the electric business it was doing in South Hadley to HP&E.²⁸¹

One of the very great benefits of HP&E to HWP occurred many years later when Mount Tom Power Plant (MTPP) was being planned. HWP, not being a public utility, does not have the right of eminent domain. It would have had great difficulty in acquiring a transmission line right of way through South Hadley and Chicopee. However, by having HP&E, with its right of eminent domain, build the transmission line, the matter was resolved. HWP sold the MTPP output to HP&E which delivered it to the HWP substation in Chicopee where it was repurchased.

Electricity for Power but not for Lights

In August of 1922 there surfaced an issue in Holyoke which stemmed from the 1903 legislation that had allowed HWP to return to the electric business under certain restrictions. Among those restrictions were the words "authorized to manufacturer electricity for power purposes."

In 1922 William Skinner & Sons, Holyoke textile manufacturer and electric customer of HWP, used electricity for illuminating its mill by installing a transformer to reduce the voltage of the HWP power to that of its lighting circuits.

The manager of the G&E sent communications of protest to HWP. This was followed by a protest to the company by the City Solicitor.²⁸³

The genesis of this issue lies in the early system of generation and distributing electric power in Holyoke. It was a direct current system. There was a voltage for lighting and a higher voltage for power. The development of alternating current, along with the transformer, made it possible for electric customers to transform purchased electricity to whatever voltages they needed for both power and lighting uses. HWP had no control over the ultimate use of the power sold. Yet, that is the issue which the City Solicitor was raising.

The matter arose again in January 1925 when the Mayor of Holyoke filed a bill in equity in the Superior Court alleging that the company was violating some of the terms of its charter or of its legislation.²⁸⁴

The complaint filed by the City was lengthy. It claimed two violations by HWP of its enabling Massachusetts Statutes of 1903 and 1909. The allegations were that the company was selling electricity which some of its customers were using for other than power purposes and others were using in quantities less than 100 horsepower.²⁸⁵

The following day in a paid advertisement in both local newspapers, HWP "emphatically denies that it has, in any manner, violated the terms of its charter, in connection with the power business, and it welcomes a judicial determination of the charges which have been made against the company."²⁸⁶

In November a committee of the Board of Aldermen appointed to investigate the industrial conditions of the City made a report and some recommendations. Among them were the following:

"The Committee believes that the institution of actions at law such as the suit now pending between the City of Holyoke and the Holyoke Water Power Company, should be a last resort in attempting to settle controversies. We believe that much more can be accomplished through the process of friendly negotiations.

"It is the belief of the Committee that the larger interests of the City of Holyoke require that the action now pending in the courts against the Holyoke Water Power Company be dismissed."²⁸⁷

However, it was not until March 20, 1929, over three years later, that the management could report to the Directors that an agreement had been reached between HWP and G&E and that the bill in equity was being withdrawn.²⁸⁸ The report to the Directors is a part of this history. Pertinent excerpts of it follow:

"Referring to the above mentioned bill in equity - The officials of the City objected to the use of our electrical energy for lighting purposes on the premises of our consumers, and they also objected, because, at times - such as during nights, Sundays, holidays and during business depression, the electrical demand of our consumers fell below 100 H.P.

"In order that the basis of these objections may be understood, the following abstract is taken from Chapter 350, of the Acts of 1903:

'The Holyoke Water Power Company *** is hereby authorized to manufacture electricity for power purposes, within the City of Holyoke and the Town of South

Hadley *** provided, however, that it shall not sell or deliver electricity to any one purchaser in a quantity less than one hundred horse power at any time,***

"Bearing in mind the above objections, and the practical use of energy by our consumers, the following is quoted from a stipulation which has been prepared and which was approved by the Gas and Electric Commission on March 20, 1929:--

'NOW, THEREFORE it is, by and between the said parties, stipulated and agreed as follows:

'The Defendant may manufacture, distribute and sell electricity for any purpose to any purchaser of electricity in Holyoke who shall have installed upon his premises electrical apparatus having at least one hundred (100) horse power capacity and who shall have installed upon his premises industrial apparatus which would require at least one hundred (100) horse power of electrical energy for its operation and who shall use at least one hundred (100) horse power of electrical energy when his plant is in normal operation, provided, however, that said purchaser may use, from time to time, not exceeding in any one time a period of twelve consecutive months, a lesser amount of electrical energy during periods when the operations of said purchaser are curtailed or suspended, and provided further, that not more than fifteen percent (15%) of the annual electrical consumption of said purchaser may be used upon the premises of said purchaser for lighting purposes.

'It is further stipulated and agreed that the Plaintiff will not object to the manufacture, distribution and sale of electricity by the Defendant under the provisions of Chapter 350 of the Acts of 1903 in accordance with the foregoing

interpretation as to the meaning of said Act, and that the bill in equity filed in this case be dismissed without costs to either party.'"

At the March 28, 1930 meeting of the Directors, the President reported that the equity case had been dismissed.

At the same time, in consideration of the dismissal of the bill in equity, HWP agreed with G&E as follows:

1. To the granting of an easement 10 ft. in width crossing the waste-way channel.
2. To an agreement by which the water power rights which the City of Holyoke acquired will be transferred to our Power Plant No. 2 for the generation of electrical energy during a period of 15 years. The water power rights referred to here were acquired when the City of Holyoke purchased the American Thread Company plant on the Second Level Canal in 1928. That plant later became owned by the Graham Manufacturing Company. It is now occupied by a successor of the Graham Company.
3. To an electric power contract by which our Company will deliver electrical energy of an equivalent amount to the City of Holyoke for general distribution during the 15 years, after which period our Company will not object to the transmission of said water power from the premises in the form of electrical energy, should the City of Holyoke, at that time, desire to construct a hydro-electric plant for the purpose.

The alleged charter violation issue was first raised by the G&E manager in 1922. It was not until 1929 that it was finally settled.

Westfield Gas and Electric Department

From late 1927 until early 1929, negotiations were carried on between the Holyoke Power and Electric Company and the Westfield Electric Light Commission concerning a proposed electric contract.

As of December 21, 1928 enough progress had been made so that the President was authorized to draft the pertinent contracts and to expend such funds as needed to carry out a power agreement with Westfield. The HWP proposal contemplated building a transmission line along the right of way of the Holyoke and Westfield Railroad from Holyoke to the Westfield Substation and to pay for the necessary changes in the Substation.

In his report to the Directors for the quarter ending February 28, 1929, the Treasurer made the following statement concerning the Westfield negotiations:

"During the quarter, there has been considerable activity in reference to the proposed power contract between the Holyoke Power & Electric Company and the City of Westfield.

"Several conferences have been held and a decision from the Commissioners was expected before this time.

"During the past few weeks there has been evidence of keen competition in the situation, and we are unable to predict the outcome.

"Inasmuch as our negotiations have been conducted on a basis of no competition, a letter - copy of which is attached hereto - was delivered to the Mayor and to each member of the commission on March 16, 1928. This letter gives a resume of the situation and for that reason is included in this report."

The April 19, 1929 newspaper carried the news that the Westfield electric contract had been awarded to the Turners Falls Power and Electric Company (TUFCO). That announcement is included herewith.

C O P Y

March 16, 1929

Lewis C. Parker, Esq., Chairman
Electric Light Commission
Westfield, Mass.

Dear Mr. Parker:

Referring to the proposed power contract between the Holyoke Power & Electric Company and the City of Westfield.

This matter has been in process of negotiation for more than a year.

Under date of December 17, 1927, we received from you the following letter:

"Mr. Robert Barrett, President,
Holyoke Water Power Co.
Holyoke, Mass.

Dear Sir:

I enclose letter of Albert S. Richey, whom I wish you would see in the matter mentioned by Mr. Avery. I have written Mr. Richey that you would write him direct and make the appointment with him, and that he would advise me so that I can be present if possible. I doubt however, if I can be there.

The figures which Mr. Richey mentions I believe are correct except that the requirements I believe would be about ten million k.w.h. Will you kindly return Mr. Richey's letter to me.

Yours respectfully,
Lewis C. Parker."

As a result of this letter, we communicated with Prof. Richey in regard to a conference.

As you undoubtedly recall, a number of conferences were held for the purpose of ascertaining your requirements and wishes in the matter.

L. C. Parker, Esq., Chairman

- 2 -

Prof. Richey sent his assistant, Mr. Thayer, to Holyoke for the purpose of making a technical examination of our power generating and transmission apparatus.

Subsequently, a similar examination was made, in less detail, by Mr. Kennard, Manager of your Department.

After several conferences had been held, we were requested to prepare a draft of contract which would save the City of Westfield at least \$20,000. annually, over its present cost of electrical energy, and based upon the present consumption, that meant a reduction in rate to about 14-1/2 mills.

On December 10, 1928, Prof. Richey came to our office in Holyoke and conferred with officials of the Company, and we quote the following from a memorandum of that conference:

"Recommendations of Prof. Richey.

1. That all changes necessary in the switchboard and feeder layout entailing new construction and the expenditure of money be financed by the Holyoke Power & Electric Company, but that the title to distributing lines outside of the substation should be in the City of Westfield.

2. Power shall be delivered at 2300 or 4600 volts at the outside of substation to be owned by the H.P.&E.Co.

3. Length of contract to be 20 to 30 years.

4. Clause to be inserted in contract providing for adjustment of rate every 10 years.

5. Contract to provide for a coal clause similar to that now existing in the contract in force, and based on \$8.00 coal.

6. That the H.P.&E.Co. shall operate the substation.

7. Prof. Richey stated that, subject to the approval of all details by counsel, the Commission was willing to sign up with the H.P.&E.Co. if it can be shown that a saving of \$25,000. or \$30,000. per year can be effected by so doing, and suggested the following rate schedule:

For first 4,000,000 per year	\$0.0150 per KWH
" all over "	0.0145 " "

L. C. Parker, Esq.

- 3 -

In accordance with these suggestions, the first form of contract was prepared and presented to Prof. Richey.

The contract was originally written for 20 years, and the Directors of the New York, New Haven and Hartford Railroad Company granted us a 20 year lease for a right-of-way.

Subsequently, at your request, the contract was written for 30 years, and the right-of-way lease has been extended to cover the period of 30 years.

We understood subsequently, that you desired the coal clause eliminated and the contract form was then modified to meet your desire.

After having reached a definite understanding in regard to rates and technical features of the proposed contract, it was approved by the Directors of our Company on December 21, 1928, arrangements having previously been made to secure a right-of-way and a location for a distributing substation in Westfield.

On December 21, 1928, two copies of the final form of contract were delivered by special messenger to Prof. Richey, and on December 25, a copy was delivered to you at your house.

From the beginning of our negotiations we understood that you agreed with the position of our Company that any form of contract submitted by us should not be used for trading purposes.

No decision having been made by your Commission, we called your attention early this year, to the fact that a certain amount of construction work on our part would be required to carry out the provisions of the proposed contract.

On March 5, we were invited to meet your commission and Mayor Keefe to formally confer relative to the execution of the proposed contract. At this conference there were present five representatives of each party. We were then advised of the logical objections of your counsel, Joseph B. Ely, Esq. in reference to the execution of the contract.

Counsel for our company, however, stated that the legal objections raised could be satisfactorily met on our part, and on March 7, Counsel for our Company handed to you a further modification of the contract to meet these legal objections.

L. C. Parker, Esq.

- 4 -

At a conference held at your office on March 14th, we were informed that the only remaining objection was the length of the contract.

Since this conference on March 14th, we have given careful consideration to the term of the contract. We now wish to notify you that we do not insist upon a 30-year contract, although the term of 30 years was made at your request. We will consider any term which would seem to be fair under all the circumstances of the case, if you will inform us as to the wishes of Commission.

Mr. Joseph A. Skinner, Vice-President of our Company, who has been present at most of the conferences with you and Prof. Richey, joins in expressing the wish that we may be able to come to a satisfactory agreement, and we, therefore, await your reply.

Yours very truly,

President

WESTFIELD AWARDS ELECTRIC CONTRACT TO TURNERS FALLS CO.

The Westfield Municipal Light Board yesterday awarded the contract for furnishing light and power to Westfield for six years, commencing July 1, 1929, to the Turners Falls Power Company. The Holyoke Water Power Company submitted the same flat rate as did the Turners Falls Company; but the latter's offer began a year earlier, and thus insured an extra savings of \$34,000 for the people of Westfield.

The Turners Falls Power Company now sells to Westfield under an agreement that does not expire until July 1, 1930. The officials, in order to meet the Holyoke Water Power Company's proposition, were willing to cancel the present contract a year earlier.

Mayor Louis L. Keefe and Manager Clarence A. Kinnard of the Gas and Electric Department have signed the contract. It now goes to the State Public Utilities Commission for approval.

Following is the statement of the Westfield Electric Light Board:

The Municipal Light Board strongly recommends that you approve the contract submitted by the Turners Falls Power and Electric Company, for the following reasons:

1. The flat rate of \$.014 without station operation charge is the same as the flat rate proposed by the Holyoke Power and Electric Company. This rate saves the people of Westfield, based on 1928 operations, at least \$34,000 a year, as compared with the present contract.

2. In addition, it saves the people of Westfield between \$35,000 and \$40,000 because the Turners Falls Company is willing to modify its present contract, which does not expire until July 1, 1930, and to put into effect the new rate as of July 1, 1929, while the Holyoke contract could not become operative until July 1, 1930.

3. It gives the city the option of trying the Hopkinson scale rate for the year beginning July 1, 1929, and the present tendency of the business of the Westfield plant shows that this scale very probably will save the people a considerable amount over the \$.014 flat rate.

4. The insurance for continuous service, because of the many transmission lines of the Turners Falls Power and Electric Company entering Westfield might well be of the greatest importance.

5. The Turners Falls Company has always been considerate and helpful not only to the Westfield department, but to the people of the city. We have enjoyed excellent service in every way. We believe this is entitled to consideration.

6. The Municipal Light Board will be able to reduce rates for light and power on July 1, 1929, and will not have to wait until July 1, 1930, as it would under the Holyoke contract. It is estimated that this reduction of rates will save \$40,000 yearly to the people of Westfield.

In view of the foregoing, the Municipal Light Board presents to you for your approval, or disapproval, new power agreement between the Turners Falls Power and Electric Company and the City of Westfield and an optional proposal which is part thereof. Both documents are dated April 11, 1929, and have been signed by the Turners Falls Power and Electric Company and the Municipal Light Board and the manager.

Respectfully submitted,
LEWIS C. PARKER,
CHARLES B. WARREN,
STANLEY K. SMITH,
Municipal Light Board.

Comments

From a reading of the letter to the Chairman of the Westfield Electric Light Commission of March 16, 1929 and a reading of the April 19, 1929 newspaper account, both of which are included herewith, the following comments can be made:

1. It seems quite doubtful that the understanding that the HP&E proposal would not be used for trading purposes was honored (see page 3, paragraph 7 of HP&E letter of March 16, 1929). Perhaps it was naive on the part of HP&E to believe it could have been.
2. TUFECO reduced its rate by \$34,000 a year to equal the .014 rate quoted by HP&E. It also reduced its rate for the one year remaining in its existing contract by the same amount.
3. TUFECO had four transmission lines that could serve the City. HP&E had two.
4. Consideration was given to TUFECO because it "has always been considerate and helpful not only to the Westfield Department, but to the people of the City."

Corporate Negotiations TUFECO and HWP

Throughout these years, there were several efforts on the part of TUFECO to acquire HWP. A summation of some of those efforts follow:

June 5, 1918 - TUFECO desired to purchase a majority of all of HWP stock. Directors Records (DR)

March 21, 1919 - Directors voted not to accept proposition of TUFECO.

March 29, 1919 - Attorney Joseph B. Ely acting for TUFECO asked for an appointment to take up the purchase of HWP.

December 23, 1925 - Committee of Directors of HWP met with a committee of TUFECO Directors.

June 29, 1928 - At a meeting of the HWP Directors, the President reported that George W. Lawrence, President of Western Massachusetts Companies (WMC) called on him in reference to placing the management and control of HWP under the Western Massachusetts Companies through an exchange of shares.

November 25, 1928 - Newspapers reported that HWP had been sold to WMC. The HWP President wrote a letter to all stockholders denying the report.

September 27, 1929 - Attorney Joseph B. Ely of Westfield called upon HWP, to press the case for its purchase by WMC.

March 28, 1930 - The Joseph B. Ely meeting was discussed by the Board of Directors. No further negotiations took place. (Note: Joseph B. Ely was Governor of Massachusetts in 1931, 32, 33 and 34).

New Hydro UnitStudies

During this period, extending over several years, three sites were considered by HWP as locations for further hydroelectric development.

At the Dam

For the second time, the first being in 1903, HWP planned a hydroelectric plant at its dam. In 1903 the project was to be a combined hydro and steam electric generating plant. This latest proposal had no steam equipment.

The hydro plant was to be located at Holyoke, in the area between the First Level Canal and the dam, near the Gatehouse. It was to have an installed capacity of 34,000 kilowatts made up of four 8,500 kilowatt units. The plant was designed to take water from behind the stone dam into an open forebay from which it would flow to the waterwheels. A tailrace channel, much like that now at the Hadley Station of HWP would have discharged the water downstream. A plan of the proposed project is included herewith.

HWP applied in December 1925 for the necessary Massachusetts approval for the plant, an approval which was received in December 1926. The company then applied to the Federal government for permission to build the plant. That permission was received in April 1928.²⁹⁶

South Hadley

As late as August 31, 1930, the management reported to the Directors that it was making studies to determine the most economical hydroelectric plant that could be built on the recently acquired site in South Hadley.²⁹⁷

The Hadley Mills site which had been recently purchased was the logical location for a hydroelectric unit. Water from above the dam could enter the South Hadley canal through the gatehouses and by means of a penstock carry it to the power plant site.

However, the quantity of water which could supply such a unit was limited by the amount of additional water that the canal could carry in addition to that which it was already supplying the Carew and the Hampshire mills. That additional amount of water was not sufficient at that time to warrant a hydro development in South Hadley.

Riverside Station

At the Directors Meeting on November 30, 1930, the management announced that an area of land south of Riverside Station, which included a penstock and a tailrace, was about to be transferred to HWP by the American Writing Paper Company (AWP). It was suggested that a 2,700 kilowatt unit could be installed on that site.²⁹⁸

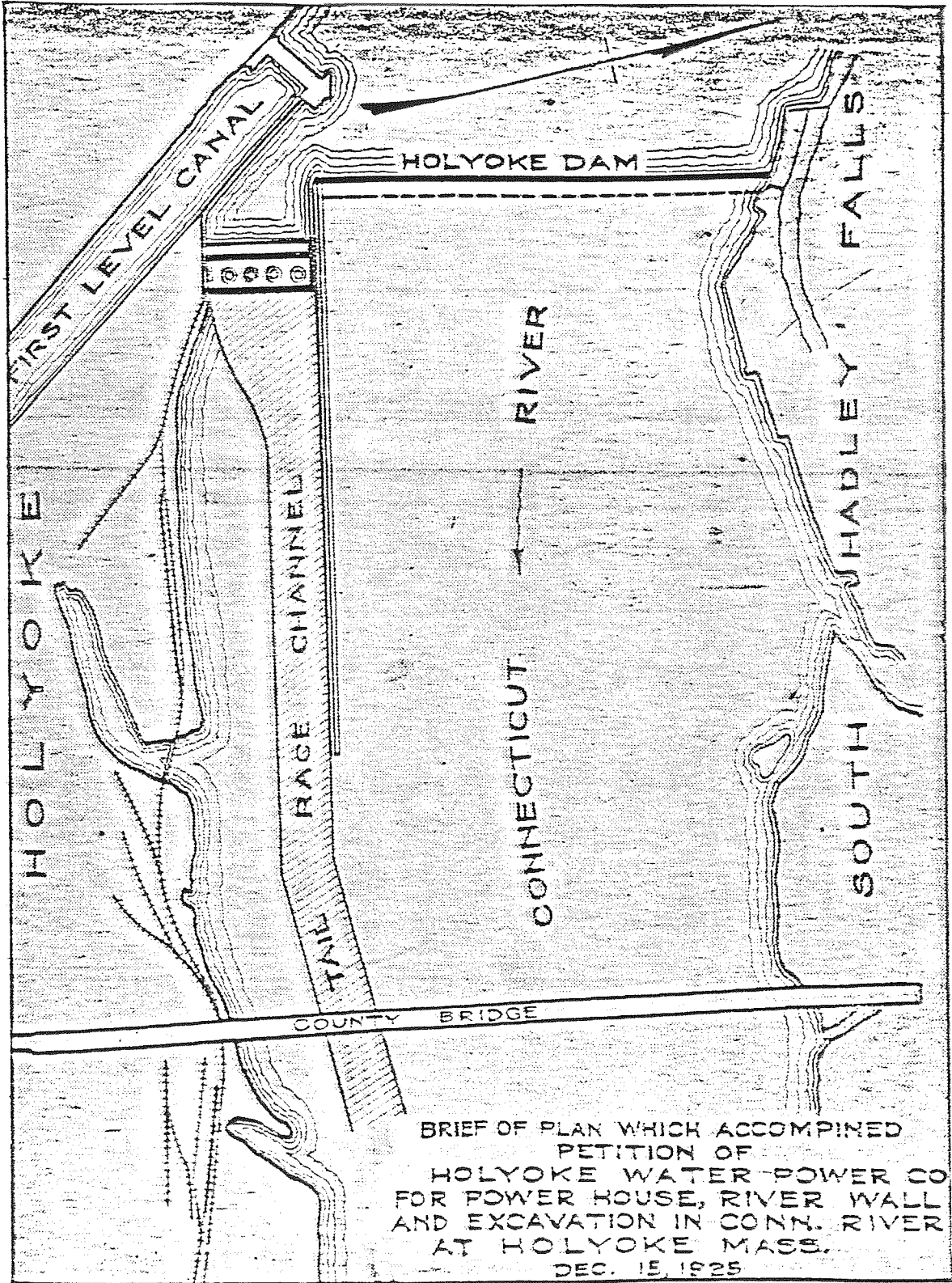
Three months later the negotiations with AWP had been completed satisfactorily. However, by that time the size of the unit had been increased to 4,000 kilowatts, which was too large to utilize the former AWP site.²⁹⁹ Therefore, the project was moved to the upstream side of Riverside Station. This meeting was held on March 27, 1931. At that meeting the management said that it expected to have the new unit in operation by November 1, seven months later.³⁰⁰ It was actually in operation in December.³⁰¹

Comments

In retrospect, the following observations can be made:

- o Unit at the Dam: The project was undoubtedly too large and too costly to be justified at that time by the HWP electric loads.
- o South Hadley: The Hadley site was limited in its water supply, at that time, to a unit too small to be economically justified.
- o Riverside: This was the best site of those studied.

Proposed Hydro-Electric Station Cost Estimated at \$2,000,000



Holyoke Transcript
December 22, 1928

Growth of Electric Business

As a measure of the growth in sales of electricity during this period by HWP, the following tabulation is taken from Company records:

Electric Gross Income

1920	\$ 73,629
1921	84,391
1922	106,887
1923	245,194
1924	214,647
1925	302,320
1926	372,046
1927	449,941
1928	422,053
1929	465,009
1930	449,043

HWP Sells Connecticut Lake to
Connecticut Valley Lumber Company

The fact that HWP once owned property at the Connecticut Lake, which is the head water of the Connecticut River in Northern New Hampshire, came as a surprise to the present Holyoke management of HWP. It stemmed out of research on a bill in the Legislature in 1919 affecting water power users in Massachusetts. That bill would have encouraged the development of water power resources by building dams and storage reservoirs. It would also have required that payments be made by users of water power to those building the dams and reservoirs. The bill, if passed would have adversely affected HWP. The company fought it successfully.

During hearings on the bill, the representatives of HWP said that the storage scheme was impractical. President Charles E. Gross of the company told how, 40 years prior, HWP had purchased the property which controlled the discharge of water from the Connecticut Lake to the Connecticut River. He told how they had tried to store water in the spring for use at Holyoke in the summer. However, it was found to be impossible to determine when any surplus water arrived at the Holyoke dam, which had been released from storage at the Connecticut Lake.²²⁸

Nathan P. Avery, Attorney for HWP, added that during the years 1881 to 1910 when the company owned the Connecticut Lakes, they produced no additional profit.²²⁹

In April 1910 HWP sold its Connecticut Lake properties to the Connecticut Valley Lumber Company (CVLC) which had been in possession of the property since 1887 as a tenant at will of HWP. The properties sold by HWP included the dam, saw mill, and 500 acres of land.

A chain of title for the Connecticut Lake property, the Deed to CVLC from HWP, and a paper concerning HWP and the Connecticut Lake accompany this history.²⁸⁹

The Island and the Saw MillThe Maps

The so-called Island, located in the river above the dam, has played an important role in the industrial and recreational life of Holyoke from early times. On a map drawn in 1831 of Ireland Parish, then a part of West Springfield, and later a part of Holyoke, the Island is shown. It is located along the westerly shore of the river, between the Upper Falls and Lower Falls. That map follows marked "A".

In 1847 Stewart S. Chase, engineer for the Hadley Falls Company, made a survey of the Connecticut River in the area of the falls. A map drawn from those notes is included herewith marked "B." The Island is shown near the westerly shore of the bend in the river above the wing dam.

Both of these maps were drawn before the dam of the Hadley Falls Company was built in 1849. The building of the dam raised the height of the river and initially must have nearly submerged the Island.

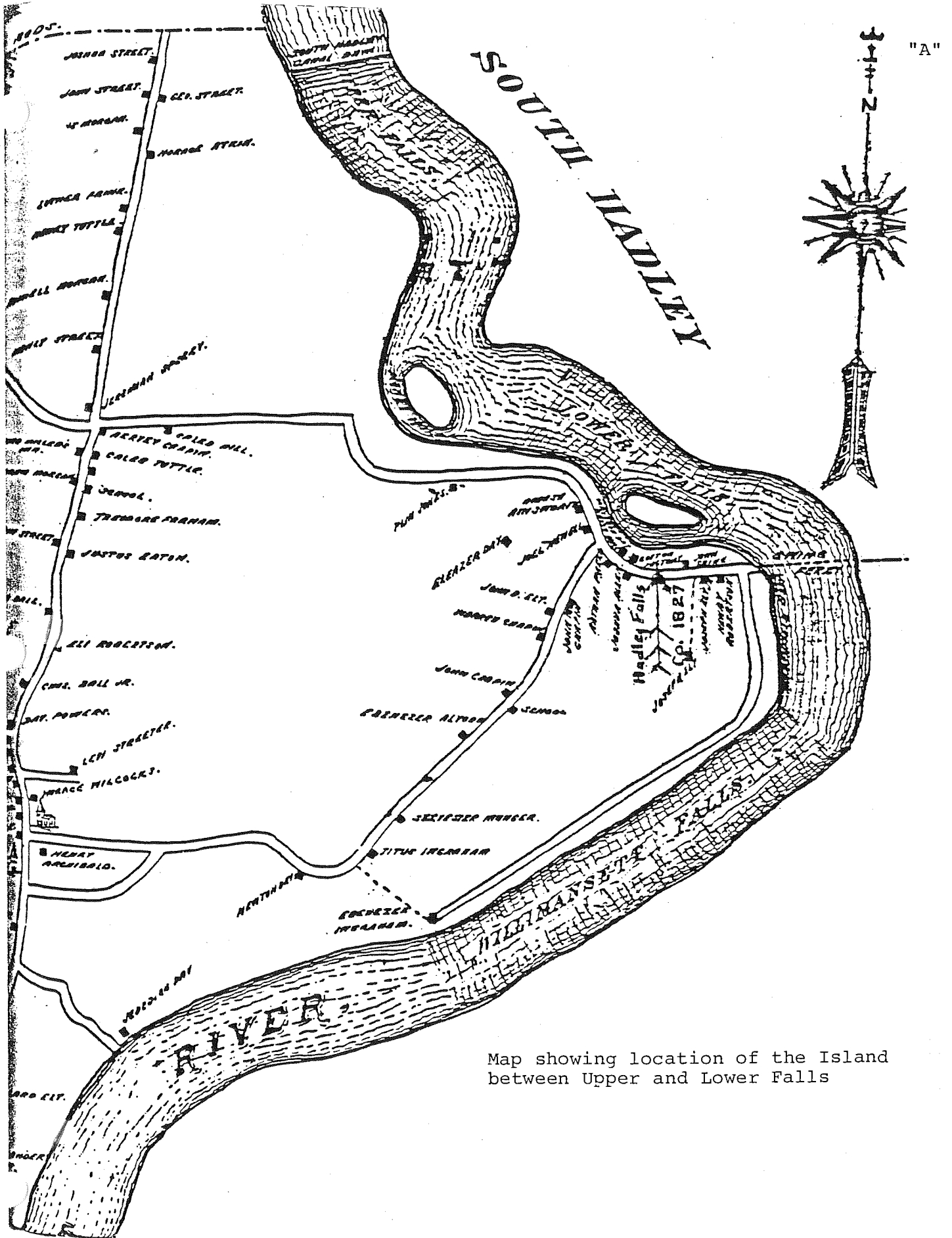
The Saw Mill

The first and only business use of the Island area began in 1871 when a saw mill was built by the Holyoke Lumber Company (HLC) on the Holyoke side of the river above the dam on land sold to it by HWP. It is believed that the construction of the mill had been at least partially financed by HWP. In 1874 the mill burned down. At the Directors' Meeting of January 6, 1875, the President reported that the proceeds of \$30,000 from the fire insurance on HLC were payable to HWP.

The Directors then voted, "That the President be and is authorized to apply the insurance money received, towards rebuilding the mills, shafting and machinery or reloan the money upon satisfactory security." The mill was rebuilt.

Log Drives

Logs harvested in the northern reaches of the Connecticut River were transported to downstream mills by the waters of the river in log drives. These drives took place from 1875 to 1915 during the annual spring freshet.²⁹⁰



Map showing location of the Island between Upper and Lower Falls

Log Boom

When the logs destined for Holyoke reached the city they were stopped by a boom extending from the upstream end of the Island part way across the river. The supports for the boom were eleven large wooden cribs filled with stone which were the anchors for the log booms which floated between the piers. This pier/log arrangement formed the barrier which prevented Holyoke destined logs from going downstream.

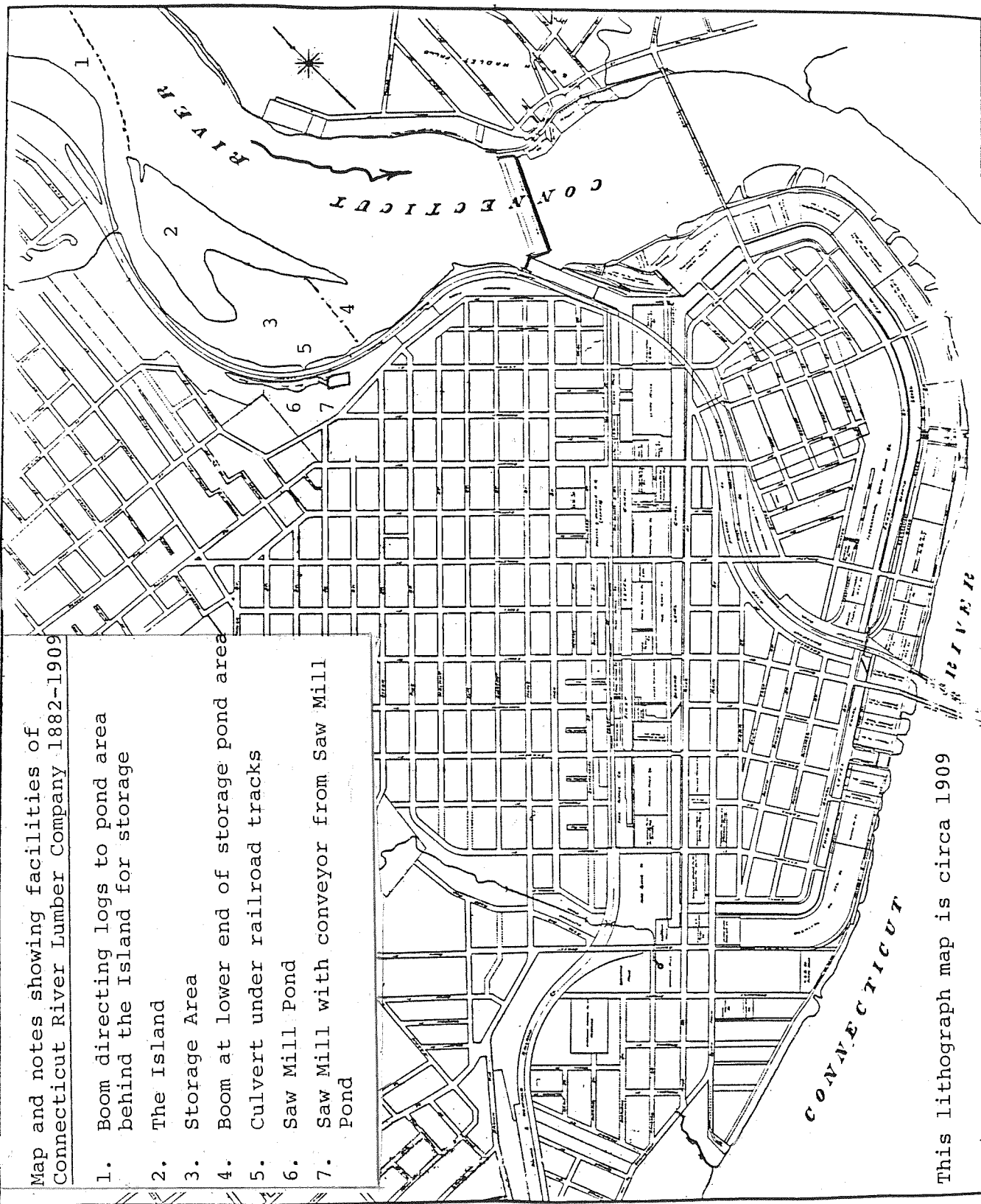
From Log Boom to Saw Mill

The logs were next guided along the boom and into the area between the Island and the shore. Map "C" shows the Island as it existed circa 1909. It also shows the boom, storage area, lower boom, culvert, Saw Mill Pond and saw mill. Much of the lumber used in building the Holyoke factories and homes came from this mill. A picture of the log storage area between the Island and the railroad is marked "D."

Logs Driven Below Holyoke

Logs destined for down river users could bypass the Holyoke boom. Logs were thus floated downstream to Springfield and Hartford as the following record from the Directors Meeting of July 27, 1876 states:

"The President reported that the Holyoke Lumber Company had attempted to float some logs over the dam and to Springfield, and that many of the logs, after passing over the dam, were lodged in the rocks below. That the logs of the Hartford Lumber Company have not yet reached the pond above the dam, said Company say there are six million feet of logs on the way, which they intend to float to Hartford."



Map and notes showing facilities of Connecticut River Lumber Company 1882-1909

1. Boom directing logs to pond area behind the Island for storage
2. The Island
3. Storage Area
4. Boom at lower end of storage pond area
5. Culvert under railroad tracks
6. Saw Mill Pond
7. Saw Mill with conveyor from Saw Mill Pond

This lithograph map is circa 1909



Log storage area between Island and the Railroad. Saw Mill with smoke stack is at the right of the picture.

The Fire

In 1882 the mill previously operated by the Holyoke Lumber Company was leased to the Connecticut River Lumber Company. On September 2, 1887, the mill was again burned to the ground.

The local newspaper carried a lengthy story of the fire. Items from that article follow:²⁹¹

- o The mill was 180 feet long, 50 feet wide, and two stories high with an addition of 20 feet for the planing department.
- o The mill had two rotary saws, a shingle machine and two planers.
- o The mill could produce 75,000 feet of long lumber, 70,000 feet of lath, and 15,000 shingles per day.
- o The mill owned and ran a boarding house.
- o There was a regular work force of 150 men.
- o The mill and machinery were valued at \$32,000 and insured for \$28,000.
- o The mill had just received its big drive of logs, was full of orders, and was running both saws.
- o It would take three months to rebuild it and refit it.

The HWP Directors at their meeting on September 7, 1887, "voted to rebuild the saw mill and replace machinery."

On October 17 a local newspaper reported that the new saw mill buildings which HWP was building were staked out and that the contractor would begin building at once.²⁹²

The name, Connecticut River Lumber Company was changed, in 1892, to Connecticut River Manufacturing Company and in 1899, to Connecticut Valley Lumber Company (CVLC) as noted in the Holyoke City Directories of these years.

CVLC stayed in business in Holyoke until 1909. The last log drive in the river was 1915. However, no logs came to Holyoke after 1905.^{292a}

A picture of the saw mill marked "E" is included herein. In addition, a portion of a map marked "F" is included. It shows the location of the saw mill.^{292b}

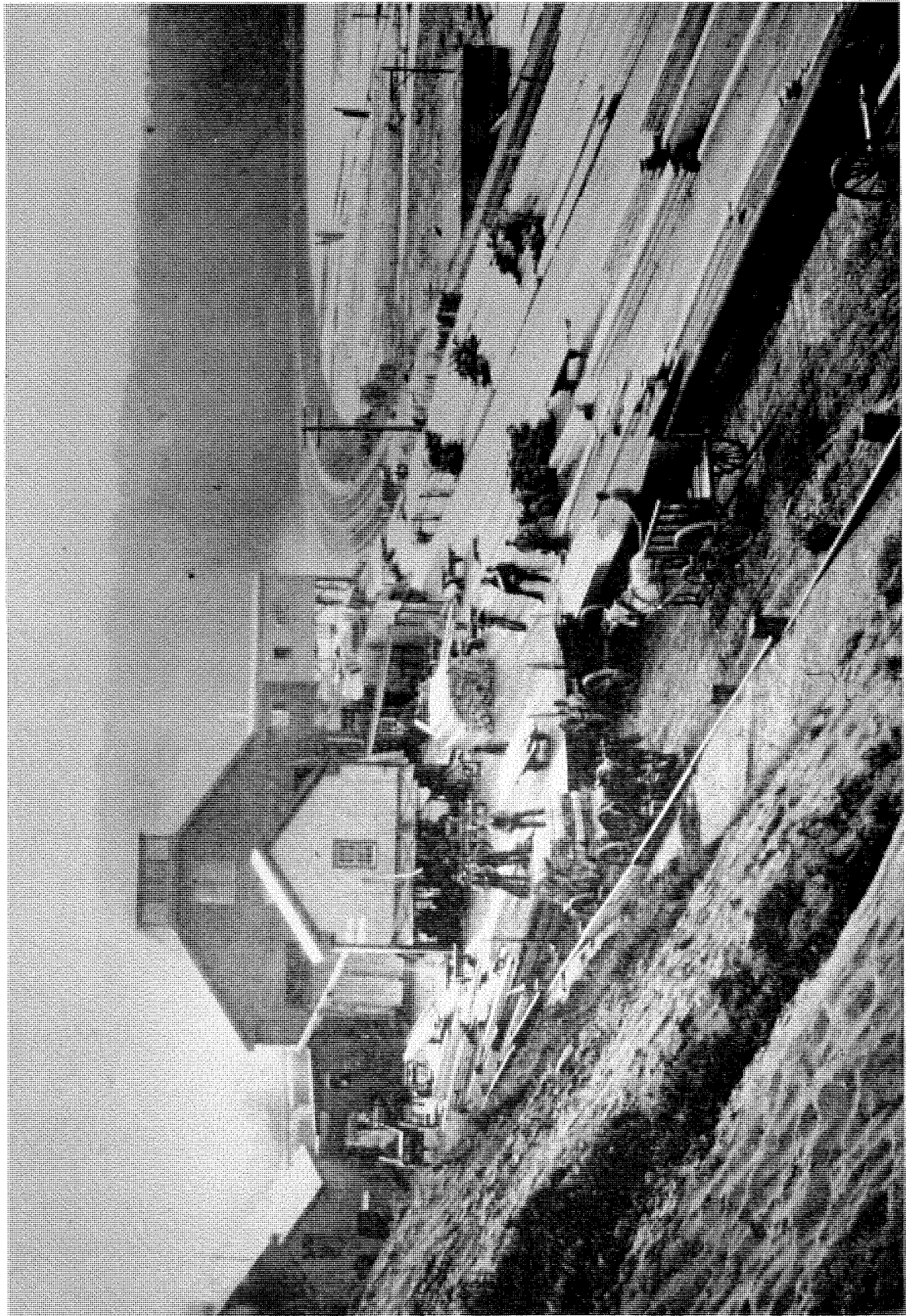
The Piers and Their Removal

The last event related to the log drives occurred in 1925. The piers for the log booms had become hazards to boating in the river. Although the piers had been built by others, state officials urged HWP to remove them. As the riparian owner along both sides of the river near the piers the company agreed to remove them.^{292c}

In 1875, eleven piers were built in the river as anchors for the boom. They were massive, having bottom dimensions of 25 feet by 50 feet, top dimensions of 25 feet by 25 feet and a height of 24 feet. They were constructed as open log cribs filled with stone and with a sloping planked upstream face. When the river level was the same as the crest of the dam, they stood twelve feet out of water. A side elevation view of a typical pier is included herewith marked "G".

After the last log drive came to Holyoke, the purpose for which the piers had been built no longer existed. As a result, the piers gradually disintegrated down to the water level of the river. This disintegration was caused by men removing the timbers and by the force of ice and current wearing them away. Because of their hazard to navigation, red flags by day and staffs with lanterns at night were placed on eight of the submerged piers in 1916 or 1917. By 1925, two of the three piers nearest to the Island had become buried in sand by the growth in size of the Island and the third was nearly buried.

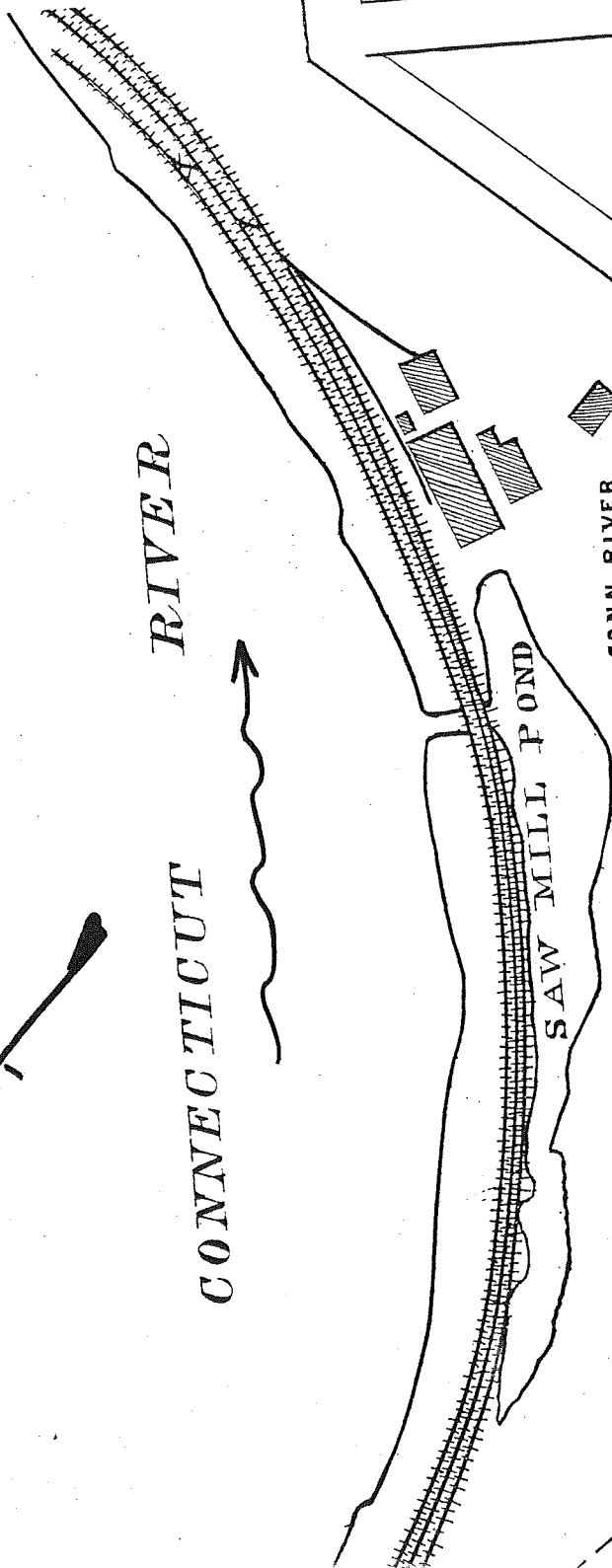
In August of that year, HWP had the remaining piers lowered to such elevations as would not endanger navigation. The work was done by Merritt, Chapman and Scott of New London and New York, a firm which was skilled in underwater construction and demolition.



Saw Mill



CONNECTICUT RIVER



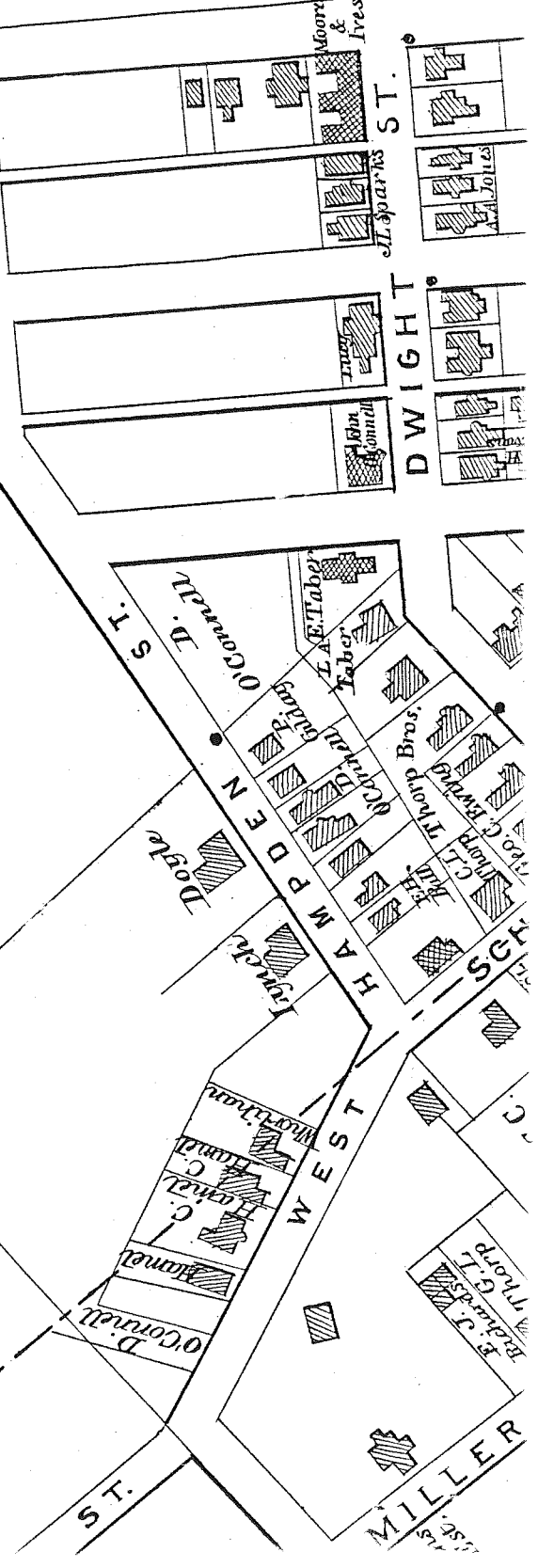
SAW MILL POND

CONN. RIVER CO.
LUMBER CO.
(OC)

H.W.P.CO (W)

W.C.

HAMPDEN ST.



MILLER

DWIGHT

ST.

D. S. T.

Dogle

Wright

WEST

ST.

ST.

ST.

ST.

E. J. Miller

W. G. L.

W. G. L.

W. G. L.

W. G. L.

W. G. L.

L. A. Taber

Taber

Brook

Brook

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W. C. O'Connell

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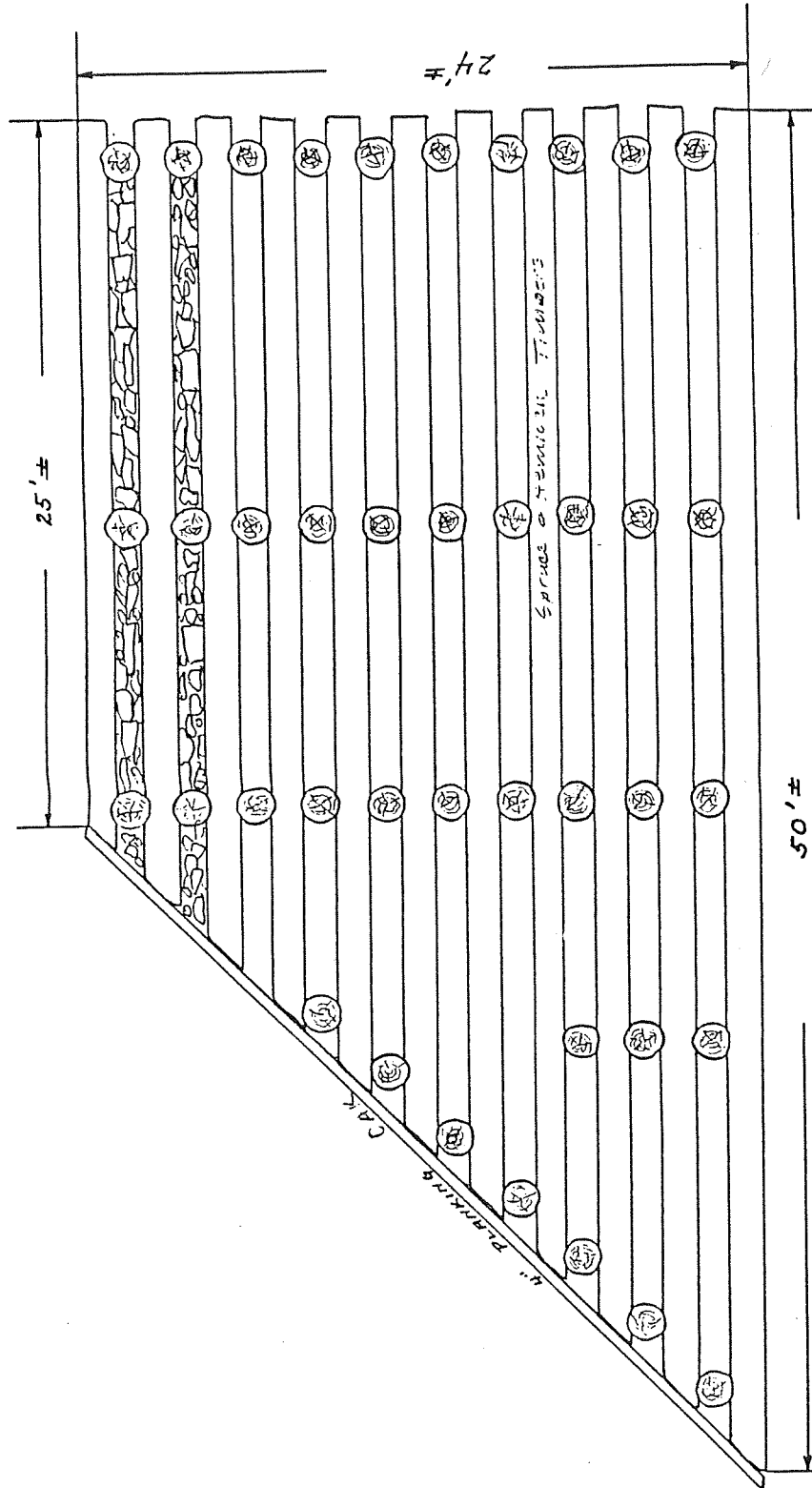
W. C. O'Connell

O'Connell

O'Connell

O'Connell

O'Connell



SIDE ELEVATION

Scale - 1/4 in. = 1 ft.
JULY 1925

LOGGING PIERS
CONNECTICUT RIVER

NOTE: - OCT. 20, 1871, A RIGHT TO ERECT
PIERS WAS GIVEN TO ONE HANSON.

"G"

Much of the foregoing discussion of the pier removals is based upon an HWP report titled, "Removal of Logging Piers in Connecticut River, August 1925" which is included among the exhibits of this history.^{292a}

Swimming at the Piers

For many years, prior to their demolition, the piers had served the young boys of the Highlands section of Holyoke, among whom was this writer, as places from which to swim and dive.

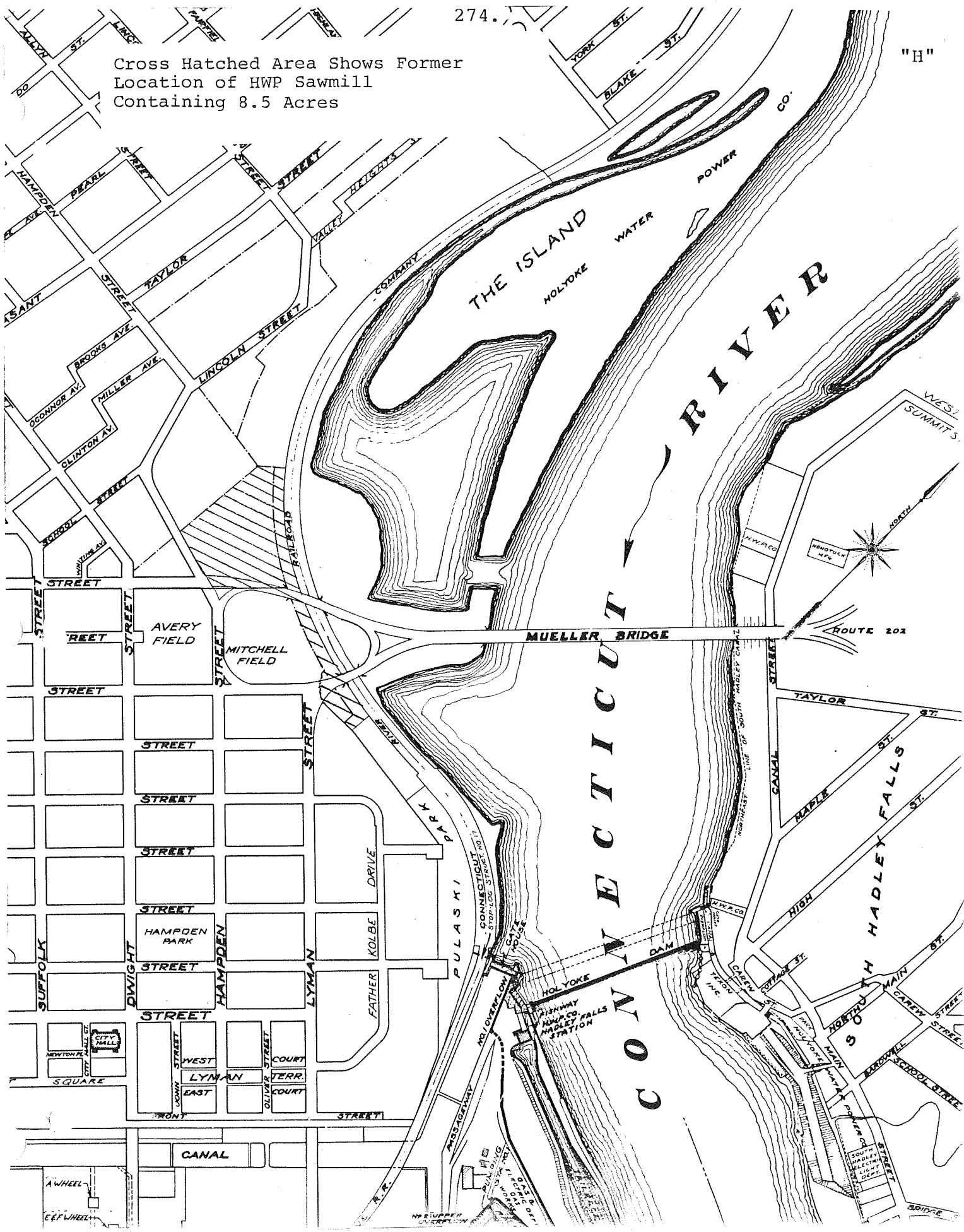
Saw Mill Site Given to City of Holyoke

The area formerly occupied by the Saw Mill is shown, between Hampden Street and the railroad, on the accompanying plan marked "H." It contained 8.5 acres. In December 1944 HWP wrote to the Mayor of Holyoke offering to present the land as a Christmas gift to the City, to be forever used for park and recreation purposes. That letter is included among the exhibits of this history. The land was transferred on September 17, 1945.³⁰²

A discussion of the filling in of the Sawmill Pond and of a portion of the Cove with municipal trash follows herein. Much of the land lies between the railroad and the foot of the slope which leads up to Hampden Street. The park with the flag pole which is opposite the Daniel O'Connell's Sons office is part of the gift which was made to the City.³¹⁶

Cross Hatched Area Shows Former Location of HWP Sawmill Containing 8.5 Acres

"H"



"Fill In" at the Island to Create Land for Industry

In June 1922 HWP proposed a plan of filling the Saw Mill Pond area on the south side of the railroad tracks near the Island and also the pond between the railroad tracks and the Island. The purpose was to create land for industry and also to straighten out a dangerous curve on the B&M Railroad.

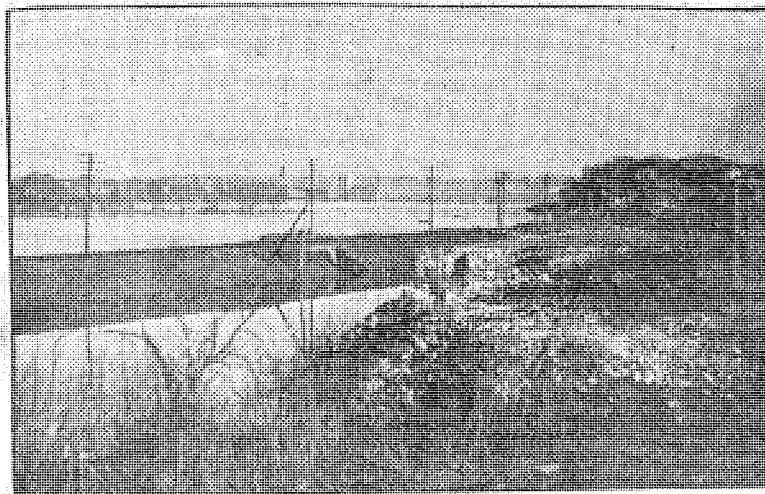
An article from a local paper which discusses the proposed project is included herewith. The plan accompanying the article, in its shaded area, shows the proposed fill. The bridge across the river proposed on this plan was built in 1959. On the left side of the railroad tracks is the Saw Mill Pond. The edge of the fill, and of the Island, next to the river was to be the route for the relocated railroad track.

The "fill in" project required approval from both the State and Federal governments. Both were received, that from the War Department on December 8, 1925. The complete reclamation project would create 4,000,000 square feet of land (90 acres) for proposed industrial use.

The use of the Island as an area for the disposal of city trash evidently began soon after the regulatory permissions were received.

Included herewith is a picture and news item from the Springfield Daily News of November 16, 1926, showing the filling progressing in the Saw Mill Pond area on the land side of the railroad tracks.

Proposed Site for New Factories



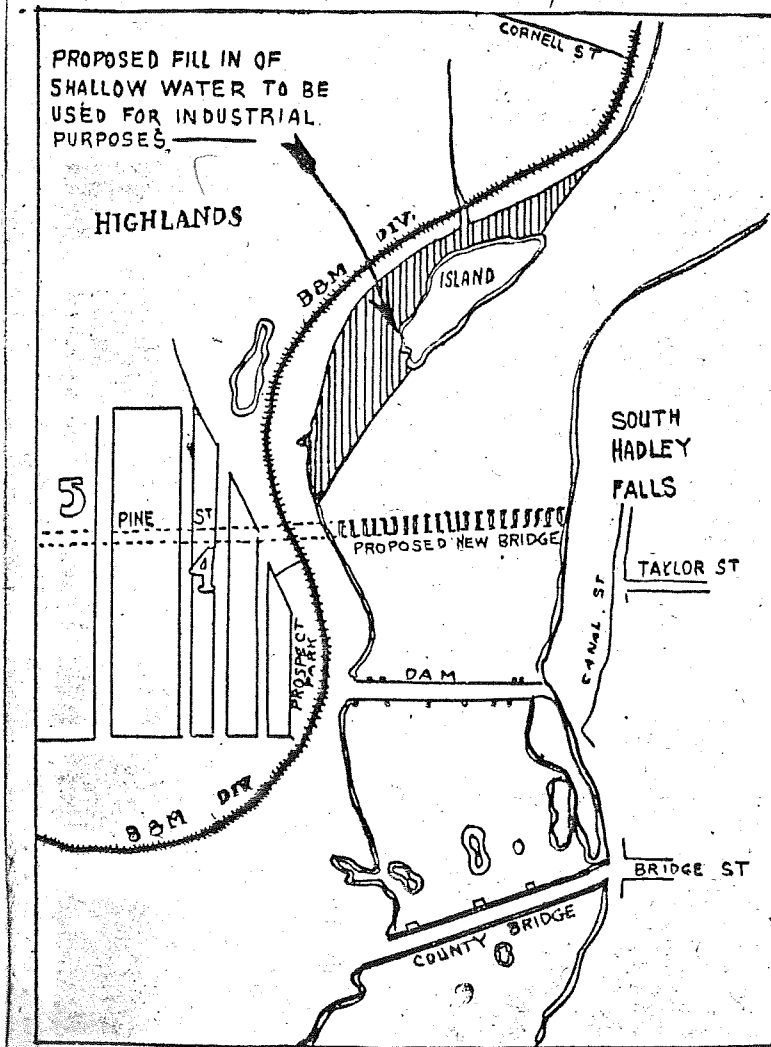
Holyoke, Nov. 16—Here is the beginning of sites for new Holyoke factories. It is the first section of the dump that the water power company has allowed the city to make use of opposite ward 4 and along the line of the Boston & Maine railroad. The Water Power company has visions of having the railroad move its tracks to the island, the fringe of trees on the lower part of which is dimly seen in the background, fill in the entire space between and offer the filled in ground along the railroad for factory sites. The filling in process will take several years. The present dumping is at the so called "old sawmill site."

Springfield Union

June 20, 1922

"Fill in" at Island Would Reclaim 200 Acres from River

Map Showing Proposed "Fill in" to
Reclaim 200 Acres at Holyoke



Studies Made by B. & M.
Railroad and the Holyoke
Water Power
Company.

MORE ROOM NEEDED FOR MANUFACTURING

Carrying Out of Project
May Mean New
Bridge at Pine
Street.

HOLYOKE, June 20—Extensive development of the "Island" above the dam, which will provide several hundred acres for industrial purposes, affording Holyoke a wonderful chance to grow as a manufacturing center and meaning much to this city 15 or 20 years hence, is the plan now under consideration by local interests. While no official statement has been made, it is known that this scheme which means so much to Holyoke's future has been talked over within the last month by officials of the Holyoke Water Power Company, the American Writing Paper Company, the William Skinner & Sons Manufacturing Company, and other big manufacturing interests, as well as with President J. H. Hustis of the Boston & Maine Railroad. Two weeks ago President Hustis and other officials of the railroad made a visit to Holyoke—a "social call," it was stated at the time—but while here President Hustis is said to have discussed the "Island" project along with other railroad matters.

Maps Prepared.

Just how far the plans have been advanced is not known, but maps have been prepared and an exhaustive study made of the situation, it is stated by Treasurer Robert E. Barrett of the Holyoke Water Power Company. The full development of the plan may not be reached for a decade, but a start has at least been made. The idea is one that has never before been advanced and which solves a most vital problem for Holyoke—getting more land suitable for mill and factory sites. The solution is one that can be worked out most successfully.

By February 1930 the Saw Mill Pond area had been fully filled, and the City was dumping material in the Cove itself as shown below.



Two years later a sizable area in the Cove had been filled, as shown on the accompanying photograph marked "I" dated June 10, 1932.³¹⁵

However, in early 1935 HWP became concerned that the material dumped by the city in the Cove was mostly paper and would be unsatisfactory as foundation material to support structures. An inspection of the site was made by HWP and City officials but no solution was found.²⁹⁴ Prior to the use of oil burners in the homes, waste paper was burned up in the stoves or furnaces of the homes. Oil burners had two negative effects on the Cove filling. No longer were coal ashes available for fill, and in addition, unsatisfactory waste paper had become the major fill material.

On September 17, 1935, HWP notified the City to stop dumping in the Cove on November 1.^{294a} On October 31, the local newspaper stated that dumping in the Cove would cease that night.^{294b}



10224

June 10, 1932

The Island and the Depression

In the Depression which followed the stock market crash in 1929 the Island became a source of fuel to heat homes in the Ward 4 section of Holyoke. The writer recalls how unemployed men would chop the tall trees down and cut them into short lengths. The wood would then be hauled in hand-drawn carts by men and women to their homes.

Following is a newspaper account telling of the denuding of the Island:

"The theft of several hundred cords of wood has put 'The Island' into the news again. Several weeks ago, it was noticed that many of the large trees on 'The Island' were rapidly disappearing and large ugly stumps marked their former positions. Much chopping was heard, large thuds resounded up and down the river as new timbers became the victims of an ax, old scows were seen hauling logs to shore, and very soon, large stacks of this fine cord wood began to appear in the back yards of many homes in the Hampden park district. Before very long, the entire end of the land was completely stripped.

"Many old settlers became alarmed as 'The Island' rapidly became bared of its beautiful blanket of foliage and innumerable complaints found their ways to the police department and Holyoke Water Power Company, owner of the property. A statement from President Robert Barrett of the Water Power Company, when questioned in regard to these devastating activities, revealed that his company had given no permission whatsoever for the removal of these trees, but had not, as yet, made any objection to the use of this wood for fuel by unemployed families. Mr. Barrett added, however, that the Water Power Company was strongly opposed to the sale of this stolen wood. It was well known that much of this valuable timber wood had been sold."²⁹⁵

Bird Sanctuary

Over the years the Island developed into a fine habitat for a wide variety of birds in all seasons. HWP declared it a Wild Life Sanctuary in November 1968 as shown on the accompanying photo marked "J." The sign has long since gone, but the birds are still there.

Island Growth

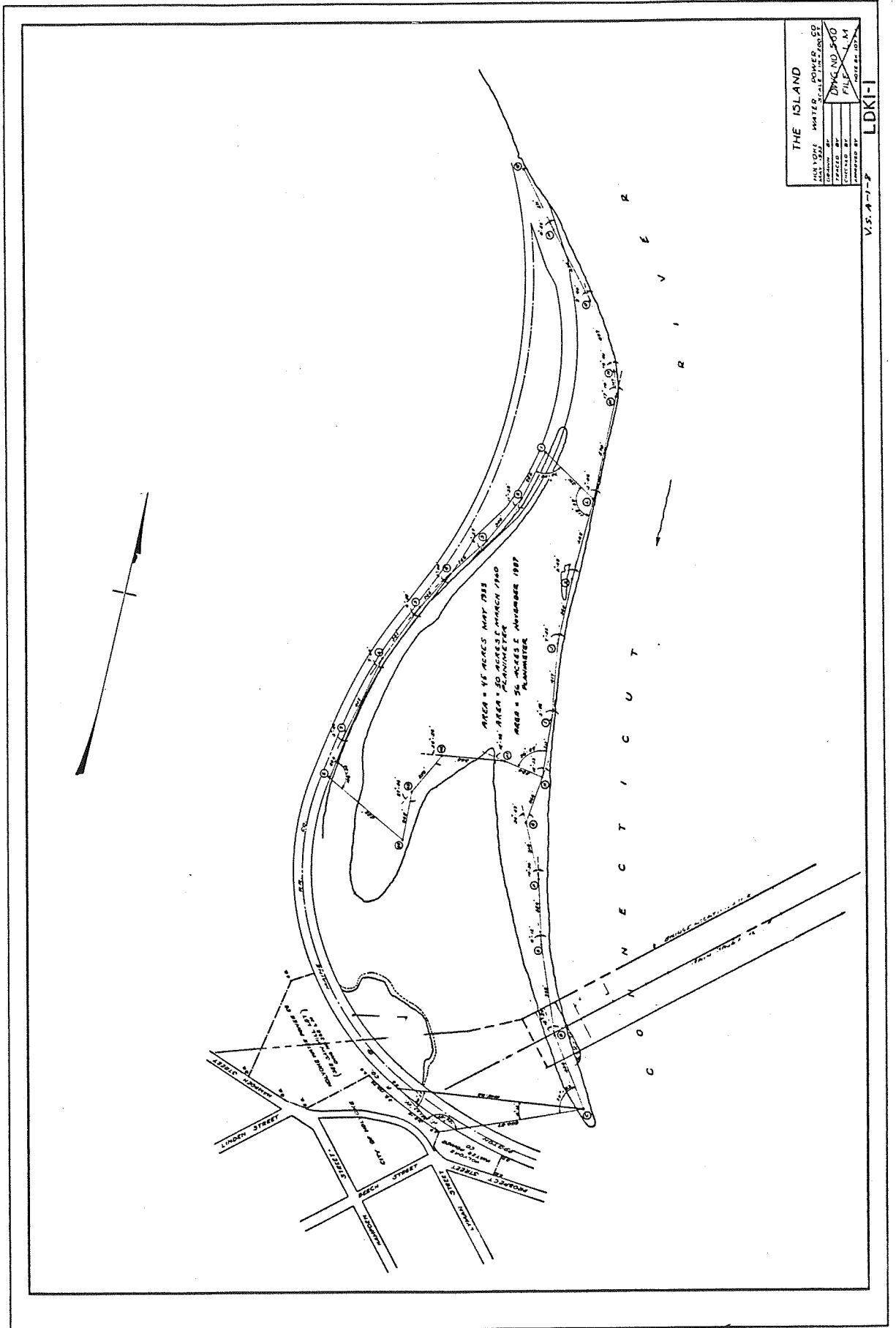
Since the building of the dam, the Island has had a steady growth, an accretion which continues to the time of this writing. The growth comes from the deposit of silt which is carried downstream by the water of the river at flood time and which accumulates over the Island area.

Included herein is a plan of the Island surveyed in 1933 and giving an area of 45 acres. It is marked "K." In 1960 the area had grown to 50 acres as planimetered from an aerial photograph. An aerial photograph taken in 1984 was also planimetered. The Island had then grown to 56 acres. Since 1933 the rate of growth has been about one acre every 5 years.

Description of the Island

This section of the history, devoted to the Island, closes with an article about it from the Springfield Republican of October 29, 1922. It tells much about the role it played in the life of Holyoke's early years. Another article about the Island from the same newspaper of September 26, 1933, is included as Exhibit A-56.





had been today, with today's Hooliganism rampant, the small tree that had been caught on the shallowing flats and started to grow would have been pulled up; but it was allowed to grow and others followed. Presently a little island appeared. It grew broader and broader; trees sprang up more plentifully; greensward began to appear along with mud turtles, muskrats, minks and small boys. Its growth was helped, no doubt, by the piers and boom built by the lumber company of whose plant nothing remains but a gaping mudhole and a bank of refuse.

Growth of Isthmus

Originally the thousands of logs floated down the river to the lumber company, were caught by the outlying boom and poled down what is now solid land, for there was then no connection between island and mainland. Later the lumber company had to string a boom across the river and bring the logs up into the "cove" from beneath the tip of the island.

If you take the main railroad tracks, keeping a wary eye out for the railroad cops, from near the ice-house and following the long "dealman's curve" Northamptonwards, you will presently come to the narrowing canal to which the wide cove shrinks as it extends north. The gully that comes down from "Sam" Hoyt's paradise of happy homes and Christian Science debouches upon the railroad tracks just where what appears to be a dike ends. Take this dike and follow the path that is worn smooth and hard by the tramp of many feet, and in a few moments you are between what appear to be two canals. Across the canal to the right is the "island," across that to the left are the mainland and the railroad embankment. The smooth and level dike upon which you are walking, with grass as high as your waist on either side of the path is the original embankment of the Connecticut River railroad used when only one track ran north of Holyoke, over which each spring swept floods which made the line impassable for days. The single track layout also appears a mile or so further up, by the rock cut opposite to the "Dutchman's" near which also once ran the dam across the river, first built not for power but for navigation purposes. It was this dam that, setting back the waters of the river, overflowed the Northampton meadows and caused a bill to be brought into the Legislature that it be abolished because of the disease and trouble that it made. This caused quite a fight between the river gods of those days and the Meadow City dwellers not wholly unlike that which is raging today over the power question at Holyoke.

Visions Differ

But to return to our island. It is across this island from its tip to the meadows in its upper section that Treasurer Robert E. Barrett of the Holyoke Water Power company sees in the future the relaid tracks of the Boston & Maine railroad extending, while ashes and other debris from the mills fill in the "cove" to form sites for a score of mill concerns. Dumping grounds in Holyoke are getting scarcer every year, and it may be that his dream will come true.

Frank O'Connell of Daniel O'Con-

nell's Sons has a different vision—he sees in it in the future a great pleasure ground for the people. The cost of a bridge to it has handicapped development, but there are some beautiful spots on the island and much more of it could be made attractive at small expense if the Connecticut river would play in its own channel and not rudely pour millions of gallons over the entire island at every period of high water.

According to legend it was at one time a rendezvous for "hoboes" who infested the territory. Sanguine hunters now and then stamp through the covers; in certain springtime months wise ones who know the ways of the muskrat shoot or trap them by the score. Muskrat skins bring a good price and one nonchalant individual recently declared that a certain ward 4 man got more than 100 skins one season. Certain it is the land is fer-

tile and the undergrowth from the dampness and the rich silt foundation riots luxuriantly every spring and summer. There are acres of fertile land going to waste. Who will be the adventurous farmer to cultivate this neglected seedbed and cause potatoes, squashes, onions and other desirable edibles to grow? The market is close at hand, so there would be no difficulty in disposing of the product.

"Money Mole Hill"

On the mainland opposite the island lies "Money Hole Hill," of which the present generation knows nothing, and the memories and legends about which are gradually fading from the older one. It was on this old railroad embankment near the island that a

fatal accident once took place in the early days. There had been a big snowstorm, and the snow blown in from the bluff onto the track, had blocked traffic. A gang was at work cutting through the big drift when a snowplow backed by several engines dashed through from the other side without warning, killing several of the workmen outright and injuring

others.

In the spring floods, it used to be a dare as to how long the engineers would run their engines over the submerged track. When the water was only a few inches above the rails the engines would dash through throwing up a shower of spray, but after it had

reached two or three feet in depth they generally stopped at one side or the other. More than once an engine left the track; one once leaned up against the rocks opposite the head gate-house like a tired horse; another ran into the little pond just above the sawmill site. Locomotives of the earlier days, many of them woodburners, were psymies compared with those of today.

The city engineer estimates the area of the island roughly to be about 25 acres and believes that the original banks of the river were on the other side of the island so the area it occupies is flooded land and without doubt a part of the land bought by the waterpower company long ago.

REPUBLICAN
OCT 29 / 22

"ISLAND" TITLE VEXING PROBLEM FOR HOLYOKERS

Boston & Maine Railroad
and Waterpower Company
Rival Claimants

IT REALLY ISN'T
AN ISLAND AT ALL

Question is Whether it Will
Become Park Site or Fur-
nish Location For More
Mills

From Our Special Correspondent.

Holyoke, Oct. 28—Who owns Holyoke's "island," the long level wooded piece of land that stretches from in front of the Holyoke ice house, curving with the blue waters of the Connecticut to the mainland above Jones Point? One claim is that the Boston & Maine railroad owns it. The Holyoke Water Power company says flatly that it owns all the land that the season's recurring floods have deposited, and that the Boston & Maine, which was the Connecticut River in those days, bought a right of way only.

The island is not an island at all now, although it was in the beginning. It is connected with the mainland by a broad meadow over which, as over the island itself, sweeps the flooded Connecticut nearly every spring, leaving a thin film of sediment like that of the famous Nile—the

sediment that has built up the island.

Assistant Marshal Haley as a boy, with other boys, gazed with eager curiosity in some early year not known at the first treelet that started to grow, which many people went out to see in boats. If it

1930 - 1940

1930 - 1940 The Litigious YearsForeword

This period in the life of HWP was noteworthy for litigation between it and two of its largest hydraulic customers, Whiting and Company and the American Writing Paper Company. The lawsuits grew out of differing interpretations of the contractual agreements between the parties. Those agreements are the HWP "Proposals" and "Indentures."³⁰³

Background

The arrangements for supplying water power by HWP to its customers followed, in general, a precedent established on the Merrimac River by the Essex Company at Lawrence and the Proprietors of Locks and Canals at Lowell.

When HWP sold a mill site on the canal system, the deed to the property included not only the land but also an agreed number of mill powers. The mill powers were an intrinsic part of the real estate. The owner of the site was obligated to make specified annual payments to HWP for the right to use the mill powers. In return, HWP was committed to supply the mill powers to the site forever.

Indentures and Proposals

The contractual agreement between HWP and a mill owner consisted of two parts. The first part, the indenture, was the deed to the site with the real estate and the appurtenant mill powers. The second part was the proposal which gave the details of the arrangements for the use of the mill powers.

Mill Powers

The units of water power which were made appurtenant to the site, and known as mill powers, were defined in the Proposals as "the right, during sixteen hours in a day, to draw from the nearest canal...and through the land to be granted, thirty-eight cubic feet of water per second, when the head and fall there is twenty feet...or, a quantity inversely proportionate to the height, at the other falls."

As defined above, the mill power is a unit of power. It is similar to a horsepower or a kilowatt. On the HWP canal system, a mill power would normally produce 45 kilowatts to 50 kilowatts depending upon the efficiency of the waterwheel-generator combination.

The first indenture signed with a user of water power was with the Hadley Mills, a textile mill in South Hadley and was dated January 1, 1849. The second was with the Carew Manufacturing Company, a paper manufacturer, also in South Hadley and was dated February 9, 1849. These indentures were made by the Hadley Falls Company, predecessor of the Holyoke Water Power Company.

Whiting and Company

In the 1920's, Whiting and Company purchased a large former textile mill which was adjacent to one of the Whiting Paper Company mills. Appurtenant to the site were 21 1/2 - 16-hour permanent mill powers.

The word "permanent" means that these mill powers are available throughout most of the year, even at times of low river flow. Other classifications of mill powers are "non-permanent" and "surplus" which are available for fewer days in the year, during times of increased river flow.

Sixteen-hour mill powers were appropriate for a textile mill which usually operated on a two-shift schedule. A paper mill operates continuously throughout a work week and needs twenty-four hour mill powers.

The Issues

Whiting and Company, from early on, disregarded the restrictions upon mill power use as set forth in the Proposals. As a result, on October 19, 1928, HWP filed in court a bill of equity in which it set forth the following claims against Whiting and Company for:

1. Using its mill powers unlawfully by not confining their use to the 16 hours from 6 a.m. to 10 p.m.
2. Transmitting and threatening to transmit off its premises electricity generated by the use of its mill powers and to sell such electricity to other persons.
3. Using the water for mill powers for process purposes, having no right to do so.
4. Drawing water from the canals, in addition to the water to which it was entitled for mill powers, and using such water for process purposes both without the consent of the plaintiff and without making payment therefore.
5. Using without right, and threatening to use, mill powers on land other than that to which they were appurtenant.³⁰⁴

During the succeeding two years several meetings were held with Whiting and Company concerning the above issues with no progress being made toward their settlement.

The Trial

The equity case was argued before the Massachusetts Supreme Court in May 1931. There were two suits before the Court.

One suit, brought by HWP concerned the five issues which have already been discussed. Four of the five issues were argued. The second issue in the preceding list having to do with electricity was not pressed by HWP, probably because it was eventually to be determined in another court.

The second suit was brought by Whiting Paper Company against HWP. The suit was based upon Article V of the proposals. Whiting and Company claimed that Article V required HWP to retain all the income from the use of mill powers by its customers in a trust fund to be used only for the maintenance of the hydraulic system. HWP argued that such an interpretation would leave the company with no source of income to operate the rest of its property and hence was not a correct interpretation of Article V.

The Decisions

On September 11, 1931, Chief Justice Rugg rendered his decisions. He sustained every position that HWP had taken as outlined in items 1, 3, 4 and 5 of the preceding summary of issues. He also found in favor of HWP in the case brought against the company by Whiting Paper Company.³⁰⁶ Item 2 was not litigated.

Negotiations

Soon after the decision of the Massachusetts Supreme Court in September, numerous conferences were held with the Whitings to try to settle issues outstanding between the two parties. Because all these efforts failed, the Directors at their meeting on March 25, 1932, authorized the management to press further litigation against the Whitings.

At the next Directors Meeting on June 16, 1932, the management reported that a Master had been appointed and that the Company was preparing facts for a hearing before him.

This movement toward further court action may have influenced the Whitings to move toward settling the controversy. On July 8, 1932, the Whiting litigation was terminated.

Among the issues settled were:³⁰⁷

Appurtenancy of mill powers

Full payment for use of process water

A contract to buy electricity from HWP

All payments to be in currency

Prohibiting the transmission of electric power generated from mill powers.

Full payments for process water used up to July 1, 1932.

Summary

1. The Whiting Company cases involved the legality of several fundamental concepts written into the water power indentures. As earlier mentioned, the court upheld the Company's position on all of those issues. They were:
 - a. That the mill powers were appurtenant to specific sites and could not be moved without HWP approval.
 - b. That the use of mill powers was confined to the hours specified in the indentures.
 - c. That the mill owner had no right to use the water of the mill powers for process purposes.
 - d. The mill owner could not take water from the canals in addition to its mill powers and use it for process purposes without consent of HWP and without payment for such use.
2. The above four positions were made part of a settlement agreement between HWP and Whiting and Company.
3. In the settlement agreement, Whiting and Company also agreed to:
 - a. Pay its water rentals in currency.
 - b. Buy its electricity from HWP.
4. The legal proceedings and the subsequent negotiating sessions extended from October 1928 to July 1932, nearly four years.

American Writing Paper Company - The Silver CaseHistorical Background

The "Proposals" set forth the method by which holders of permanent water power should pay the perpetual annual rent. That wording from Article V follows:

"It is therefore declared, that each mill power, with the land to which it is annexed, shall forever be subject to a perpetual annual rent of at least two hundred and sixty ounces troy weight of silver, of the present standard fineness of the silver coin of the United States, or an equivalent in gold, at the option of the grantee at the time of payment; which rent is to be paid in yearly payments forever, free from all charges or deduction whatever for taxes or assessments of every description, which may be assessed or levied upon any granted premises, after the making of the deed, all of which are assumed by the grantees; and a perpetual annual rent, at least equal to the above shall be reserved for every mill power hereafter sold."

The above paragraph states that the annual rental payment for each mill power shall be made at the rate of 260 ounces of silver (or gold at the option of the grantee) of the fineness of the silver coin of the United States at that time.

Why Silver?

These indentures with water power rights appurtenant to the mill sites, run to perpetuity. It must have been in the minds of those early legal draftsmen that the value of a set amount of dollars could fluctuate over the years and probably diminish because of inflation. Silver or possibly gold, being precious metals, had the virtue of permanence and of being a commodity that would probably vary in price with changes in the purchasing power of currency.

What Actually Happened?

- o When the first indentures were written in 1849 by the Hadley Falls Company, predecessor of HWP, the price of silver was \$1.30 a troy ounce.³⁰⁸ Thus, 260 ounces of silver .9 fine, the annual rental of one mill power, equaled $260 \times .9 \times 1.30 = \304.20 .

- o For reasons unknown, the Company rounded off the annual rental price to \$300. For a price of \$300 to be justified the price of silver would have had to be $\frac{\$300}{260} \times .9 = \1.28 an ounce.
- o The price of silver was above \$1.28 every year until 1878 when it was \$1.21 an ounce as shown on the graph accompanying this section. During the 29 years following 1849, \$300 in currency had been accepted as full rental payment, instead of requiring the more valuable silver bullion.
- o However, from 1877 to 1963, a period of 86 years, with the exception of 1920, the price of silver was below \$1.28³⁰⁹ which equates to \$300 a mill power. Nevertheless, until 1931, a period of 54 years all the the water power customers, with one exception, paid for the use of mill powers at the \$300 rate.
- o The exception was the Hadley Company which paid its rentals in silver bullion from 1881 to 1901.³¹⁰ During that time the price of silver was as low as 58¢ an ounce. At that price the payment in bullion reduced the former payment of \$300 per mill power to \$151, a 50 percent reduction. The minutes of the Directors for March 15, 1902 carry the following: "The President reported...the release of the Silver Clause by the Hadley Company." No details of the negotiations leading to the release were given.
- o Evidently the concern that other mill owners might also try to pay their mill power rentals in silver bullion caused HWP to negotiate with them to release their silver clauses. They were successful with most of them, although the Company undoubtedly made concessions in each case to reach the agreements. In addition to the Hadley Company, some of the other companies which released the silver clause beginning in 1901 were: Chemical Paper Company, William Skinner & Sons, Prentiss Wire Company, Lyman Mills, Newton Paper Company and as late as 1932 Whiting and Company.³¹⁰
- o As early as 1900 HWP attempted to negotiate a release of the silver clause with the American Writing Paper Company (AWP) without success. AWP continued to pay its water rentals in currency at the rate of \$300 a mill power until 1931.³¹¹

Proffer of Silver by American Writing Paper Company
(AWP)

In 1931 AWP made several proffers of silver bullion at the office of HWP in payment for its water power rentals. The bullion was not accepted. HWP brought suit against AWP in the Federal District Court for not paying its bill for water power in currency.

The Issue

The argument of HWP was that, although the wording of the indenture specified silver bullion payments, actual practice, for many years, had been that the payments had been made in currency. HWP then argued that the practice of currency having been proffered and accepted had established a precedent which had legitimized currency payments.

The Decision

The case was argued in the Federal District Court in Boston in November 1932 before Judge McLellan. He rendered his opinion directly after the final arguments were made. He decided in favor of AWP.

In his memorandum, which is included herewith,³¹² Judge McLellan said that for the decision to be made in favor of HWP he would have to find that the payment in currency had commuted the rent.^{312a}

He also stated therein the rationale for his decision as follows:

"These payments of installments over a long period of time at first blush seem to me to be of more cogent effect in favor of the plaintiff than a careful consideration of them thereafter warrants. It seems to me that those payments are consistent with the willingness of the parties to settle that installment which is then settled, and that there is nothing in the settlement of that installment which can be regarded, no matter how many installments are involved, as resulting in the conclusion that the parties have led each other reasonably to suppose that a change in the terms of the original contract was intended."

U.S. Circuit Court of Appeals

In October 1933 HWP appealed Judge McLellan's decision. After hearing the arguments on appeal the Court ruled, "...we think the District Court was right in finding, from all the evidence in the case, that under the indentures in issue here, the parties understood that the rentals were payable in bullion of the fineness of the coinage of 1859."³¹³

Economic Effect

In reporting the decision of the Silver Case to the Board of Directors, the Treasurer stated, "...As has been previously reported, the United States Circuit Court of Appeals confirmed the decision of the lower court in the so-called 'silver bullion case,' with the result that, with silver at 46 cents per ounce, the American Writing Paper Company, Inc. will pay our Company \$3,600 in silver ounces, as compared with a former payment of \$10,025 or a decrease of \$6,428."³¹⁴

Graph of Silver Prices

Herein is a graph of the price of pure silver from 1860 to 1987. It begins with the price of \$1.36 an ounce in 1860. Prior years from 1849, when the first indentures were written, until 1860 have been omitted to save room for the chart. However, the price in 1849 was \$1.30, only six cents less than the price in 1860.

The graph shows that, for each year from 1860 through 1877, the price of silver was such that, if bullion had been demanded by HWP, it would have received more than \$300 for each mill power. It also shows that from 1878 until 1964, with the exception of 1920 it would have received less than \$300 for each mill power.

The Silver Case - A Chronology

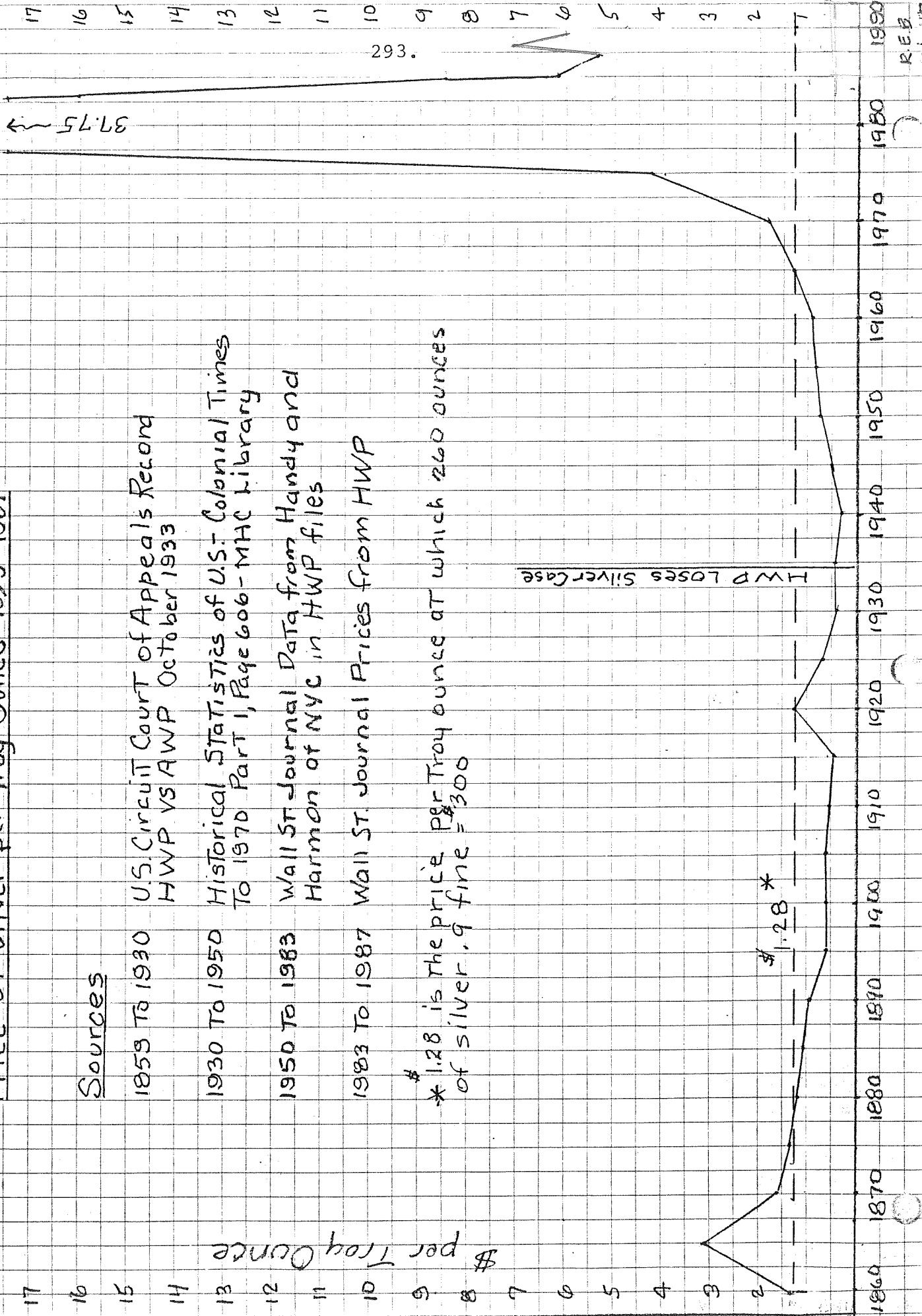
- o The first agreements for the payment for the rights to use water power were written by the Hadley Falls Company, the predecessor of HWP. They contained the provision that each 16-hour mill power would require an annual payment of 260 ounces of silver, .9 fine or its equivalent in gold.
- o The annual payments for the mill powers were made originally, and for many years, by the mill owners in currency and at the rate of \$300 per 16-hour mill power per year.

Price of Silver per Troy Ounce 1859-1987

Sources

- 1859 To 1930 U.S. Circuit Court of Appeals Record HWP VS AWP October 1933
- 1930 To 1950 Historical Statistics of U.S. Colonial Times To 1970 Part I, Page 606 - MHC Library
- 1950 To 1983 Wall ST Journal Data from Handy and Harmon of NYC in HWP files
- 1983 To 1987 Wall ST Journal Prices from HWP

* \$1.28 is the price per Troy ounce at which 260 ounces of silver .9 fine = \$300



- o For \$300 to have been the equivalent of the value of 260 ounces of silver, the price would have to be \$1.28 an ounce. However, the actual price of silver was above \$1.28 an ounce for every year from 1849 to 1878. Thus, for those years the mill owners, paying at the \$300 rate, were receiving their mill powers at less cost than if HWP had required silver payment.
- o From 1872 to 1965 the price of silver was less than \$1.28 an ounce. Nevertheless, until 1931, with one exception, all the mill owners paid at the \$300 rate even though payment in silver would have given them substantial savings. The one exception was a millowner who paid in silver from 1881 to 1901.
- o From 1900 onward to as late as 1932, HWP negotiated with the mill owners, including the American Writing Paper Company (AWP) attempting to convert the silver payments to currency payments.
- o The effort of HWP management, over the years, to convert the payment rate for the use of mill powers from 260 ounces of silver to \$300 in currency can be understood in view of the long historical record of the low price of silver. When the first indenture was written in 1849, the price of silver was \$1.30 an ounce. In 1932, when the last efforts were made, the price was 46 cents an ounce. Silver which had been expected to be a protection against the devaluation of the dollar had given the opposite result.
- o In 1931 AWP delivered silver bullion to HWP as payment for the use of its mill powers. HWP then brought suit against AWP in the United States District Court. AWP won the law suit. By so doing, it reduced its annual payments to HWP from \$10,025 to \$3,600, a decrease of 64 percent.
- o The victory in the Silver Case saved money for AWP in decreasing amounts from 1934 to 1965.
- o Since 1965 HWP has been benefiting from the Silver Case because silver has been always above \$1.28 an ounce.
- o At this writing, January 1, 1989, the value of silver is \$6.04 an ounce. At that price, each mill power is annually costing Linweave, a successor to AWP, \$1,413 compared to the \$300 it would have been paying if AWP had not won.
- o The Gas and Electric Department of the City of Holyoke also has some indentures which call for payments in silver.

The Gold CaseWhy Gold?

In addition to the agreements with the mill owners which called for mill power payments in silver, there were several which called for payments in gold. In these latter agreements, unlike in the silver ones, gold was specifically defined as a commodity.

From 1882 to 1895 there were eight agreements concluded by HWP with mill owners which had gold clauses instead of silver clauses. In 1882 the price of silver was \$1.14 an ounce and in 1895 it was \$.60 an ounce. As the earlier discussion of the silver clause has shown, silver had failed completely as a hedge against inflation. Now gold was being used instead to try to maintain the purchasing power of the income from these mill powers.

When the gold indentures were written, gold had a value of \$20.67 an ounce and continued at that value until January 31, 1934. At that time the quantity of gold in the U.S. coins was reduced to an amount which raised the price of gold to \$35 an ounce.

Resolution of Congress

On June 5, 1933, a Joint Resolution of Congress made it illegal to require payments of debts in gold. The specific wording of that resolution follows:

"Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) every provision contained in or made with respect to any obligation which purports to give the obligee a right to require payment in gold or a particular kind of coin or currency, or in an amount in money of the United States measured thereby, is declared to be against public policy; and no such provision shall be contained in or made with respect to any obligation hereafter incurred. Every obligation, heretofore or hereafter incurred, whether or not any such provision is contained therein or made with respect thereto, shall be discharged upon payment, dollar for dollar, in any coin or currency which at the time of payment is legal tender for public and private debts."

HWP Sues AWP

The American Writing Paper Company (AWP) held several mill power indentures with gold clauses. On January 1, 1934, HWP billed AWP for its use of mill powers at the world price of gold of \$32.574 an ounce. AWP refused to pay its bill at the new rate. HWP then brought legal action against AWP.

Supreme Court Decision

The gold clause eventually reached the U.S. Supreme Court. On March 1, 1937 it was decided against HWP in a five to four decision.

The Court recognized the reason why the gold clause was drafted when it said, "Here what was intended was to assure the payment of a money debt in dollars of a value as constant as that of gold." The Court continued, "Payment in currency, quite as much as payment in coin or bullion, was not only performance under the law, but performance under the contract, provided only that the value of the currency was equal, when paid, to the value of the gold. Whether that proviso had been abrogated is next to be considered."

The Court then found that because of the Joint Resolution of Congress, the gold clause proviso in the indentures had been abrogated. That Resolution prohibited payments to be made in gold or to be measured by gold. Presumably, if the commodity named in the contract had been diamonds or potatoes, the indentures would have been valid.

On October 28, 1977 gold clauses in contracts were made legal by Public Law 95-147 (HR5675). Section 4c follows:

"(c) The joint resolution entitled, 'Joint resolution to assure uniform value to the coins and currencies of the United States,' approved June 5, 1933 (31 U.S.C. 463), shall not apply to obligations issued on or after the date of enactment of this section."

However, that section applies only to obligations issued after October 28, 1977. The gold clauses in the HWP indentures are still prohibited because they were in effect prior to June 5, 1933.

A Similar Case

Following is a case decided by the 11th U.S. Circuit Court of Appeals which bears upon the HWP gold clause indentures. It further emphasizes that the HWP gold clauses are not enforceable.

Transcript-Telegram, Holyoke (Mass.)
Wednesday, December 28, 1983

All gold in contract doesn't glitter

The Associated Press

"ATLANTA - Saying he 'struck gold, but, alas, he cannot keep it,' a federal appeals court has ruled that a landlord who tied rent increases to the value of the dollar violated a now-repealed law banning such clauses in contracts.

"Although Congress repealed the ban on gold clauses in 1977, the 11th U.S. Circuit Court of Appeals ruled Tuesday that the prohibition remains in effect for contracts already in force at the time of the repeal.

"Florida developer Milton F. Steinhardt was described by the court as "a modern prospector, panning of security in the rivulets of commerce.

"Starting in 1970, Steinhardt required tenants at the Eastern Shores White House condominium development in North Miami Beach, Fla., to sign leases that provided for rent increases to offset official devaluations of the U.S. dollar. Devaluations occur when the government increases the official price of gold.

"'...In 1974, the gold bug bit Steinhardt,' a three-judge panel of the court said in an opinion written by Senior Circuit Judge Irving L. Goldberg of Texas."

Commentary

There is probably no company anywhere which is selling a product, commodity or service at the same price today as it did over 100 years ago, and which is

obligated to keep those century old prices in effect forever.

The HWP experience of trying to protect itself with its contracts running into perpetuity has been very unsuccessful.

The Company started out in 1859 with silver. Silver then dropped in price so much that the management, through negotiation, changed several contracts to currency. It took over eighty years from 1878 to 1964 for silver to recover to the price levels when the early indentures were written.

The sad experience of the company with silver caused it to turn to gold. It was then thwarted by Congress which allowed only those gold clauses written after October 28, 1977 to be legal.^{314a}

In reporting the Supreme Court decision on the gold clause to the Directors, the Treasurer said: "It is difficult to understand how the voiding of such an important clause in a perpetual contract can be accomplished without affecting the validity of the document as a whole."^{314b}

Process Water Case

The Issue

The issue in the process water case was whether the mill owner, in this case the American Writing Paper Company (AWP), had the right to use, for non power purposes, water drawn either from their mill powers or from excess water in the canals.

Prior Whiting Decision

In the Whiting Case, which has previously been discussed, the use of water for process purposes was litigated. Chief Justice Rugg in writing the Massachusetts Supreme Court decision said that such use of the mill powers could not be made. He relied upon the wording of the Proposals which said that each mill power must be drawn "through the land to be granted." He continued, "There cannot be compliance with that stipulation if the water is used or consumed on the land." He concluded, "...The use of its millpowers is limited to the production of power on water wheels." 306

Decision of U.S. District Court

The AWP Case was litigated in the U.S. District Court and heard before a Master. The decision was in favor of AWP. It was affirmed by the District Court. It was then appealed to the U.S. Circuit Court of Appeals (USCCA) by HWP.

The issues which AWP raised and which the District Court found valid were:

1. That the amount of non power water that would be used by a paper mill in connection with the use of mill powers must have been known to HWP or its predecessor at the time of drafting the mill power agreements.
2. That the predecessors of AWP must have understood that they were entitled to draw from their flumes such amount of water as would be reasonably required for manufacturing purposes.
3. That prior to the bringing of the law suit HWP had not taken action to stop the use of the process water nor had it rendered any bills for it.

4. That there was an implied grant by HWP of the right to use such incidental water as manufacturing plants would reasonably require.
5. That AWP had a prescriptive right, in the nature of an easement, to take the water for non power uses. On this issue, the Master had said that if AWP did not have prescriptive rights, the decision would have been for HWP.

Decision of USCCA

The USCCA rendered its decision on June 1, 1937. It agreed with the District Court on the first four points listed above. On the fifth point, however, it found that HWP had protected itself from prescriptive rights by serving notice against such prescription upon AWP. In this manner, USCCA overturned the decision of the U.S. District Court.³¹⁷

Rationale for the Decision

The following is a discussion of the prescriptive rights issue in the USCCA decision:

"The question turns on whether the defendant's use was interrupted by notices given by the complainant to all lessees of its water power under Massachusetts General Laws, Chapter 187 Sections 3 and 4. These notices were given in 1891, 1904 and 1918. Those given in 1891 and 1904 were in substance as follows:

'You are hereby notified that the Holyoke Water Power Company intends to prevent the acquisition by you of any right or easement to discharge any waste water or sewage into the Canals of this Company, from your premises, situated in said Holyoke * * * or to draw or take wash water or water for any purpose from the First Level Canal or any other Canal of the said Holyoke Water Power Company in excess of the rights, granted in and by the deed aforesaid.'

'It being the purpose of this notice to prevent the acquisition by you of any right or easement in, to or upon

the canals of said Company not granted in and by the deed aforesaid.'

"The notices given in 1918 were substantially similar.

"The Master found that the notices given under the statute had not barred the easement because they were not sufficiently definite. We are wholly unable to agree. The notices were quite sufficient to call the recipients' attention to any unauthorized use of water in excess of the amount granted and to advise them that no prescriptive rights would be obtained by such unauthorized use. There is nothing in the statute nor in the reason of the thing which requires that each particular wrongful use should be pointed out to the person who is maintaining it. It follows that no prescriptive rights were established."

Electric Transmission CaseBackground

The genesis of the electric transmission case lies in the definition of a mill power which is defined in the Proposals as the, "right,, to draw from the nearest canal and through the land to be granted, thirty-eight cubic feet of water" The pertinent words in the definition are "through the land to be granted." In this manner, the mill powers are appurtenant to specific mill sites.

The purpose of the above definition was to be certain that the granted mill powers would be used to the benefit of the site to which they were appurtenant. A secondary consideration was that by being made appurtenant to the granted site the water drawn from the canal could not be used at another site. To do so would upset the orderly balance of water in the canals.

The appurtenancy of mill powers was one of the issues in the Whiting Case. In that case the position of HWP was completely sustained; namely, that mill powers must stay at the sites to which they are appurtenant unless changed by HWP.

At the June 1931 meeting of the Board of Directors, the management stated that the American Writing Paper Company was transmitting electricity, generated by mill powers appurtenant to one site, to another AWP-owned site. A statement, concerning this energy transfer by means of an electrical connection, made by Company management follows:

"About two months ago, the American Writing Paper Company installed an electrical connection between two or more of its adjacent mills located in a group upon the Second Level Canal. The purpose of this connection was to make possible the transfer of electricity generated from indentured water power from one mill site to another. Records obtained have indicated that at various intervals as much as 100 kW's have been transferred to other mill sites.

"The effect of this transmission of power from one idle mill to one in operation is to reduce the demand for electricity and surplus water and we consider such action a direct violation of the old indentures."^{317a}

Position of HWP

1. A mill power is a unit of power synonymous with horsepower or kilowatt.
2. A mill power is the right to draw, through the land to be granted, 38 cubic feet of water per second when the head is 20 feet. It is normally equivalent on the Holyoke canal system to 45 to 50 kilowatts.
3. Because a mill power is by definition appurtenant to a particular mill site, it follows that the power generated by the mill powers must stay on that site.
4. The power generated by mill powers on one site cannot be transmitted to adjacent mill properties by belts and pulleys.
5. The transmission of electricity generated by water power from mill site to another mill site is just as much a transfer of power as if belts and pulleys had been used.

Position of AWP

1. So long as the water power is applied to water-wheels at the site to which it is appurtenant, AWP is free to do what it wants to with the electricity so generated, including transmitting it to adjacent mill sites.
2. Electricity is no different from the production of any other commodity. (This position was sustained by the Special Master who stated that the generation and transmission of electricity are commonly distinguished and that there is nothing in the indentures forbidding the transmission elsewhere of the electricity so generated.)

Positions of District Court

The Electric Transmission Case was first heard by a Special Master who filed his report on February 14, 1936. The case was then referred to the U.S. District Court on exceptions to the Master's Report.

1. The Court agreed with the position of HWP that electricity is not a commodity but a means of transferring power as shown in the following statement:

"If these indentures, fairly construed, forbid the application of power available at the waterwheels on any particular site to ordinary mill machinery located on any other site, then this respondent ought not to be allowed to circumvent any such provisions by the use of electricity. While it may be that electricity is sometimes spoken of as a separate commodity, in fact it is of no use to anybody, except as a convenient means for the transfer of power."³¹⁸

2. The Court disagreed with the position of HWP that AWP could not connect its waterwheels to machinery on its adjacent mill sites. It said, "A considerable number of the indentures contain no express words which could possibly be construed as limiting the respondent in the ultimate location of his machinery."
3. The Court said, "These indentures, and the attached proposals, were carefully drawn and were intended to serve as the basis for the relations of the parties and their successors for a long time. Under these circumstances, the well-known rule that grants are to be construed against the grantor is applicable."

Decision of the Court

The Court ruled that "The use of the water power granted in terms of mill powers is not so restricted in the proposals and indentures to the mill sites as to prevent the transmission of electric power generated on such sites to the load located elsewhere."

Summary of HWP vs. AWP Legal Issues

Silver Case - AWP Won Originally - Today HWP is the Winner

From 1934 until 1965 the decision saved money for that company. However, from 1965 until the present time the decision has increased dramatically the annual payments of that company's successor for its silver clause indentures. In late 1988, the price of silver was \$6.04 an ounce compared to \$1.28 which was the basis of the HWP charges at the time of the Silver Case decision. Today's price is nearly five times what it would have been if AWP had accepted the HWP offer of \$300 a mill power in 1900.

Gold Case - AWP Won

The United States Supreme Court in a 5 to 4 decision decided the Joint Resolution of Congress of June 5, 1933, had made the Gold Clause invalid.

An Act of Congress of October 28, 1977, made contracts with payment in gold legal. However, this law applies only to contracts written after that date. This means that those indentures which were written nearly 100 years ago still cannot apply the gold clause.

Process Water Case - HWP Won

The United States Circuit Court of Appeals overturned the adverse decision of the United States District Court and sustained HWP's position. As a result, water used for purposes other than for power, require separate arrangements with HWP for its payment.

Electric Transmission Case - AWP Won

Here the main argument of AWP was that its only obligation was to use the mill powers on the site to which they were appurtenant and that electricity was a commodity made by water power which it could transmit wherever it wished. The Court disagreed with the AWP argument.

However, the Court also disagreed with the position of HWP that the machinery of AWP, using the energy generated by the mill powers, had to be located on the same site. Its position was that if the

original agreements had meant such a restriction as to location of machinery, they would have clearly so stated.

The issue of electricity was not a deciding factor in the Court decision because its rationale would have applied equally to any method of power transfer to another site such as by belts and pulleys.

Electric Transmission - Today's Appraisal

This is being written at a time when cogeneration and the great mobility of electricity over transmission systems are common place. For HWP today to attempt to prevent electricity generated by water power on a specific mill site from being used elsewhere would not be realistic.

Settlement with AWP

Disagreements between HWP and AWP in interpreting the water power Proposals and Indentures began in 1931 with the delivery by the paper company of silver in payment for its use of its mill powers.

It was not until March of 1939, eight years later, and after four major law suits had been decided, that the two companies came together and settled all their differences. ³¹⁹

Process Water

Arrangements were made whereby specified quantities of process water at the AWP mills would be taken from the appurtenant mill powers but at a higher rate.

At two AWP mills which did not have permanent mill powers, a fraction of a permanent mill power, sufficient for process uses, was transferred from others of its mills.

Transmission of Electricity

AWP agreed not to transmit electricity from the mill sites where it was generated except between two groups of mill sites owned by it.

Electric Power Contract

A five-year contract for the purchase of electricity by AWP from HWP was part of the settlement.

Poor Business and the Bank Holiday

The Treasurer in his report to the Directors of February 28, 1933, reported on reductions in wage rates and on the "bank holiday."

Wage Reduction

Poor business conditions by early 1933 had affected HWP sufficiently that it had to reduce wages as noted here:

"Effective on February 1, 1933, we have made a reduction in salaries and wages. A reduction of 10% was made on the higher salaries and 7 1/2% on the lower ones. This reduction amounts in total to \$610.46 per month.

"Wages in our electric and hydraulic departments were reduced about a year ago, coincident with a similar reduction in similar wages paid by the City of Holyoke.

"At this time we have made a reduction in the hourly wages of our shop and maintenance employees, although for a long time, these men have been employed on a schedule of less days per week. It is our intention, however, to allow these men to work more hours per week in order to maintain wages which have heretofore been considered a minimum."

Bank Closings

"For the first time in the history of our Company we were unable to pay our employees on March 8, because of the enforced bank holiday.

"Mr. Allen, President of the Hadley Falls Trust Company, when approached on March 9, for funds for our payroll, asked that we try to get the money elsewhere. Application was then made to the Third National Bank and Trust Company, and on March 10, we secured from that bank an amount of money which enabled us to make a maximum payment of \$25.00 to all employees entitled to \$25.00 per week or more, and a payment in full to all under that amount.

"Prior to securing the funds, as above, provisions were made with the Holyoke City Market, whereby those of our employees who were in need of food supplies could obtain same upon an order from our Company, payment to be made by our Company and later by the employee to the company.

"Three families have been supplied with food in this manner and by keeping constantly in touch with our employees we feel sure that none have suffered.

"On March 14, the Hadley Falls Trust Company resumed full business and we hope that the financial situation has been so cleared that payrolls may be paid and other business transacted as usual."

Floods

The maximum height, in feet, of water over the HWP dam has been recorded by the Company each year since 1850. The four highest floods in the 138-year period from 1850 to 1988 occurred during the eleven years between 1927 and 1938. They were:

<u>Year</u>	<u>Month</u>	<u>Height</u>
1927	Nov. 5	14.75
1933	Apr. 20	13.20
1936	Mar. 19	16.80
1938	Sept. 22	14.90

1927

The flood was the greatest in local recorded history up to that time. Unlike most floods, it occurred at a time in the fall when there was no snow to melt to add to the run-off. Extraordinary rainfalls over a large part of the drainage area caused this flood which, to date, has proven to be the third highest on record. Up to 1927 the highest flood had been 12.7 feet, nearly two feet lower. It was necessary to sandbag the windows in the gatehouse and to build a sandbag dam across the adjacent railroad track to prevent the river waters from by-passing the gatehouse and entering, uncontrolled, into the canal system.

1933

This flood was unusual in that the river reached a stage of 9.69 feet on April 9 exceeding the nine foot stage normally considered flood height. It seemed at that point that this was the peak of the spring freshet. However, a combination of heavy rain and warm temperatures over the watershed caused the river to rise again to its peak of 13.20 on April 20.

1936

The highest flood on record, 16.8 feet, occurred on March 19 as a result of heavy snows on the watershed, warm weather and heavy rains.

This flood caused great damage to HWP. An ice jam, preceding the flood crest, removed the top layer

of granite stones from the dam. At Riverside Station many electric motors were under water as were several of the hydro-electric generators. The flood of 1936 and the flood protection work which followed are discussed further on herein.

1938

The second highest flood on record, 14.90 feet, occurred on September 22. It was the result of very heavy rainfall, beginning in mid-September, over the lower portions of the drainage area and of the rains just preceding and during the hurricane which occurred on September 21. A special report on this flood and hurricane written by the then hydraulic engineer of the Company is included among the Exhibits accompanying this history. ³²⁰

Peak Annual High Water

Accompanying this section is a tabulation showing the peak height of water in feet on the dam for each year since 1850. It shows that the highest water for the year can occur in each of the 12 months as shown below:

Peak Annual Stage at HWP Dam in Each Calendar Month

<u>Year</u>	<u>Date</u>	<u>Stage</u>
1874	January 9	8.0
1915	February 26	9.0
1859	March 20	9.8
1862	April 20	12.5
1893	May 5	9.0
1952	June 3	10.95
1973	July 2	9.06
1856	August 21	8.6
1882	September 24	8.1
1869	October 5	12.7
1907	November 8	9.5
1878	December 11	9.2

ANNUAL PEAK STAGES AT HOLYOKE DAM

<u>Year</u>	<u>Date</u>	<u>Stage</u>	<u>Year</u>	<u>Date</u>	<u>Stage</u>
1850	May 1	9.5	1890	Sept 18	5.1
1851	Jan 1	5.1	1891	Apr 19	7.1
1852	Apr 24	8.5	1892	Jan 15	6.9
1853	Nov 15	7.5	1893	May 5	9.0
1854	May 1	10.5	1894	Apr 25	5.0
1855	Apr 22	7.9	1895	Apr 16	10.3
1856	Aug 21	8.6	1896	Mar 2	10.2
1857	Feb 21	7.1	1897	Jun 11	7.5
1858	Mar ?	4.2	1898	Mar 21	7.5
1859	Mar 20	9.8	1899	Apr 26	7.8
1860	Mar 1	5.7	1900	Apr 21	10.8
1861	Apr 15	7.9	1901	Apr 8	12.1
1862	Apr 20	12.5	1902	Mar 4	11.9
1863	Apr 19	8.1	1903	Mar 24	11.1
1864	Apr 29	6.2	1904	Mar 27	10.0
1865	Mar 18	9.2	1905	Apr 1	11.2
1866	Feb 25	7.6	1906	Apr 17	9.3
1867	Apr 17	7.3	1907	Nov 8	9.5
1868	Mar 18	7.9	1908	Mar 30	8.1
1869	Oct 5	12.7	1909	Apr 16	11.2
1870	Apr 20	9.5	1910	Jan 23	8.9
1871	May 6	6.8	1911	Apr 16	7.4
1872	Apr 12	7.7	1912	Apr 9	9.8
1873	Apr 12	7.8	1913	Mar 29	12.7
1874	Jan 9	8.0	1914	Apr 22	10.4
1875	Apr 18	6.0	1915	Feb 26	9.0
1876	Apr 16	9.2	1916	Apr 3	9.3
1877	Mar 29	8.8	1917	Mar 30	7.7
1878	Dec 11	9.2	1918	Apr 4	8.2
1879	May 1	8.5	1919	Mar 29	9.6
1880	Apr 6	5.7	1920	Mar 28	10.2
1881	Dec 31	7.3	1921	Mar 11	9.2
1882	Sep 24	8.1	1922	Apr 13	11.9
1883	Apr 15	7.6	1923	Apr 7	9.8
1884	Mar 28	7.6	1924	Apr 8	8.0
1885	Nov 10	7.3	1925	Mar 31	9.9
1886	Apr 2	8.4	1926	Apr 27	9.5
1887	Apr 12	8.7	1927	Nov 5	14.75
1888	May 11	9.6	1928	Apr 9	9.1
1889	Nov 29	5.1	1929	Mar 25	8.6

<u>Year</u>	<u>Date</u>	<u>Stage</u>	<u>Year</u>	<u>Date</u>	<u>Stage</u>
1930	Apr 9	5.9	1970	Apr 26	7.66
1931	Apr 12	8.8	1971	May 5	7.64
1932	Apr 14	9.9	1972	May 6	8.46
1933	Apr 20	13.2	1973	Jul 2	9.06
1934	Apr 14	10.8	1974	Apr 7	7.52
1935	Jan 11	9.3	1975	Apr 21	6.97
1936	Mar 19	16.8	1976	Apr 3	9.43
1937	May 16	9.6	1977	Mar 15	9.89
1938	Sep 22	14.9	1978	Apr 15	6.95
1939	Apr 23	9.7	1979	Mar 27	8.85
1940	May 5	10.9	1980	Apr 11	7.08
1941	Apr 16	5.7	1981	Feb 26	7.89
1942	Apr 9	7.3	1982	Apr 19	9.08
1943	Apr 29	7.5	1983	May 4	7.27
1944	Apr 26	7.6	1984	May 31	12.00
1945	Mar 22	8.6	1985	May 14	5.43
1946	Mar 11	7.8	1986	Apr 2	8.48
1947	Apr 13	9.3	1987	Apr 1	10.55
1948	Mar 23	11.4	1988	May 1	7.00
1949	Jan 1	11.6	1989	May 7	7.30
1950	Apr 6	8.4	1990		
1951	Apr 1	10.0	1991		
1952	Jun 3	10.95	1992		
1953	Mar 28	10.7	1993		
1954	Apr 19	8.05	1994		
1955	Apr 17	8.15	1995		
1956	May 1	9.21	1996		
1957	Mar 17	4.60	1997		
1958	Apr 24	9.30	1998		
1959	Apr 5	8.90	1999		
1960	Apr 6	12.0	2000		
1961	Apr 25	7.05			
1962	Apr 2	8.89			
1963	Apr 4	7.75			
1964	Apr 16	7.95			
1965	Apr 17	5.11			
1966	Mar 27	6.17			
1967	Apr 4	7.83			
1968	Mar 25	9.20			
1969	Apr 23	9.27			

A Rampaging River

The spring of 1936 brought two events which severely tested the hydraulic structures of HWP. The first was an ice jam which took place on March 15 at Mt. Tom Junction upstream from Holyoke. The second was the record breaking flood which reached a peak height of 16.8 feet on March 19. The following account of these two events is largely based upon reports made to the Directors by the Treasurer.

Ice Jam

So far as is known, there never before had been a serious ice jam in the river below Turners Falls. Ordinarily, the ice in the lower Connecticut River Valley has broken up and flowed downstream before ice cakes from the north had arrived here.

This year, spring rains and warm temperatures upstream had broken up the frozen river and the ice cakes moved downstream to Mt. Tom Junction. There, they met a still frozen river which stopped their movement to the sea. A mammoth ice jam was created which was a mile long, 1,000 feet wide and 30 feet deep.

This tremendous mass of ice, which entirely choked the river to its bed presented a terrifying sight and a person could only speculate as to what would happen when it started to move. The worry at HWP was that severe damage might be caused to its structures at Holyoke when the jam broke loose.

A newspaper account of the ice jam is included herewith.

Ice Floating Down Connecticut Lodging Against Solid Sheet at Mt. Tom Junction Bridge Blamed for Condition Unparalleled in History of Connecticut River; Last Sem- blance of Danger Gone With Slow Breaking Up of Jam, Barrett Points Out

HOLYOKE, March 16—Officials of the Holyoke Water Power Company breathed a sigh of relief this morning as they reviewed tense moments of last night between receipt of the first report that the gigantic ice jam which blocked the Connecticut River at Mt. Tom Junction had begun to break and its actual arrival at the Holyoke Dam.

With a tremendous roar the huge ice floe fell over the dam about 8 p. m. just an hour after it broke away from the solid barrier. Without loss of life and comparatively small damage here, the most serious ice jam in the river's history ended and at noon today there was 8.82 feet of flood water falling over the dam, as compared with the peak figure of 10.11 feet recorded Saturday at 9 p. m.

An examination made this morning by water power company officials at Mt. Tom Junction showed that some ice still is piled along the banks of the river but the entire flow has now reverted back from the meadow channel to the river.

Robert E. Barrett, president and treasurer of the company in reviewing the activities of the past three days said that the jam started last Friday morning when a tremendous amount of floating ice cakes struck a sheet of solid river ice a short distance below the Boston & Maine Railroad station at Mt. Tom Junction. This large quantity of floating ice, having met an irresistible obstruction, piled into a solid mass at the edge of the ice sheet and progressively filled the entire Connecticut River bed upstream for a distance of more than a mile.

According to Mr. Barrett it was estimated that this solid mass of ice averaged 300 feet in width and consequently interfered with the discharge of the Mannan River which enters the Connecticut River at the railroad bridge just above Mt. Tom. As soon as the natural channel of the river became obstructed the flood flow, which was about 100,000 cubic feet per second, made its way across the Hockanum Meadows, entering the Connecticut River a short distance below the ice jam. While large quantities of broken ice reached Holyoke across the meadows from the north during the past few days no ice left the jam at Mt. Tom Junction until 7 o'clock last night according to Mr. Barrett.

Since early Friday morning preparations have been made by engineers of the Holyoke Water Power Company to sandbag the abutments at both the Holyoke and South Hadley ends of the dam so that in the event a large quantity of water was released by the ice jam, the surge which would be caused thereby would not do property damage. An emergency crew under direction of Stephen T. Callahan, Holyoke agent of the Boston & Maine Railroad Company worked in cooperation with the power company and from strategic positions advised all interested parties when the jam began to break.

It is significant to note that during Sunday afternoon, although the flow over the dam remained about constant, that is, 9.6 feet, the level of the river at the Hockanum Meadows for some unexplainable reason dropped more than six feet thus reducing the

volume of water which had been held back by the ice.

It took just one hour for the ice to travel from Mt. Tom Junction to the Holyoke Dam and its traveling speed was computed at 9 feet a second. Some idea of the quantity of ice which fell over the dam from 3 until 9.30 p. m. yesterday can be had when it is realized that it took an hour and a half to discharge the tremendous ice mass over the crest of the dam which is 1020 feet in length.

While every precaution has been taken to prevent property damage through the use of sand bags on each side of the river, it is found that the breaking of the jam did not affect the quantity of water which had been flowing past Holyoke during Sunday afternoon. In fact the maximum effect of the release of ice and water resulted in a rise of about two inches in the pond level above the dam.

The noise caused by the breaking of the ice was tremendous and could have been heard for long distances up the river as late as 9.30 p. m. When the last of the ice jam had passed over the dam, the river reverted to ordinary flood conditions which represent a fall of about 9.5 feet of water.

Mr. Barrett, commenting upon the flood, said that jams of various magnitude are common, but as far as can be learned no ice jam has ever occurred in this section of the Connecticut River to equal the one of the past week-end. Its occurrence this year, he said, can be explained by the long period of severe cold weather during January and February which preserved intact a heavy ice sheet over the river below Mt. Tom Junction. It was his opinion that this sheet broke up Friday afternoon and had the great mass of ice from the north reached Mt. Tom Junction "only 12 hours later," there would have been no ice jam and flood conditions at Northampton would not have been serious.

Report of Ice Jam at Mt. Tom
Junction 8 miles above Holyoke,
March 13 - 15, 1936.

The Flood

Following the break up of the ice jam on March 15, the river began to rise and reached its record height on March 19. By that time its water had spread over large areas along the river in the southerly part of Holyoke and in South Hadley Falls and had done much harm. The properties of HWP suffered serious damage.

Flood Damage

Loss of Dam Crest

It was several weeks after the height of the flood before the river had lowered to such a level that it was realized that the dam had suffered severe damage. It soon developed that most of that the huge blocks of granite which formed the crest of the dam, and which weighed about 3 tons each, had been displaced to a depth of 5 feet for nearly its full 1,000 feet length. The stones were scattered over the riverbed.

It was discovered at the same time that the old wooden dam just upstream was practically intact after being subjected to the same phenomenon. The explanation of these two widely differing results, made by the company Treasurer, follows:

"The 9 1/2 feet of water, flowing over the dam when the ice jam broke up, was sufficient to cause the heavy blocks of ice to slide up the gentle sloping up-stream face of the wooden dam. After ascending this slope the great masses of ice fell or dove into the space of 150 feet between the two dams so that the ice was apparently rising from its submergence when it struck the back of the stone dam which was more or less perpendicular.

"This was all quite evident because the stones were removed to a lower depth at the back of the stone dam than on the face."

Replacement of Dam Crest

While the river flow was receding, plans were being made to replace the granite stones which the blocks of ice had removed from the dam. It was decided that reinforced concrete would be used instead of granite.

Flashboards were placed on the crest of the old wooden dam so that water could be diverted into the canal system. Then a portable coffer dam was built and moved along the length of the dam as the work progressed. The coffer dam held back the water leaking over the wood dam so that the work could be done under dry conditions. The replacement of the crest was completed in 17 working days and nights.

Strengthening of the Gatehouse

The gatehouse at the Holyoke end of the dam regulates the amount of water entering the canal system. At times of flood, and at all other times, it prevents the river waters from entering the canal system out of control and doing damage. The gatehouse was built in 1848 and, in succeeding years, had been subjected to increasing pressures because of higher floods.

Following the 1936 flood the Company management felt that a major project to increase the stability of the gatehouse was essential. The seriousness of its concern is shown in the following statement of the Treasurer to the Company directors:

"Such a structure (the gatehouse) is inelastic and it can stand only a certain pressure from the river, and it is very difficult by modern engineering science to determine just the amount of that permissive pressure.

"After the flood of 1927 considerable work was done in building walls to hold back higher pond levels and a certain amount of sand in the form of ballast was used to weight the gatehouse structure down. But the pressure caused by the flood of 1936 was much greater than in 1927 and no competent engineer could witness such an occurrence without fear."

Engineering and Construction

Much engineering study was devoted to this serious problem and the conclusion was that the only safe course to follow was the excavation to ledge of an area 40 feet wide on the canal side of the gatehouse and the building of 12 concrete buttresses, extending upward from ledge rock at an angle of 45 degrees to serve as braces to the old granite masonry structure.

On top of these buttresses there was built a concrete box loaded with 1,250 tons of concrete and gravel. These buttresses and this added ballast doubled the resisting strength of the gatehouse and should insure its stability for all time.

The carrying out of this work presented great difficulties, because of the contractual obligation to furnish, during all week days, water power to the mills. It was necessary, therefore, to do this work at great speed each weekend during the hours from 6 a.m. on Sunday until 2 a.m. on Monday morning, when the canal could be unwatered.

After deducting the time required to drain the canal and pump the remaining water from the work area and refill the canal, there remained only 11 hours to actually work on the 12 buttresses. During those hours, excavation, carpentering and concrete work was rushed at maximum speed. Work began on May 24 and after 8 of these 11-hour work days, the 12 buttresses had been built to such a height that no more unwatering of the canal was needed.

South Hadley Gatehouse

At South Hadley, it was found better to demolish the two small gatehouses, raise the foundations and then rebuild the gatehouses.

A newspaper account of repairs to the dam and gatehouses follows.

From Treasurer's Report
August 31, 1936

LARGE DAM AND GATE HOUSE JOB NOW COMPLETED

Holyoke Water Power Company
Will Permit Public to In-
spect Project

Holyoke, Aug. 27—The extensive program of the Holyoke Water Power company, so far as its dam and gate house are concerned, was completed yesterday. This construction program was the result of an exhaustive engineering study which was begun as soon as the flood waters receded in March of this year. The ice jam which preceded the flood of March removed the top of the masonry dam to a depth of five feet.

The first project consisted in replacing this granite masonry with 4000 tons of concrete masonry reinforced with steel and by working night and day the top of the dam was completely restored during 17 days in June. The flood levels on the Connecticut river at Holyoke seem to be increasing with the passing of time, whatever may be the causes of the phenomenon. The original abutments, wing walls and gate house floor levels, were constructed in 1848 at a height of 10 feet above the top of the dam.

Considering the excellent and proven engineering judgment of the engineers of that day, as evidenced by the long period throughout which their constructed works at Holyoke have withstood the test of the elements and the wear and tear of operation, it would seem as if they must have felt confident that the gate house floors were being constructed above future flood levels.

The records show a progressive increase in the height of floods at Holyoke since the beginning of the century. The flood of 1913 rose to a height of 12.75 feet above the crest of the dam, and in 1927 it rose to 14.72 and in March, 1936, the flood waters rose to 16.80 feet above the dam, or nearly seven feet above the original level of the gate house floors at the ends of the dam.

As a result of the flood of 1927 the company built concrete walls around its gate houses replacing the sand bag barricades which were built during the flood. These walls were entirely inadequate to cope with the tremendous amount of water which came down the river in March. Over 100,000 bags of sand were required in the building of barricades at the ends of the dam to force the flood waters over the dam and prevent its uncontrolled flow into the canal systems at South Hadley and Holyoke.

The engineering study which was made after the flood of March this year, led to the conclusion that the walls should be raised to a height of 20 feet above the crest of the dam, or to a height of three feet three inches above the recent flood level. The walls have all been constructed of a sufficient top width so that sand bags can be placed upon them if it is desired to temporarily increase their height. Should flood waters reach the top of the new walls, it is estimated that the flood level at Springfield will be seven feet above the recent flood level.

An important part of the program has been the basic strengthening of the gate houses which during the recent floods served as dams to exclude water from the canal system. This result has been accomplished by the building of heavy concrete buttresses or braces extending from ledge rock in the canal to the down-stream side of the gate houses.

At the Holyoke gate house, over 2000 tons of ravel and concrete were placed on the top of these buttresses and upon the gate house floor which dead weight, together with the broadening of the foundation of the gate house structure by means of 12 massive buttresses, had doubled the strength of the gate house to withstand water pressure from the river. The work of the company has extended from the natural ledge on the South Hadley side of the right of way of the Boston and Maine railroad on the Holyoke side. This gap of about 60 feet has been a dangerous place during the recent floods and it has been hoped that some permanent provision would be made at that point to hold back flood waters.

The flood protection at the railroad tracks should be made permanent because of the risk involved in building temporary sand bag barricades in the dark during pouring rain and under many adverse conditions.

The Holyoke gate house has been protected against an ice jam by the building of reinforced concrete walls designed to ake the pressure and impact from an ice flow in case such a contingency should arise.

All of the work done by the Holyoke Water Power company has been permanent, involving large amounts of steel and over 3500 tons of concrete masonry and has been placed during a period of about three months.

While it is impracticable for large numbers of persons to actually inspect the work which has been done, the company is anxious that the public, and particularly the public officials be familiar with the work done, and the results which will be accomplished during the next flood emergency.

Flood Damage to Riverside Power Plant

HWP had been able to protect its Riverside Power Plant from the 1927 flood. However, in 1936 the water pressure was so great that the river broke through a window in an adjacent structure housing a hydroelectric unit. It then flowed through a cable tunnel into the main power plant filling the station with water to flood height.

The damage to electrical equipment in the plant was extensive with four hydroelectric generators under water. In addition, all auxiliary electric motors in the steam boiler and turbine section of the power plant were submerged. All of these electric motors and generators had to be dried out before the plant could return to generating electricity.

Flood Protection at Riverside

In order to protect Riverside Power Plant against future floods, all windows in the station were bricked up to an elevation five and one-half feet above the 1936 flood level. All door openings were protected to the same elevation by providing stop log protection. In addition, all exterior walls and interior ground floors were strengthened with steel beams and concrete masonry. The power plant thus became a rectangular box with the floor and walls reinforced to withstand water pressures well in excess of those of 1936.

Fishways

In 1938 the Massachusetts General Court passed legislation requiring HWP to build a fishway at its dam. This was the second fishway to be ordered by the State. Both fishways were built to specifications approved by the State. The first was built in 1873 and passed no fish.³³⁵

The second was built during the summer of 1940. The state inspector on the job also acted as a foreman directing 10 NYA boys who were furnished through the cooperation of the Department of Conservation. They assisted in the construction work at no cost to HWP.

The cost of the fishway was \$1,500. An effort was made to have legislation passed to compensate HWP for this fishway expense, but it failed.

The fishway was officially dedicated on May 20, 1941, with officials from the Conservation Departments of Massachusetts, Vermont and New Hampshire in attendance as well as members of local Fish and Game organizations.

This second fishway was a complete failure. No shad or salmon ever used it.

HWP as a Banker - Cash and Land Mortgages

When HWP became the successor to the Hadley Falls Company in 1859, it became the owner of potential mill sites along the canals, and of areas of land for commercial and residential development. The sale of real estate soon became an important part of its business. As earlier noted in this history,¹⁰² the monies so obtained enabled the company over the years to make capital investments in its electric power plants, to build mill buildings and to pay dividends.

In the Depression era, HWP was criticized for lacking sympathetic cooperation with the Holyoke manufacturers. In response, the Company assembled the following list of loans to local industries, from 1905 to 1932, which, in the forms of mortgages and cash, amounted to \$1,445,564. In this way, HWP was rendering a service to industry that is today a normal commercial banking function.³²²

Exhibit A2 accompanying this history has a tabulation of all real estate sales from 1859 to 1984. They total 2,397 sales amounting to \$12,366,937.

HWP Loans to Holyoke Industry

<u>Name</u>	<u>Date</u>	<u>Cash</u>	<u>Land Mortgage</u>
Crocker McElwain Co.	Mar. 1905	\$ -	\$ 200,000.00
Am. Pad & Paper Co.	June 1905	-	3,500.00
Martin Judge	June 1906	-	5,500.00
Am. Pad & Paper Co.	May 1907	-	4,500.00
Barlow Mfg. Co.	Nov. 1907	19,750.00	16,250.00
Goetz Silk Co.	July 1909	-	25,000.00
Wm. Brooks, et. al.	May 1910	-	5,000.00
Holyoke Bar Co.	July 1910	6,500.00	5,500.00
Merrill B. Barkley	Nov. 1910	30,000.00	23,100.00
Chemical Paper Mfg. Co.	Nov. 1912	150,000.00	-
Chemical Paper Mfg. Co.	May 1913	100,000.00	-
E. M. Friedrich	May 1913	-	12,000.00
Buchanan & Bolt	Apr. 1914	-	3,500.00
Holyoke Hotel Co.	1914	20,000.00	-
Otto Dreikorn	Dec. 1916	-	30,000.00
Nat'l Blank Book	Mar. 1917	-	48,000.00
S. Haarman & Co.	Aug. 1917	-	13,500.00
Richard H. Dietz	Nov. 1917	22,000.00	15,523.20
Holyoke Bar Co.	Apr. 1918	8,000.00	-
Smith Tablet Co.	July 1919	7,312.50	24,687.00
Century Machinery Co.	Nov. 1920	39,200.00	47,000.00
Holyoke Hotel Co.	1920	5,000.00	-
Cowan Truck Co.	Dec. 1921	76,855.21	35,191.19
John O'Shea	May 1922	-	30,000.00
Holyoke Belting Co.	June 1923	-	40,000.00
Prentiss Brooks Co.	July 1923	-	5,000.00
Walsh Boiler Works	July 1923	-	100,000.00
Charles Belsky	Feb. 1924	-	4,875.00
R. H. Dietz, High St.	July 1924	-	90,000.00
James P. Hobert	June 1925	-	6,000.00
C. M. Sullivan, Gas. Sta.	Nov. 1925	-	4,200.00
Brown, Stevens & Fifield	July 1926	-	3,000.00
Bibeau Coal Co.	Jan. 1927	-	27,000.00
Glesmann Ice Cream Co.	Apr. 1927	-	1,400.00
General Cleansers	July 1927	-	2,400.00
Holyoke Bar Co.	Sept. 1927	-	2,000.00
J & W Jolly	Feb. 1928	15,000.00	-
Marvellum	Feb. 1928	25,000.00	-
Legrand Ice Co.	Feb. 1929	10,000.00	-
D. Mackintosh	Sept. 1930	4,870.00	-
Electro Ice Co.	June 1931	10,000.00	6,400.00
White & Wyckoff	Dec. 1931	40,000.00	-
Holyoke Ice Co.	Apr. 1932	<u>15,000.00</u>	<u>4,000.00</u>
		\$604,487.71	\$ 841,076.39
			<u>604,487.71</u>
			\$1,445,564.10

Source: Supplemental Report to Treasurer's Report
December 28, 1934

HWP to Supply Electricity to City of Chicopee

The first mention in the Treasurer's Reports to the Directors of the desire of public officials of the City of Chicopee to purchase electricity from HWP occurs on February 28, 1933. It follows:

"The attention of the Directors should now be called to the fact that at times during the last year and twice during the past two weeks, attorneys have called at our office, stating that the Mayor of the City of Chicopee desired to purchase electricity from our Company for the Chicopee Municipal plant.

"During the year the City of Chicopee purchased from the Turners Falls Power and Electric Company its electrical requirements at \$0.014 per kWh under a contract which expires July 31, 1936. In 1932, the payment under this contract amounted to \$174,452.

"The suggestion has been made several times, that a long-term contract would be signed with our Company for service beginning August 1, 1936, provided we would now give the City of Chicopee financial assistance in its present crisis.

"No encouragement has been given these emissaries, although our Company could afford, under its present conditions, to sell the City of Chicopee its requirements at a rate which would mean a saving to that City.

"We have sufficient capacity to provide the City of Chicopee with its electrical requirements and the cost of the connection would be insignificant."

Events concerning Chicopee evidently lay quiescent for many months until late in 1935. Excerpts from the report to the Directors of November 20, 1935 follows:

"The power situation at Chicopee has been active throughout the quarter - on our part, consisting mostly of meeting arguments and statements originating somewhere such as the following:

1. That we could not meet the competing rate.

2. That we were not financially responsible.
3. That we did not have and could not obtain sufficient plant capacity.
4. That we could not reach the plant of the City of Chicopee with our electricity.
5. That we were not good people with whom to do business.
6. That "fuses" would be put into the transmission lines leading to Holyoke so that in the event that we had plant trouble, we could not get help from outside.
7. That the competing company paid \$140,000 to the City of Chicopee.
8. That in the event that power was bought from Holyoke, the competing company would tear down a \$3,000,000 idle power plant taxable in Chicopee."

All of the above objections, and many more, were met over and over again.

"The subject was discussed in Chicopee through a mayoralty campaign, but to no great extent, for it was found that the public was not greatly interested as between the two power companies, but rather in the ultimate result of lower power rates."

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"As we understand, the competing company offered four different propositions up to and including December 11.

"Our proposition was filed on November 30, and remained unchanged until December 16, when on account of the definite loss of the American Writing Paper Company, Inc., electric power contract and the reduction of the rates by the City of Holyoke, it seemed wise to make a modification.

"A revised proposition was filed by us with the Commission on December 18. The matter was then held under advisement.

"A plan was attached to the proposal which explained the method of delivery.

"Selling at the city line obviated street franchises and the use of lead covered cables obviated all dangers to the public. This system is used extensively in Bridgeport and elsewhere. The first cost is much greater than bare wires but the maintenance is negligible.

"On December 20, 1935, the Mayor of the City of Chicopee and a majority of the Municipal Light Board, awarded our company an electrical contract for the period August 1, 1936 to August 1, 1951.³²⁴

"This contract, on a basis of the 1935 load, represents a gross income of \$152,000 a year or an increase of 35% for our electric department."

After the Chicopee contract had been signed, a group of 15 taxpayers brought a bill in equity declaring the contract null and void for several reasons among which were:

1. No bond had been filed.
2. HWP did not have the corporate powers to serve in Chicopee.
3. An appropriation by the Board of Aldermen was required before the Chicopee Electric Light Board could enter into a contract.

The issues were tried before a judge of the Superior Court who sustained the HWP position. The taxpayers then appealed to the Supreme Court.

During the interim, in July 1936, HWP amended the contract to meet some of the objections of the taxpayers. The most important was the substitution of Holyoke Power and Electric Company (HP&E) for HWP in case the latter was declared ineligible to do business in Chicopee. HP&E is a wholly owned subsidiary of HWP and is a public utility and thus had the necessary corporate authority to carry out the Chicopee contract obligations.³²³

The Supreme Court subsequently affirmed the decision of the Superior Court bringing to an end the controversy over the electric contract.

Service to Chicopee

In his report to the Directors of February 28, 1937, the Treasurer wrote:

"Our service to the City of Chicopee has been excellent and it is quite evident that both officials and citizens have been well pleased since our Company took over the responsibility of delivering electrical energy to the Municipal Lighting Department on August 1, 1936.

"The Department, after a few months, greatly reduced its lighting and power rates to consumers and has contributed from earnings, the sum of \$38,934.29 to the City, thus reducing the levy upon taxable property.

"While this contract has increased our net earnings during the last two quarters, the full benefit will not be shown until after August 1, 1937, for the reason that under the terms of the contract, and to meet a competitive condition, free service to the value of \$40,000 was given the City during the months of October, November, December and January."

Comment

After much legal maneuvering, HWP became the supplier of electricity to the Chicopee Electric Light Department. That relationship continued for 50 years. Then, in 1986 the Department began to take electricity from the Millstone 3 Nuclear Plant of NU of which it is a part owner, as well as from other sources. However, as of November 7, 1988, a new agreement was signed with the Department which makes HWP again a major supplier of electricity to it.

Following is a comparison of the sales of electricity to Chicopee in 1937 and 1986:

	<u>1937</u> ¹	<u>1986</u> ²
KwH Purchased	18,629,000	163,954,000
Annual Payment	\$ 195,793	\$ 13,482,000
Rate per kWh	1.05¢	8.22¢

1. Annual Report to Federal Power Commission, Page 513
2. Annual Report to Federal Energy Regulatory Commission, Page 304

District Steam SystemA Move for Diversification

In an effort to diversify its operations, HWP, in early 1937, decided to enter the business of supplying high pressure steam for heating and process uses to the manufacturers located in the industrial area near its Riverside fossil fuel steam generating station. It was felt that the sale of steam would tend to even out the load on the Company's boilers and increase plant efficiency.

Petition for Street Franchise

In order to distribute the steam most economically to the prospective customers, the Company proposed to obtain a franchise from the City, allowing it to place the steam pipe underground in public streets. A petition for such a franchise was filed early in May.

Opposition

The franchise petition struck immediate opposition from the Holyoke Central Labor Union, the International Union of Steam Engineers and the Gas and Electric Department (G&E) of the City of Holyoke.

G&E Opposition

The proposed district steam system was not located in proximity to the operations of the G&E. Nevertheless, its Manager requested that any grant or franchise be made only in accordance with a group of restrictive conditions which he had drafted. Those conditions are included as part of this history. ³²⁵ They were so onerous that HWP took the firm stand that it would accept no restrictions in the franchise other than those covered by State statutes.

HWP Support

Many manufacturers and businessmen including the Chamber of Commerce urged that the Board of Aldermen and the Mayor take favorable action on the petition.

The Result

The franchise was voted on favorably by the Aldermen 11 to 9 on June 16 but was vetoed by the Mayor on June 23. The veto was sustained 10 to 10.

Second Try

On June 24 HWP filed a second petition with a reduced area in which to distribute steam. The Mayor announced he would veto the second petition if it passed the Board of Aldermen. HWP withdrew this second petition.

Alternate Plan

Realizing that it was futile to try to use the City streets as the location for the steam line, HWP then resorted to its canal berme lands, railroad rights of way, private property and an unaccepted City street as its route.

One part of plan involved the laying of the steam pipe in a concrete conduit in an unaccepted street. The work involved 260 feet of insulated steam pipe, two manholes, and replacing the street surface with new concrete pavement.

In order to avoid having the work stopped by a possible court injunction, it was undertaken and completed on the Saturday, Sunday and Monday of Labor Day weekend.

Chronological Record

A day-to-day record of events involved in successfully entering upon the steam distribution business, despite intense political opposition, is included in this history. It covers the period from May 4, 1937 to September 16, 1937.³²⁶

District Steam History

Delivery of steam began in the middle of November 1937 to two industries, the Worthington Corporation and the Marvellum Company. Three more customers were added in 1938. They were White and Wyckoff Manufacturing Company, Springfield Photo Mount Company and the

Holyoke Wire and Cable Company on Water Street. The gross income in this first full year was \$35,179.³²⁷ By 1981 there were ten industrial customers with annual steam purchases of \$2,602,000.³²⁸

In 1982 the production of electricity from fossil fuel had become uneconomic at Riverside Station. Accordingly, the steam plant was shut down and the district steam system sold to the G&E.

Construction Activity

The ten-year period from 1930-1940 saw a tremendous amount of construction work which was designed and built by HWP. Some of the most important items were:

- o A river crossing of transmission lines and two lead covered 3 phase, 13,800 volt cable lines running from Riverside Station to the center of Chicopee, each about 4 miles long.
- o Two substations, one at Chicopee Center, and one at Grattan Street, Chicopee, each of 7,500 kVA capacity.
- o One 750[#], 150,000[#]/hr. steam boiler at Riverside Station.
- o One 10,000 kW steam turbine at Riverside Station.
- o One 4,000 kW hydroelectric generator at Riverside Station.
- o District Steam System.
- o A combined machine shop and warehouse to support the power plant and line crew activities.
- o An addition to the warehouse for future expansion but initially to be rented for manufacturing.
- o Effects of 1936 Record Flood
 - a. Replacing the crest of the dam
 - b. Strengthening the Holyoke and South Hadley gatehouse
 - c. Flood protection of the Riverside Power Station

Finances

During the latter years of this decade, the Company needed to have ready funds to pay for the facilities to serve Chicopee, to expand its electric generating facilities, to build the steam line and to pay for the 1936 flood damages and subsequent flood protection works. HWP had been able to pay for much of this work from internal funds and bank borrowings. However, additional funds of a permanent form were also needed.

Some of those expenditures were:³²⁹

Cost of new boiler and turbine	\$ 483,388
Cost of electrical connections to Chicopee	243,000
Cost of 1936 flood and subsequent strengthening of flood protection	253,679
Other necessary small construction projects	<u>141,550</u>
	\$1,121,617

Sources of funds:

Company funds used	\$ 476,388
Short-term bank loans	250,000
To be obtained	<u>395,229</u>
	\$1,121,617

Thus, the total of funds to be long-term financed was \$645,229 of which \$250,000 would pay back the bank loan and \$395,229 would be new money.

Increasing the Authorized Capital Stock

Among the several options considered by the company was the issuing of more common stock by doubling the authorized capital stock from \$3,000,000 to \$6,000,000. HWP is a corporation organized by a special act of the Legislature in 1859 with a capital which was limited to \$600,000. The authorized capital was increased by the Legislature to \$1,200,000 in 1889 and to \$3,000,000 in 1924.

A bill was filed on November 20, 1937 and publicly advertised asking the Legislature to authorize an increase on the capital stock of HWP by \$3,000,000.

Following are excerpts from the Treasurer's Report to the Directors of February 28, 1938:

"House Bill 214 was duly filed and publicly advertised, asking legislative authority to increase the capital stock of this Company by \$3,000,000.

"Immediately two bills were filed by the Manager of the local Gas and Electric Department to severely hamper our Company in making any future expenditures in its electrical business.

"While these two bills were filed as general laws, they seriously affected only our Company.

"The Company was subject to a barrage of local publicity which would lead the public to believe that we were in the electrical business either illegally or that our rights had been obtained in 1903 and 1909 in a questionable manner.

"Philip O'Brien, of our local counsel, offered to publish over his own signature a legal defense of our position and it was easily seen that it was imperative that such steps be taken.

"Mr. O'Brien is a well known and highly respected attorney, with a substantial local practice, but he was willing to risk his reputation on the issue. For every attack of the Municipal plant lawyers, he published an answer and finally exhausted the matter.

"The public now understands that we have ample legal authority for our electrical business and that its conduct has not injured the growth and prosperity of the local municipal plant. Ninety percent of its business and probably all of its profit is protected by restricting our Company to sales of over 100 horsepower. Its profit is derived from its sales to residential users and small power customers where the rates are high.

"The opposition of the local department was a great handicap in the Legislature because of the strong political support which the Municipal Plant organization maintains within the City.

"The Chamber of Commerce and nearly all of the manufacturers have helped in the support of our stock bill and in the defeat of the destructive legislation offered by the Municipal plant."

The Act Becomes Law

"Following are excerpts from the Treasurer's Report to the Directors of April 22, 1938:

"On April 7, 1938, Governor Charles F. Hurley approved, as an emergency measure, our bill, petition for which was filed with the Clerk of the House on December 17, 1937. It is Chapter 183 of the Acts of the General Court for the year 1938.

"The legislation as enacted, is exactly as filed and later amended by the addition of Section 3, which has reference to the issue of bonds, notes and other evidences of indebtedness.

"Although we had created by publicity and otherwise, a strong support for the legislation among businessmen and manufacturers of Holyoke, we were confronted with a strong opposition from an influential group of labor officials and by the Manager of the local Municipal Electric Plant.

"Nevertheless, by constantly meeting the arguments of the opposition, over a period of more than three months, and steadfastly refusing to amend or compromise the provisions of the bill, it was found possible to advance the measure through its various stages with a fair margin of votes."

There is included in this history a chronological record which gives by dates the various stages through which this bill had to pass. However, it does not indicate the tremendous amount of work that was necessary to be done in the community and elsewhere before favorable votes could be obtained.³³⁰

Obtaining the Funds

With the passage of the Legislation to increase the amount of authorized capital stock, the Company had three financing options. These were to issue additional shares of stock, to borrow money on a

medium-term basis such as three years or to take out a 15 to 30-year loan at a fixed rate of interest.

The decision was made to seek a long-term loan of \$1,000,000. This was obtained from two Hartford insurance companies as follows:

	<u>Amount</u>	<u>Term</u>	<u>Rate</u>
Aetna	\$ 600,000	20 years	3%
Connecticut Mutual	400,000	20 years	3%
	<u>\$1,000,000</u>		

Labor Relations

In the latter part of 1938 there were the first indications that Union representatives were active among the HWP electric department employees. In December the Company was notified by a representative of the National Labor Relations Board that 18 of the 30 employees in the electric department had joined the International Brotherhood of Electrical Workers (IBEW), Local B-926.³³¹

There followed many negotiating sessions with a labor union representative and a committee of employees which finally culminated on February 13 in an agreement. However, the committee failed in its efforts to get the agreement accepted by the Union membership.

Effective as of April 2, the Company made a wage adjustment in which the men were offered their choice of a 40-hour week on the agreed upon Union pay scale, or a lower hourly rate for a longer work week with time and one-half for overtime over 44 hours. The majority chose the second alternative because it resulted in a larger weekly paycheck.

On April 13 the company was notified by newspaper reporters that the Union organizer was publishing a statement threatening a strike of the HWP electric employees. The Company immediately called upon Charles E. Wyzanski of the legal firm of Ropes and Gray of Boston for guidance. Wyzanski was largely responsible for drafting the National Labor Relations Act and had successfully argued its constitutionality before the Supreme Court.

Wyzanski immediately came to Holyoke, reviewed the negotiations which HWP had had with the Union and then telephoned Daniel W. Tracy, International President of the Union. Subsequently, at the suggestion of Tracy, the Union organizer called Wyzanski and arranged for a conference. That conference was held at Holyoke on April 18 between the Company, Wyzanski, the employees' negotiating committee and the Union organizer. As a result of the meeting, the terms of a contract were mutually agreed upon.³³² A copy of that contract is included herewith.

The relationship between HWP and Local B-926 of the IBEW has continued for nearly 50 years. As an indication of the change in wage rates during that period, a comparison of the few classifications which are still similar follows:

	<u>1939</u>	<u>1987</u>
Switchboard Operator, Riverside	\$0.95/hr.	\$16.275/hr.
Electrician, Riverside	0.95	15.855
Lineman	1.00	15.905
	<u>1944</u>	
Operator, Gatehouse	0.65	13.91
	<u>1950</u>	
Engineer, Riverside	2.00	16.575

The International Representative of the IBEW for the HWP employees during this initial period of Company-Union relations continued in that capacity for 27 years. No further strike threats were made during that long period.

Purchase of Norman Mill Building

In January 1937 the American Writing Paper Company sold at auction a property originally built as a paper mill and known as its Norman Division. The property was sold for \$3,500. The purchaser then sold the machinery in the building for \$7,500. At this point, HWP stepped in and bought the property for \$8,200.

The property consisted of four and one-half acres of land contiguous to the Riverside hydro and steam plant of the Company. The building contained 90,000 square feet of space. It was soon renovated for use by small industries. During the past fifty years, the Norman has had a high rate of occupancy and has helped to fill the need for rental manufacturing space in the City. It is still owned by HWP.

This purchase of the mill property gave HWP an opportunity to re-establish a policy started in 1881 when it built the Cabot Street mill as a site for small industries. That mill, after serving as an incubator for several local firms, was sold for use as a paper mill in 1903.⁶¹

Railroad Fares

In order to encourage stockholders to attend the Annual Meeting of the Company, a bylaw was passed in 1912 as follows:

"All stockholders, who may attend the Annual Meeting of this Company, shall receive their railroad fares over the most convenient route from their residence to and from Holyoke, provided however, that payment shall not be for over three hundred miles in the aggregate in any one case."

The use of the railroad at that time was particularly appropriate for HWP stockholders because the Company office was conveniently located just across the railroad tracks from the railroad station.

However, when travel by automobile became so convenient, the use by stockholders of the train became infrequent. Nevertheless, the wording of the bylaw did not seem to require actual use of the train by the stockholders. As a result, stockholders would go to the meeting by automobile and collect the cost of the railroad fare from their residences.

At a Special Meeting of the Stockholders on April 23, 1938, the following vote was passed:

"That the vote of the stockholders on establishing a bylaw in reference to the payment of railroad fares of stockholders, October 16, 1912 be and the same is hereby rescinded."³³³

A Summation

The years from 1930 to 1940 brought with them major issues requiring the administrative and engineering talents of a very small company. Among the problems were:

- o An ice jam which removed the top layer of granite stones on the dam.
- o Highest flood in history.
- o Greatest hurricane damage ever to strike the area.
- o Flooding of Riverside Station with four hydroelectric generators and several electric motors in the boiler plant under water.
- o Restoration of the crest of the dam, the strengthening of the Holyoke and South Hadley gatehouses and the flood protecting of Riverside Station.
- o Critical litigation of several issues concerning the use of, and payment for, millpowers by their owners. HWP won some of the issues and lost some. One loss was at the hand of the U. S. Supreme Court by a five to four decision.
- o Major expansion of the electric generating capacity by adding 4,000 kilowatts of hydro and 10,000 kilowatts of steam.
- o Obtaining of a long-term contract to supply the City of Chicopee with its electric power.
- o Construction of a cable transmission system with substations to serve the Chicopee load.
- o Design construction and operation of a District Steam System in the face of strong political opposition.
- o Obtaining of legislative permission to increase its capital structure in the face of strong political opposition.
- o Obtaining of sufficient long-term funds to finance adequately the company.

1940 - 1950

1940 - 1950

This ten-year period brought several issues which were beyond the normal HWP functions of supplying electric and hydraulic power and operating its Real Estate Department. These issues were World War II, Federal Power Commission (FPC) jurisdiction over HWP, licensing proceedings of HWP hydraulic property before FPC, the start of construction of a major hydro-electric generating unit and increasing HWP industrial development activities.

World War IIElectric Service to Westover Field

The anticipation of the United States eventually being involved in World War II affected HWP in early 1940. At that time, Westover Field, a military air base with an area of eight square miles, was under construction in nearby Chicopee.

In January of 1941, HWP, the City of Chicopee Electric Light Department (CELD) and the Turners Falls Power and Electric Company were asked to bid upon the electric requirements for the base. The bid specifications required that electricity be delivered by June 1.

The CELD bid was the successful one. It was based upon the electricity being purchased from HWP and transmitted to the base via transmission lines owned, operated and maintained by the company. Two single circuit lines, each two miles long were to be built in nearby wooded country crossed by gullies and ravines. It was a large construction job, built under difficult conditions. Nevertheless, it was finished on time with electricity being delivered to Westover by HWP on May 27, three days ahead of the June 1 date. ³³⁵

Federal Power Commission (FPC) Conference

In June of 1941, the FPC called to Washington, officials of all the power companies in the north-eastern part of the country. The purpose of the meeting was to tell the utilities that the defense needs of the country were certain to produce a power shortage in 1942-1944 unless orders for additional generating equipment were placed at once. HWP left the meeting feeling that the government, through the FPC, was assuming the leadership to insure that adequate electric power supplies could be available.

Power Plant Protection - (FPC Order)

Pearl Harbor was bombed on December 7, 1941. On December 8, President Roosevelt declared war on Japan. On the same day, the FPC telephoned HWP the following: "Deny entrance to property to everyone except Army, Navy and Federal Power Commission representatives. However, these must be identified and escorted through the property. Refuse strangers admission to property." The following news item appeared in the local press on December 9:

**Power Plant Area
Ban Is Announced**

**Water Company Moves to
Protect Property**

HOLYOKE, Dec. 9—Stringent regulations barring all persons except company employes, irrespective of their mission, from the vicinity of the power plants of the Holyoke Water Power Company were announced tonight by President Robert E. Barrett. The Municipal Gas & Electric Department also may take similar action as Manager John J. Kirkpatrick said such a move was under consideration. Barrett's statement follows:

"No person, except company employes, regardless of their mission, will henceforth be permitted to pass guards at power plants of the Holyoke Water Power Company. Any person desiring information or to do business with the company must call at the main office, 1 Canal Street. All persons are requested not to enter the area between Appleton and Mosher Streets, east of the level canal, between sunset and sunrise."

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Within two weeks after the FPC order, uniformed guards were on duty at all hours at the gatehouses at each end of the dam. Each guard carried a gun. Heavy duty shot guns were available in the guardhouse which had been built at the Holyoke end of the dam as well as in the gatehouses. Extensive floodlighting was installed at the approaches to the gatehouses.

Blackout

By the end of February 1942, the management reported that the main power plant on the riverbank had been completely equipped with shutters and curtains so that it could be operated with full illumination inside and would be in total darkness on the outside.

However, the curtains and shutters so interfered with ventilation that, despite the installation of cooling fans, the heat within the station was high.

Finger Printing

On orders of the Federal Bureau of Investigation, issued through the Springfield Ordinance District to all public utilities, finger prints of all HWP employees were made by the local police department.

Power Plant Expansion and Operations

The war time conditions brought with them increasing demands from customers for electric power. This led to the need for more generating capacity. In addition, problems soon arose in retaining skilled personnel and in obtaining fuel.

Topping Turbine

In 1940, HWP installed a 5,000 kilowatt topping turbine which received its steam at 675# per square inch pressure and discharged it into the 200# pressure turbines and to the steam line. This was a major step forward in the efficiency of the plant. It made possible the operation of its high pressure boiler at 675# pressure, passing the steam through the topping turbine, where 5,000 kilowatts of electricity were generated, and then discharging the steam at 200# pressure into the low pressure turbines and into the district steam system.

New Boiler

In July, 1941, HWP placed an order for a second high pressure boiler. The project was scheduled to be completed by May 15, 1942. However, the war time conditions soon affected the construction schedule. Nineteen tons of special steel required for the superheater drum were diverted to the Navy for armor plate. This caused a delay in the delivery of the boiler.

German Submarines Endanger Oil Supply

When the new boiler was purchased the supposition had been that oil would be an available fuel. However, the sinking of oil tankers along the Atlantic Coast by German submarines caused the Government to control the use of fuel oil and to urge the conversion of steam boilers to bituminous coal.

Purchase of Fuel Handling Equipment

Responding to the desire of the government, HWP ordered the extensive equipment needed to unload, store, transfer, crush and pulverize coal. The original estimate of the cost of the boiler was \$200,000 to \$250,000. With the addition of the coal facilities, the total cost of the project was increased to \$600,000. At that time, the management understood that no further orders for electric generating equipment would be allowed by the government and that the rationing of electricity would be the next step.

Electric Generation Supplemented with Purchased Power

While the new coal burning boiler was still under construction the Government continued to urge the Company to reduce its use of fuel oil. This HWP could not do and still carry its load. Its stoker fired boilers and its hydro generation of electricity were of insufficient capacity.

On December 7, 1942, HWP was telephoned from the War Production Board in Washington asking it to discontinue, or materially reduce, its consumption of fuel oil because of the critical fuel oil situation in New England. HWP reported its problem to the Turners Falls Power and Electric Company and asked that it be allowed to purchase sufficient power to carry its load. The request was readily granted.

The new boiler with its coal handling equipment was finally completed and placed in service in February 1943, 10 months later than originally scheduled. The HWP system was thenceforth able to carry its load during the remaining war years.

Effect of the War Upon Personnel

The war soon had its effect upon the ability of HWP to maintain an adequate force of trained men because of the draft, the desire of men to enlist, and the high wages being paid the defense workers in the area. However in February of 1946, the management reported, "It is a pleasure to note that, with one exception, all of our veterans have been discharged from service. Eighteen of our employees participated in the war, and ten of these are back at work. Several of the remaining men are at school. Our total number of employees normally is about 105."

Robert E. Barrett I

On October 13, 1945, Robert E. Barrett (REB I), President and Treasurer of HWP, died after a short illness. He was 64 years old. He had been treasurer since 1920 and president since 1923. He brought to Holyoke an extensive background in civil engineering and much experience in the design and construction of large hydraulic projects.³³⁷

During his years at HWP the company had expanded greatly. Its sales of electricity had grown from \$86,420 in 1921 to \$1,239,000 in 1945 and its net income had increased from \$259,500 to \$326,200. Federal income taxes had increased from \$0 to \$260,000. A biographical account of his life, as carried in the local newspaper, is part of this history³³⁹. An editorial tribute to him is included herewith.

His tenure in office spanned twenty five years. He will best be remembered as one who, early on, recognized the need to create a new source of income for the company. The HWP lands for sale, which for many years had created earnings for HWP capital projects and stockholders dividends, were becoming depleted. They were a non-renewable resource.

At the same time, growth in the sales of water power had reached its peak. There were very few sites left on the canal system for new water power users. The dependable flow of the river had all been allocated. Industries were turning to electricity as the firm power source.

As a result, REB I concentrated upon expanding the electric power producing capability of HWP, and upon aggressively marketing electric power for industrial and municipal use. A comparative tabulation from the Massachusetts Department of Public Utilities Reports of the HWP electric business, at the beginning and at the end of his tenure, follows:³³⁸

	<u>1920</u>	<u>1945</u>	<u>Increase</u>
Electric Sales KWh	4,778,090	120,375,876	25.19 Times
Electric Sales - \$	58,627	1,239,369	21.13 "
Electric Peak - KW	1,160	24,600	21.20 "

REB I had successfully converted HWP into a major supplier of electricity.

OCT 13 1945

Robert E. Barrett

Not since its beginning, ninety-seven years ago, has the Holyoke Water Power Company, which is the backbone of Holyoke's industrial system, had such a driving force at its head as Robert E. Barrett.

The quality of the pioneers who dared build the first dam across the river was revived in the engineering genius of Mr. Barrett. When Mr. Barrett came here twenty-five years ago the engineering possibilities for use of water power were resting. It should always be remembered in any study of the century of history of the Holyoke Water Company that there were very great land holdings within the city and for many decades the satisfied management was not willing to sell the land because it was a certain capital asset. Mr. Barrett fired that system.

Mr. Barrett had been trained in the new school where hydro-electric power worked along with and was created from the water-wheel. He had to rebuild the whole new development of the power available. Everywhere he turned there was an obstacle. All the way along there was something to be overcome. It was not like going out and starting from new foundations.

The company recognized the great ability of Mr. Barrett and his intense devotion to its interests and made him president. During his administration Mr. Barrett had caused to be built a hydro electric plant with the capacity of 27,000 kilowatt power to augment the 60,000 horsepower upon which the city's industries and its very life had been built. This is a permanent addition to the wealth of Holyoke—as well as to the Holyoke Water Power Company.

Holyoke is a richer city now and for the future due to the creative engineering vision and the intense power for work that marked Mr. Barrett's all too short life. It is true that a full quarter of a century in one field is a longer period than most men have to do their work. These twenty-five years of Mr. Barrett's service in Holyoke have been as hard as any such period in the whole story of American industry. Everything was in changing tempo following the first World War. The period of inflation in the Twenties, the intense depression of the Thirties and the war period of this decade have each forced heavy tests upon all men in field of leadership.

Mr. Barrett had to work through three floods, the like of which the Holyoke dam had never known, any one of which might have meant the destruction of the hydraulic power system of Hol-

yoke were it not for the great skill he showed in mastering the emergency crises that were forced upon both the Holyoke Water Power Company and the City of Holyoke.

Just as he fought flood and hurricane and inflation and depression Mr. Barrett carried his fighting spirit into the life of Holyoke. Naturally he aroused hostilities but any measure of Mr. Barrett's life and work in Holyoke will give him one of the highest places ever attained in the development of the basic power which makes the wheels of our industrial life go round. He was vigorously interested in the Holyoke Chamber of Commerce. In social life he had warm friendships.

When he came to his twenty-fifth anniversary of service in Holyoke early in the year there was very high national recognition of his attainments as an engineer and administrator. By this time there are more than 1100 Holyoke Water Power stockholders in every state of the Union and in every continent of the world, to whom Mr. Barrett felt he had a very personal responsibility as the head of their organization.

If one would have wanted to find the most delightful phase of Mr. Barrett's personality one had but to find some way to get him to tell about what the Connecticut river meant from its headwaters, where fishermen love to make their haunts, until it flows on its way to the sea after powering the industries of Holyoke. Always he would be telling about the foresight, the great engineering ability and excellent workmanship of the men who harnessed the river and built the canals of Holyoke that had lasted almost a hundred years. So in the future annals of the Holyoke Water Power Co. and the City of Holyoke they will be telling of the engineering genius of Robert E. Barrett, and his great power for putting his dreams into reality, and making them work for those who will be coming after.

It is always the purpose of the engineer to build the bridges for those coming behind to cross over. Out of them and for us the legacy

Might of the roaring boiler
Force of the engine's thrust
Strength of the sweating toiler
Greatly in these we trust.

But back of them stands the schemer,

The Thinker who drives things through;

Back of the Job—the Dreamer
Who's making the dream come true.

That has been Mr. Barrett's twenty-five years in Holyoke.

Robert E. Barrett II

Following the death of his father, Robert E. Barrett Jr., (REB II) was elected president and treasurer of HWP. He had joined the company in 1930 following his graduation from Harvard as an electrical engineer. He had become Assistant Treasurer on June 26, 1943, and was elected to his new offices on October 26, 1945.

With his election as the company's chief executive, he assumed the full responsibility for the operation of the company, a role he was to fill for the next 29 years. He is the same person who is writing this history. Accordingly, very much of that which will be written henceforth will be based upon personal knowledge. Therefore, it will not be necessary to document the remainder of this history with as frequent reference notes as has been done heretofore.

Federal Power CommissionHistorical BackgroundLegislative Authority

Holyoke Water Power Company and its predecessor companies developed and operated the hydraulic resources of the Connecticut River beginning in 1792 under authority granted by the Massachusetts state legislature. Those were:

Properties of the Locks and Canals on the Connecticut River

Incorporated in February 1792 to render the "Connecticut River passable for boats."

Hadley Falls Company

Incorporated in April 28, 1848, "...for the purpose of constructing and maintaining a dam across the Connecticut River...and of creating a water power."

Holyoke Water Power Company

Incorporated January 31, 1859, "...for the purpose of upholding and maintaining the dam across the Connecticut River heretofore constructed by the Hadley Falls Company and of creating and maintaining a water power to be used by said corporation for manufacturing and mechanical purposes and to be sold or leased to other persons..."

Federal Power Act

The Federal Power Act was passed in 1920. It created the Federal Power Commission (FPC) which was empowered to issue licenses for the use of navigable waters for the development of electric power. The term "navigable waters" is defined therein as those waters over which Congress has control.

Navigability as Defined at HWP

At Holyoke, for many years, HWP had recognized the claim of Government officials that the Connecticut River was navigable within its territory both below and above the dam. This had made it necessary to obtain licenses from the War Department for any excavation, filling or other construction work below the high water mark of the river. A similar license had to be obtained from the State of Massachusetts.

After the creation of the FPC, HWP understood that jurisdiction for construction work below the high water mark, that is in the stream bed, rested with the FPC when the generation of electricity was involved. The Company did not understand that licenses were required from the Federal Power Commission for work done previously under licenses issued by the War Department. In addition, HWP had not undertaken any projects involving the generation of hydroelectric power since the passage of the Federal Power Act that had required construction work below the high water mark of the river.³³⁹

FPC Requires Licenses on Connecticut River
A Chronology

In March 1941, the FPC ordered the Bellows Falls Hydroelectric Corporation to apply for a license to operate its project on the Connecticut River in Vermont. Accompanying the order was a ruling that the Connecticut River was navigable from its mouth up to and beyond Bellows Falls.³⁴⁰

In May 1941, the FPC indicated that the Turners Falls hydroelectric project was on the way to being licensed. The four operating companies of the Western Massachusetts Companies were seeking to merge into one operating company, a move which required Federal approval. The FPC issued an order to the companies to show cause why, as a condition to the granting of the pending proposal for merger, the companies should not apply for a license for the Turners Falls hydroelectric development.³⁴¹

On December 1941, HWP was notified by FPC that it must submit reclassification and original cost studies to the commission for its approval.³⁴²

In March 1942, the FPC suggested to HWP that it should apply for licenses to maintain and operate its two hydroelectric power plants.³⁴³

In May 1942 the FPC wrote to the Company that it was assuming jurisdiction over HWP accounting, because its sales of electricity to the Turners Falls Power and Electric Company placed it in interstate commerce.³⁴⁴

In July 1942, two HWP representatives had an all day meeting with the FPC in Washington. At that time the FPC staff stated that, in addition to the two hydro stations, the dam, canals and riparian lands were to be included in the licensed project.³⁴⁵

In August 1942, the principal attorney of the FPC and a staff engineer spent the entire day in Holyoke conferring with the Company management and in visiting its hydraulic properties.

In January 1943, the Company wrote to the FPC as follows:

"The Holyoke Water Power Company intends to apply for a license under the provisions of the Federal Power Act.

"A formal application is in preparation. You will understand that the form of our business is such as to raise difficult questions, on many of which we are expecting your cooperative assistance."³⁴⁶

Comment

From 1848 to 1943, nearly 100 years, decisions about the development of the Connecticut River at Holyoke for power purposes had been made by the Holyoke Water Power Company and its predecessor, the Hadley Falls Company. Now, within less than two years, the ultimate control of such development had been taken over by the Federal Power Commission.

FPC License Application Filed

On March 28, 1944, HWP filed its license application following several conferences with FPC officials and after completion of extensive engineering and legal investigations. The application consisted of thirteen pages of text and fourteen exhibits.

It was understood by HWP that the application received the approval of the engineering and legal divisions of the Commission. The original drawings had received the approval and signature of the Secretary of War.³⁴⁷

Rumors of FPC Plans for Changes at Holyoke

Local newspapers on January 24, 1946, carried a Washington dispatch indicating that the FPC planned to order changes at the Holyoke Dam. The story originated in testimony of Chairman Leland Olds of the FPC before the House Appropriations Committee. Subsequent

investigations by the local Congressman, HWP Washington counsel and with the U.S. Army Engineers indicated that no immediate changes were contemplated. However, all three sources indicated that FPC was considering a redevelopment scheme at Holyoke in connection with storage reservoirs to be constructed on the Connecticut River watershed.

New G&E Manager Advocates Acquisition of HWP

On October 25, 1945 the recently appointed manager of the G&E laid out in the local newspaper his long-range plan for the municipal utility. The keystone of that plan was to take over HWP. The following comes from the local newspaper:

"As to acquiring the Holyoke Water Power Company, King does not want any eminent domain wrangle. He would rather try to convince the directors of the private utility of the wisdom of such a move.

"Integration of the two systems to develop maximum efficiency is the solution of Holyoke's problem, and I say that the municipal plant should be the one to take over. That's the trend of the times," King said." 348

G & E Throws Down the GauntletG & E FPC License Application Filed

On November 18, 1947, the G & E announced that it had applied to the FPC for a preliminary permit for three years to plan to develop the Connecticut River at Holyoke. On that evening, the Holyoke Board of Aldermen unanimously endorsed the G & E application. This action was vetoed by the Mayor who was later upheld by the Aldermen. However, the application remained before the Commission.

HWP Response

On the next day REB II stated that HWP was unalterably opposed to any plan of the G & E which would obstruct its right and duty to serve the industry and people of Holyoke and the surrounding communities with hydraulic and hydro-electric power.

FPC Response

On the same day Willard W. Gatchell, attorney for the FPC, stated that the HWP application and the G & E application were in conflict and that both petitions would be heard by the commission together, sometime in 1948.

Public Hearing

On December 10, a public hearing was held in the City Hall auditorium at which 800 people attended. All chairs were filled and people were standing around the walls of the rooms. It was an informational type meeting with the positions of HWP, G & E and the industrialists made clear by their respective representatives. Among the speakers were REB II and Frank King, the G & E Manager. Interest ran high among those in the audience.

Holyoke Transcript - Washington Investigation

The Managing Editor of the local newspaper spent three days in Washington in mid-January 1948 interviewing FPC staff, public officials, and private power people.³⁴⁹ Following are summaries of his main conclusions:

1. The move of Francis King of the Holyoke Gas and Electric Department (G & E) to take over the power generating business at the Holyoke dam has strong backing within the Federal Power Commission.

2. The plan that was so suddenly revealed to Holyoke in November has been in "the works" a long time.
3. Men within the FPC say that the HWP system is wasteful and obsolete and that cheaper power can be generated at the dam if the old mill power indentures on the canal system are eliminated and the power facilities concentrated at the dam.
4. The immense project may not be so huge in cost because the HWP can be judged as a trespasser on the river and, in taking over its properties, a "junk" value can be placed on them.
5. FPC officials believe that the Holyoke mills which generate their power with water from the canals will not, in the long run, suffer financial loss because they will be getting cheaper power from the new development.
6. This is the first opening the public power zealots within the FPC have had to break into New England and they say that the Holyoke experiment will break the present power rate system throughout New England.
7. Private power people say the tip off to them came when Manager King took office two years ago and, in an interview in the Transcript, said that the G & E might some day take over the Holyoke Water Power Company. They say that he, with this crusade, can well imagine himself to become, some day, the "Lilienthal of New England".
8. The FPC is watching every minute development in the Holyoke situation. It has a complete file on hand of all articles in the Transcript-Telegram on the issue.
9. The FPC officials feel that they are bound by law to grant the license to the G & E to run the power show here because its proposal, if proven valid after a survey is made, calls for a fuller use of the power potential of the river than does the HWP plan.

Additional Pertinent Comments of the Editor

"Willard W. Gatchell (FPC Attorney), an able proponent of public power, told me that this move of Manager King promises to open up all of New England to public power. He told me that Holyoke has been made the focal point because Manager King was smart enough to see the possibilities."

Editorial

An editorial from the local newspaper commenting upon the G & E plan is included herewith.

The Counter Offensive Begins

In his report to the HWP directors for the quarter ending November 30, 1947, REB II commented upon the G & E application of November 18, 1947 to the FPC as follows:

"We have engaged the Holyoke lawyers Russell L. Davenport and John S. Begley to assist the firms of Shipman and Goodwin of Hartford, and Covington, Burling, Rublee, Acheson & Shorb of Washington in an effort to obtain our license and oppose the application of the Gas and Electric Department. The engineering firm of Jackson & Moreland has also been engaged to assist us in the technical phases of the problem.

"The Company has been ably and enthusiastically joined in its opposition to the Gas and Electric Department by the manufacturers of Holyoke who are our hydraulic customers. These companies have been represented by a steering committee which has aggressively aroused local opinion against the plans of the municipal department.

"On December 12, a conference was held in Springfield attended by all those representing the Company in this matter at which time definite courses of action were agreed upon."

Conference with FPC Engineers

On March 9 Edward Moreland, partner of Jackson and Moreland engineers of Boston and REB II spent all the day in Washington with FPC engineers discussing the HWP canal system and the proposed redevelopment by the G & E. The HWP representatives left Washington feeling that the FPC engineers were completely unbiased and that their interest was only directed toward the best ultimate development of the site, as governed by sound engineering and economics.

TRANSCRIPT

JAN 19 1948

Let's Keep Our Eyes Open

When the local power issue was first presented, the question kept coming up: but why should Holyoke want to go into the power business beyond supplying its own needs? The answer is now clear. It was never the intention of public power advocates for the City of Holyoke to take on the role of utility merchant, but rather for this city to be the hub of a vast federal power project.

The report in today's Transcript of what is going on in the minds of Washington power authorities pins down what has been a growing suspicion: that the G. and E. application for a license to use the water power of the Connecticut river is merely an opening gambit in a much larger game than was first indicated.

Two other facts also become crystallized: 1) that the personal ambition of one man is a motivating force in the local aspect of the issue; and 2) that the welfare of the city of Holyoke and the wishes of its people are minor considerations in the plans of those who are behind the project. A low price is also put on the rights of the Holyoke Water Power Co.

Holyoke people may rightfully be angered by the way in which their credulity has been abused and by the high-handed manner in which their civic rights and welfare have been ignored. At first reading, today's report may naturally be expected to arouse new waves of bitterness in an issue that locally is already heated by personal and political frictions.

However, more thoughtful study of the report makes clear that Holyoke can not afford to bog down in a fume of resentment. When the future of the city is at stake and the determination of our future course is taken at least partly out of our hands, something more than sputtering is called for.

We may well be insulted by the lie to which we were subjected, and we may wish that the Federal Power Commission had given Mr. King a good job in Tennessee or Missouri and left Holyoke content with its dam as is. But Holyoke is bigger than Mr. King or than the G. and E., which after all is not quite a sovereign department.

Holyoke, however, is not bigger than the federal government. Nor is this city so insular that its people will automatically reject (in vain) the sacrifice of a theoretical community independence to a key role in a much vaster enterprise.

The people in Washington do not much care what the citizens of Holyoke want, and they do not care at all what happens to the Holyoke Water Power Co. So far they have avoided telling the people of Holyoke just what is planned for this area and what effect it is likely to have on this city. Much of the information that has been voluntarily dispensed here about the project has been false.

That is why the Transcript Telegram went looking, in Washington, for the facts in the case. Today's report has opened our eyes to the character and dimensions of the proposed "Connecticut Valley TVA." Now that it has been made plain what we are facing, we can begin to look deeper into the issue, ask more questions, and try to determine what we can do about it.

We do not yet know whether the proposed plan would work for the long-range benefit of Holyoke or not. Although such a project could be forced upon us against our strongest opposition, that is not to say that Holyoke can not influence the character and progress of what is still a blueprint. The Federal Power Commission will not ask Holyoke

for what it wants, but it will ask Congress. And what the people of Holyoke and of the whole extended New England area involved tell their Congressmen will have a lot to do with what Congress gives the FPC.

The important thing is for every Holyoke citizen to keep pace with the development of this power issue. It must be studied carefully and watched closely, not just by the G. and E. and the Board of Aldermen and the Water Power Co., but by the whole citizenry. Holyoke must in the coming months mould its opinion, not on its feeling, but on facts, so that no opportunity to take a guiding role will be missed. We must not let ignorance put us in the position of being faced with accomplished designs duly legalized, when it is too late for us to do anything about them.

Should the project as a whole prove to be inevitable, Holyoke can still make its voice heard and force the elimination of those factors most distasteful or harmful to this community. We have been pushed around a little in this matter, but we do not have to be exactly victimized by it even if our sovereignty is limited. The people of Holyoke hold a few cards in the game that is just beginning and if we stay awake we may not necessarily lose.

Relations with Hydraulic Lessees

During this period, there was a great deal of pressure put upon HWP by the mill owners to make definite commitments with regard to the future operation of the canal system. This the company could not do because it was still making engineering studies of future hydraulic power development possibilities.

Special Report to Directors re: FPC License Application

In June the President made a special report to the HWP Director's which discussed the options of HWP as it faced the G & E threat.³⁵⁰ A summary of that report follows:

1. The application of our Company and that of the Gas and Electric Department are squarely opposed to each other.
2. The granting of a Federal Power Commission license to the Gas and Electric Department would be of very great harm to our Company.
3. Engineering studies show that improved operation of our canal system can be attained if water is dispatched in accordance with efficiency rather than in accordance with indentured agreements with our hydraulic customers.
4. If further hydro-electric development at the dam were undertaken, the logical size unit would be 15,000 kilowatts and its cost would be \$4,000,000.
5. It is estimated that the annual return on this investment over and above carrying charges would be \$45,000 per year, if the unit were operated as a part of a system of economically dispatching the entire hydraulic system.
6. It is estimated that a maximum of \$193,000 could be also gained by the Company by developing the economic dispatch system. How great a percentage of this sum could be realized would depend upon the success of negotiations with the mills. The possibilities of successful negotiations with the mills are better if this system is undertaken in connection with the construction of a new hydro-electric unit.
7. The added cost of a second 15,000 kilowatt unit would be \$1,585,000. However, it is questionable whether a market for its output now exists.

8. Defensively, our position is comparatively strong for the short pull but in the longer term it is weak. Court decisions are against us. Also the Federal policies of maximum possible utilization of natural resources point toward an eventual redevelopment of some kind at Holyoke.
9. Offensively, if the Company should decide to make a major hydro-electric development at Holyoke, we are now in a strong tactical position. However, this offensive position of strength will last only up to the time of a Federal Power Commission hearing. It would be gone if a license to develop Holyoke should be granted to the Gas and Electric Department.
10. If we do not assume the leadership in this present situation, with a constructive program, the Gas and Electric Department or some other public agency eventually will.
11. It would seem that the major decision of what policy our Company should follow in relation to its hydraulic development must be made very soon and certainly before the Federal Power Commission hearing scheduled for September 13, 1948.
12. If a decision should be made by our Board of Directors to undertake an extensive hydro-electric development at Holyoke, then our license application before the Federal Power Commission should be amended as soon as possible in order that it might be reviewed by the Commission's engineers in advance of the hearing.

Engineering and Economic Analysis of a New
Hydro-Electric Unit 351

Accompanying the President's report to the Director's was an engineering and economic analysis of a proposed 15,000 kilowatt unit at the dam. The report by the engineering firm of Jackson and Moreland gave the cost of such a unit and its economic justification.

The report also recommended that the scheduling of the river water to the HWP hydraulic customers be changed from one based upon indentured rights to one based upon the efficiencies of the respective installations. It became known as the Economic Dispatch System.

This change in policy meant that the river water would be dispatched to the most efficient combinations of water wheels at all times. The new system, because of its higher efficiency, increased the amount of electricity being generated.

When the more inefficient water wheels were not scheduled to run, the mills received equivalent electricity from HWP. The mills suffered no loss.

The most efficient water wheels were largely those of HWP. The increased amount of electricity generated by the dispatch of the water to the more efficient installations created additional electricity, the sale of which was part of the economic justification for a new hydro-electric unit.

Directors Decisions re: FPC License Applications

A special meeting of the directors was held on July 28 with the legal and engineering staffs in attendance. The directors voted:

- o To withdraw the license application filed on March 28, 1944.
- o To file a new application for an initial 15,000 kilowatt hydro-electric unit to be constructed at the dam.
- o To employ such expert assistance as required to proceed with the preliminary plans for the construction and financing of the project.

HWP Picks Up the GauntletNew License Application Filed by HWP with FPC

On August 6, HWP filed its new license application with the FPC in Washington.

On the same day, it had invited to a meeting, held at its office, all its hydraulic customers including the G & E officials and engineering consultants, members of the Chamber of Commerce, the Taxpayers Association, and public officials.

There follows the statement which REB II made at that meeting.

Following the HWP statement, the meeting was opened for questions. One of the early ones came from G & E Manager King, who asked if the application could be revised so that it would become a joint HWP - G & E project. The answer to him was that this was to be solely an HWP project. The reaction to the HWP proposal was favorable from most of those present. The articles in the newspapers were also favorable.

REB II STATEMENT AT AUGUST 6 MEETING

ANNOUNCING FILING OF NEW FPC LICENSE APPLICATION

The Holyoke Water Power Co. has filed with the Federal Power commission today an application for a license to construct and operate a new hydro-electric plant near the dam with an ultimate capacity of 60,000 kilowatts. It is planned to construct one 15,000 kilowatt unit initially and to construct three additional units of the same size as they become economically justified.

In connection with the new hydro-electric plant, and supplementary thereto, the company proposes to continue the operation of its existing canal system and hydro-electric plants. It is also proposed that the local hydraulic equipment owned by the mills and others be operated in as efficient coordination as possible with the entire project.

If the license is granted before the end of 1948, it is expected that construction work on this new hydro-electric plant will begin by June 1949 and that the plant will be in operation within two years thereafter. Field survey work will begin immediately in the bed of the river.

The cost of this first 15,000 kilowatt hydro-electric unit is estimated to be 4 million dollars. The construction of the new unit will be financed by money to be borrowed from insurance companies.

The installation of this new hydro-electric plant will continue the company's program of expanding the electric generating facilities with which it serves its customers in Holyoke, Chicopee and South Hadley. A new 15,000-kilowatt steam turbo-electric generator is now nearing completion in the company's steam power plant at the foot of Appleton St.

The new 15,000-kilowatt hydro-electric unit will be the largest hydro-electric generator in Massachusetts and it will bring the combined steam turbo-electric and hydro-electric generating facilities of the company to nearly 68,500 kilowatts. Jackson & Moreland, engineers, have designed this new hydro-electric plant

The Licensing Process

Prelude

The months following the announcement of the new FPC license application by HWP were filled with preparations for the coming hearing before an FPC examiner.

FPC Representative Visits Holyoke

At the request of the Mayor, two representatives of the Federal Power Commission visited Holyoke on September 29 to discuss the HWP and G & E license applications with members of the Board of Aldermen. The representatives were an attorney and an engineer. The meeting was held for the benefit of the aldermen and was closed to the public although the newspaper reporters were present.

The main points made by the FPC were:

- o At that time, HWP had no legal right to develop water power on the Connecticut River at Holyoke.
- o The recently filed application of HWP contained in the FPC opinion, "the best possible plan to harness some 60,000 kilowatts that were undeveloped".
- o If the G & E retracts its existing application and files a new one, that substantially parallels the HWP plan then "in all probability the municipal bid will receive primary consideration". This was based upon Section 7 of the Federal Power Act of 1940 which states, "the commission shall give preference to ³⁵³ states and municipalities for power development".

The visit of the FPC attorney and staff did not lend much encouragement to the HWP management. In discussing the probabilities of success with the legal staff, REB II was told that the chances were less than 50-50. However, the Washington lawyers said that they had prevailed in instances with worse odds than ours because of better preparation for, and execution of, the litigation.

Broad Powers Given to G & E Manager

On October 14, 1948, the G & E Commission as part of a broad vote, authorized and directed the Manager "to do all things necessary or incidental to obtaining a permanent license for such a hydro project from the Federal Power Commission".³⁵⁴

G & E Files New License Application

On November 15, 1948, the G & E filed a new license application. The plan contemplated two 15,000 kilowatt units to be located at the dam and the shutting down of all the water power plants on the canal system. The G & E would substitute an equivalent amount of electricity for the mill owner's water power rights, plus the present cost of generation, for the duration of the license.

Pre-Hearing Maneuvering

The period of time between the filing of the G & E application and the beginning of the FPC hearings was used by both applicants as a time to explain their plans to the public.

G & E

- o Hosted city officials with a tour of its gas plant and electric station followed by dinner.
- o Met with the Board of Aldermen to discuss its plan followed by dinner.
- o Met with the mill owners with water power rights.
- o Placed advertisements in the local press in an effort to gain support.
- o Fostered a "citizens committee" to serve as rallying ground for the supporters.
- o Appeared at public gatherings to answer questions about its plan.

HWP

- o Visited each user of water power on the canal system to discuss its plan.
- o Invited the Board of Aldermen to visit its power plant to see its new steam turbine in operation, followed by dinner.
- o Attended public meetings to explain its FPC application.
- o Spent much time in preparing the testimony, and the witnesses, for the hearing.

- o Developed a campaign of eleven nearly full page advertisements in the Holyoke newspaper. They were timed so that one appeared every day in the week before the hearing. Four occurred in the preceding week, and one, opening the campaign, occurred on the prior Saturday. Each advertisement was a letter to the People of Holyoke and signed by the president. The campaign was extremely effective. It refuted most of the points of contention which had been raised by G & E during the prior months. The scheduling of the advertisements was such that G & E never had time to mount a counter campaign. The first and last of the eleven letters are included herewith. The entire eleven are included among the exhibits. ^{354a}

The following editorial from the local newspaper appeared the night before the hearings opened. It comments on the effectiveness of the HWP advertising campaign.

As The Gong Rings

It has been a long time since a case for any party to an all-important dispute has been presented with such clarity and completeness as the case of the Water Power Company in its controversy with the Holyoke Gas and Electric Department has been presented. Those who have followed the series of ten advertisements in this newspaper in which nine different points and a summation have been presented must have been impressed, no matter what one's previous opinions in the matter may have been.

In that series of advertisements the Holyoke Water Power Company has placed all its cards on the table, and face up. It corrects a lot of previously popular errors in thought. It has aimed to sell the idea to the open-minded citizens of Holyoke that it has a good record in the partnership that has existed for nearly a century now between the company and the community and that the results of the partnership have been to make Holyoke what it has been and is today. The company's attitude, as it is developed in the series, has been one of "enlightened self interest," the only attitude in a privately owned public utility that can be depended on to get majority public support against the forces seeking to move the American economy down the winding highway to state socialism.

As Round One of the long struggle head to be opened in the hearings at the War Memorial building tomorrow gets under way, we again ask from the readers of this newspaper give close attention to reading the mass of testimony to be presented. Some of it is going to make dry reading, we may be sure. But it should be read along with the testimony spiced with personalities and charges and counter-charges. This is not a popularity contest. The welfare of a great American community is involved as well as a principle of government. Holyoke is the community. On the eventual decision may well rest the direction and the volume of our future city life.

Holyoke Water Power Co.

ESTABLISHED 1859

HOLYOKE, MASSACHUSETTS

ROBERT C. BARRETT, JR.
PRESIDENT

January 29, 1949

To the People of Holyoke:

Subject: License Applications

On February 15, the Federal Power Commission will hold a public hearing at the War Memorial Building to consider the hydro-electric license applications of the Holyoke Water Power Company and the Gas and Electric Department.

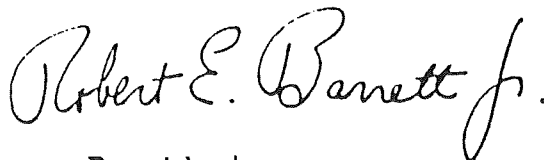
We have been asked many questions concerning these license applications and their effect upon Holyoke. I would like to share our answers to these questions with you in this and other letters to follow.

One of the questions most frequently asked is why any hearing is necessary at all if the law requires that a municipal department and not a private corporation receive the license. The answer to that question is that the Federal Power Commission is not required by law to grant the application of a municipal department such as the Gas and Electric Department. In fact, we have been advised that the Federal Power Commission has never granted a license to a municipal department instead of a private company when the private company had already made a substantial part of the development as our Company has done in Holyoke.

The issue before the Federal Power Commission is not public against private ownership of hydro power generating facilities. The real issue is whether the plan proposed by this Company is better adapted to develop, conserve and utilize in the public interest the water resources of this region.

For nearly 100 years the resources of the Connecticut River have been developed to the great benefit of Holyoke by the Holyoke Water Power Company. The license application of our Company is for a development which will retain and expand those benefits for Holyoke.

Yours very truly,



President

Holyoke Water Power Co.

ESTABLISHED 1859

HOLYOKE, MASSACHUSETTS

ROBERT E. BARRETT, JR.
PRESIDENT

February 12, 1949

To the People of Holyoke:

Subject: Our Story - A Summary

During the past two weeks, we have written a letter to you each day concerning the issues which are involved in the conflicting license applications of our Company and the Gas and Electric Department. We have felt that you wanted to know, and that you were entitled to know, our position on those issues.

In these letters we have discussed the following points:

1. The Federal Power Commission is not required by law to grant a license to a municipal organization such as the Gas and Electric Department.
2. Our Company is a Massachusetts company with a majority of its stock and stockholders within the state.
3. Our Company had the active assistance of the city officials when it returned to the electric power business in 1903.
4. Only if our Company, and not the G&E Department, builds the new hydro-electric plant at the dam will new tax revenues be gained by our City.
5. We propose the immediate construction of a 15,000 kw hydro-electric unit and the preservation of the canal system with its many benefits.
6. The G&E plan would cost millions of dollars more than ours.
7. The G&E plan would be financed by revenue bonds, which would have to be paid back by the users of electricity.
8. The new powers requested by the Department from the Legislature are sweeping and would remove the G&E even further from the control of the people of Holyoke.
9. The G&E would have to spend at least \$2,000,000 for a new steam plant to supplement its new hydro-electric plant; our Company has adequate steam capacity.

The plan of our Company is the best plan to develop, conserve and utilize the water resources of the river in the public interest.

Yours very truly,

Robert E. Barrett Jr.

President

The Trial

The hearings before Judge Maximillian G. Baron, the presiding examiner for the Federal Power Commission, began on February 15, 1949. They were held in the auditorium of the War Memorial Building in Holyoke, with an attendance estimated by the media to be approximately 400. The hearings adjourned on March 9, and reconvened in Washington for one day on March 16.

The hearings were the major front page story in the Holyoke Transcript (HT), and were prominently covered by the Springfield newspapers. They lasted a total of seventeen days. The typed record of the proceedings filled 2,894 pages. The pages of the local newspapers for this period are on microfilm and are available at HT and at the Holyoke Public Library. Therefore, this account of the trial will touch only upon the highlights.

The Participants

The major participants in the proceedings were:

- o The public: which was given an opportunity to make statements in support of either one of the license applicants. These statements were not under oath and did not become part of the record.
- o HWP: whose legal counsel consisted of three members of the Washington law firm of Covington and Burling; namely, Edward Burling, Jr., James McGlothlin, and Clifton Stratton; and Holyoke lawyers John S. Begley and Russell L. Davenport. Its witnesses were REB II and Edward L. Moreland of the engineering firm of Jackson and Moreland.
- o G & E: whose legal counsel was James M. Healy, and who at one time had done legal work for HWP. Its witnesses were Frank H. King, Manager; Patrick J. Kennedy, Holyoke engineer and contractor with much practical hydraulic experience in Holyoke; and Bernard J. Van Ingen, a municipal bond expert from New York City.
- o FPC: Engineers John M. Shepley, Thomas M. Crum, Dr. J. A. Gessell, Attorney Joseph E. Hayden, and Assistant Chief Counsel Willard D. Gatchell.

- o Mill Owners: as interveners, they were represented by Attorneys Olcott D. Smith of Hartford and Charles L. Kirkpatrick of Holyoke.
- o Administrative: Joseph J. Gimmelli, a world champion stenotypist of the staff of Acme Reporters, Inc. of Washington, official reporters for the FPC.

The Setting

All of the participants were located at the stage end of the auditorium. They were seated at tables which formed a hollow square. Judge Baron sat at the southerly side of the square, next to him was the table for the witness, and facing the witness was the stenotypist. At the easterly side of the square was a table for the press, and at the northerly side of the square, with their backs to the audience, was the FPC staff. On the westerly side of the square were two tables, one behind the other. The table nearest the hollow square was for HWP participants. Behind it was the table for G & E participants.

The Procedure

The trial opened each day at 10 o'clock, recessed for an hour for lunch, and then adjourned for the day at the convenience of Judge Baron, usually about 4:30.

The Washington lawyers had rooms at the Hotel Roger Smith, one block away from the hearing room. The entire HWP team would meet as a group at the hotel right after the adjournment to appraise the events of the day. An early dinner was held at the hotel, and then the group reassembled in the lawyers' quarters to await the arrival of the court stenographer's transcript of the hearings. If there was nothing, in a quick review of the record, requiring either the local lawyers or the witnesses to stay, they were excused for the night.

The Washington lawyers then went over the transcript in detail, noting errors or statements that needed correction the next day, and preparing questions for cross-examinations. The group assembled at the hotel at 9 o'clock the next morning. Any problems that had developed, as a result of the Washington lawyers' night work, were discussed and action decided upon. Everyone then walked to the War Memorial Auditorium to begin another day.

The Record

It is not proposed herein to discuss in detail the proceedings at the hearings. The official record of each of the seventeen days of testimony is in the files at HWP.

The Presentations

The Lawyers

The trial began with statements by a lawyer for the FPC, Willard W. Gatchell; by John S. Begley, HWP lawyer; and James M. Healy of the G & E as a prologue to the presentations of evidence.

During the trial, the several HWP lawyers divided up the tasks of direct and cross-examination, depending upon their own areas of expertise. In the case of G & E, Attorney Healy filled both functions. Attorney Hayden of the FPC also filled both roles.

The Witnesses - HWP

REB II

HWP presented its case first. REB II was the first witness. It was his assignment to give the historical background of the company, to discuss the present operations of the company, and to explain its plans for a new hydro-electric plant at its dam. His direct examination by HWP attorney Burling required an entire afternoon, and the cross-examination by G & E attorney Healy took up nearly all of the next day.

Moreland

The witness who carried the burden of the engineering and economic phases of the proposed HWP hydro expansion was Edward L. Moreland. At that time, he was Executive Vice-President of the Massachusetts Institute of Technology, and senior partner in the engineering firm of Jackson and Moreland. He had a distinguished record of public service in both World War I and World War II.

Moreland was on the witness stand for nearly four days, with HWP lawyer McGlothlin giving the direct examination and Attorney Healy doing the cross-examination. He was a very fine witness who ably explained and defended the HWP plan of additional hydro development at the dam. He also explained the HWP proposal of distributing water to the hydro installations on the canals based on their efficiency rather than indentured rights.

The Witnesses - G & EKennedy

It was the responsibility of this witness to explain and defend the proposed G & E plan from the standpoint of the structural changes required. He was on the stand for a day and a half.

King

This witness was the originator of the G & E plan. As such, it fell to him to explain the proposal in detail and then, under cross-examination, answer the innumerable questions which arose from HWP, the manufacturers, and the FPC.

King was on the witness stand for two and one half days.

The Witness - FPCCrum

It was the responsibility of the FPC engineer to present to the examiners the plan of development which he felt had the best engineering and economic feasibility. The direct examination was by FPC attorney Hayden, and cross-examination by HWP attorney McGlothlin and G & E attorney Healy. Crum was on the witness stand for about a day and a half.

The Plans

With the conclusion of the testimony by HWP, G & E and FPC staff, it was clear that the HWP and G & E plans for further hydraulic development were markedly different.

HWP Plan

- o To retain all of the canal system and all the existing hydro-electric generators on it.
- o To construct a new 15,000 kW unit at the dam with headworks and tailrace built to serve a second unit.
- o To schedule the use of all the hydro-electric generators so that, for every flow of the river, the most efficient hydro installations were being used.
- o To retain for the mill owners with water power rights all their economic benefits.

- o To begin construction promptly upon FPC approval with:
 - a. Financing arrangements all completed
 - b. No legislative or regulatory permits needed.

G & E Plan

- o Complete abandonment of canal system.
- o All existing hydro-electric generation on the canal system made useless and with no compensation to the owners.
- o Construction of two new 15,000 kW units at the dam.
- o Construction of a pipeline to supply process water to the mills.
- o Permission of Massachusetts Legislature and of the Holyoke City Government needed.
- o No financing arranged.

FPC Plan

- o The staff analyzed both the HWP and G & E plans and tested their economic feasibilities.
- o The staff also developed what they considered to be the best engineering and economic use for the project.
- o The preferred plan of the staff closely paralleled the HWP project both in design and cost.

The Comparisons 355

Costs

- o The initial HWP development of one 15,000 kW unit at the dam and the retention of existing generation on the canals was \$4,100,000.
- o The FPC staff cost for the HWP plan was \$4,162,200.
- o The initial cost for the G & E plan of two 15,000 kW hydro-electric generators at the dam and the elimination of hydro generation on the canals was \$7,775,000. There were additional ancillary costs of \$4,875,000 for process water conduit, underpinning mill buildings, canal filling, etc.

Energy Production

There follows a comparison of the electrical output of the HWP and G & E development plans as summarized by the FPC staff. It shows that the HWP plan gives much higher annual hydro kWh output and much higher capacity output than the G & E plan.

From Decision of F.P.C. in License
Application of H.W.P. and G & E

June 1, 1949

ELECTRIC AND HYDRAULIC SUMMARY

HOLYOKE REDEVELOPMENT

(Initial Stage)

Item	Company Plan Project No. 2004	Department Plan Project No. 2014
1. Hydro Plant at dam	One 15,000 KW unit	Two 15,000 KW units
2. Method of canal dispatch	Economic	(No canals)
3. Installed hydro-electric capacity	42,440 KW ^{1/}	30,000
4. Average annual output	245,000,000 KWH ^{1/}	205,000,000 KWH
5. Dependable capacity	19,000 KW	13,000 KW
6. Maximum river flow utilized	13,750 cfs	7,800 cfs
7. Percentage of time water wasted over dam	30%	58%
8. Percentage of time full river flow utilized	70%	42%
9. Method of process water supply in Holyoke	Canals	Conduit
10. Method of process water supply in South Hadley	Canal	None
11. Head loss in forebay of New plant	None	1.0-1.5 ft.
12. Normal headwater eleva- tion in forebay ^{2/}	103.1 ft.	102-102.5 ft.
13. Maximum usable headwater elevation at new plant ^{2/}	113.5 ft. ^{3/}	102-102.5 ft.
14. Usable head at new plant during maximum flood ^{3/}	33.5 ft.	22 ft.

^{1/} Includes hydro-electric equivalent of mechanical installations.

^{2/} All elevations Holyoke datum, which is approximately 2.5 ft. above sea level datum.

^{3/} Based on 1936 flood.

THE FINALEHearings Suspended

The hearings before Judge Baron, which began on February 15, heard the last witness, an FPC electrical engineer, on March 9. It was anticipated by all that the case would then be closed and a judgment rendered at some future date. However, the lawyer on the FPC staff requested instead that the hearings be suspended. That request was strongly opposed by HWP lawyer Burling, who urged that the license application of the G & E be dismissed. He presented the following reasons:

"That the G & E Department is not a legal entity under state law; that it has no authority under state law to apply for a license, accept a license, or to construct and operate the project described; that the application does not contain sufficient information; and that the Holyoke Water Power Co. Project 2004 is best adapted to develop, conserve and utilize in the public interest the water resources of the region and that the power company has the ability to carry out the project."

Judge Baron ruled that the hearings were to be suspended, which meant that they could be reopened at any time at the wish of the Federal Power Commission.

Hearings Reopened

The hearings before Judge Baron resumed on March 28 in Washington. The only witness to testify was engineer Crum of the FPC staff.

The testimony of Crum made the following points concerning the Department's development plan:

- o The annual losses would exceed benefits by a total of \$186,600.00.
- o These losses did not include consideration of the major capital expenditures required by the G & E plan of a conduit for supplying process water and the damage to mill building foundations if the canals were abandoned, and of the acquisition costs of HWP property.

Following Crum, Attorney Gatchell, assistant general counsel of the FPC, read to Judge Baron the recommendation of its staff, which was to grant the license to HWP. ³⁵⁶

Judge Baron then closed the hearing after setting dates for receiving main briefs and reply briefs from all the interested parties.

The Decision

On June 1, 1949, Judge Baron rendered his decision granting the license to HWP. It is a 50 page document.³⁵⁷ The findings of fact upon which the examiner made his decision follow:

"The Presiding Examiner has given full consideration to the findings proposed by the Department, the Company, the Commission's staff and the Interveners and has adopted some of the findings proposed by each of the parties and has made such others as he determined were warranted by the record and evidence adduced. Those findings not here adopted are rejected.

FINDINGS OF FACT

"Upon consideration of the entire record on the two projects and all the evidence adduced, and the briefs filed in this proceeding, the Presiding Examiner finds and concludes that:

- (1) "Holyoke Water Power Company (Company), the Applicant in Project No. 2004, is a corporation organized and existing under the laws of the Commonwealth of Massachusetts, with its principal office in the City of Holyoke, Massachusetts, and is engaged in the production, sale and distribution of electricity to industries in the cities of Holyoke and South Hadley and to the municipal electric systems of Holyoke, South Hadley and Chicopee, Massachusetts, and maintains also a connection with the system of Western Massachusetts Electric Company.
- (2) "The City of Holyoke Gas and Electric Department (Department), the Applicant in Project No. 2014, is a municipal corporation organized under the laws of the Commonwealth of Massachusetts and a municipality, as defined by Section 3(7) of the Federal Power Act, and is engaged in the production, sale and distribution of electric energy in the City of Holyoke, Massachusetts.

- (3) "The company has submitted satisfactory evidence of compliance with the requirements of all applicable State laws in so far as necessary to effect the purposes of a license for the project.
- (4) "The Department does not possess the legislative authority requisite under the laws of the Commonwealth of Massachusetts (a) to condemn land, structures and rights-of-way essential to its project (b) to construct and operate a project situated partially outside the City of Holyoke (c) to sell and distribute electricity beyond the city limits of the City of Holyoke, as proposed in its plan, (d) to issue revenue bonds to enable it to finance its proposed project.
- (5) "The redevelopments proposed by the applications in Projects Nos. 2004 and 2014 are mutually exclusive.
- (6) "Public notice of the filing of the applications and the consolidated hearing was given and published as required by the Federal Power Act.
- (7) "The Company is willing and financially able to finance its proposed project and to commence work immediately and to complete it as may be required.
- (8) "The Department is financially unable to finance its proposed project.
- (9) "The Company's proposed project would not use or affect any Government dam, nor will the issuance of a license for its project, as hereinafter provided, affect the development of any water resources for public purposes which should be undertaken by the United States itself.
- (10) "The record in this case does not establish that the proposed development should be undertaken by the United States itself.

- (11) "The Department's plan of redevelopment as modified during the aforementioned hearing is not economically feasible and is not equally well adapted to a comprehensive plan for improving and developing the Connecticut River at Holyoke, Massachusetts, for the use and benefit of interstate commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes.
- (12) "There is not information in the record in this proceeding upon which the Commission may direct the Department further to modify its plan to make it equally well adapted to conserve and utilize in the public interest the water resources of the region.
- (13) "Under present circumstances and conditions the project proposed by the Company is best adapted to a comprehensive plan for improving and developing the Connecticut River at Holyoke, Massachusetts, for the use and benefit of interstate commerce, for the improvement and utilization of water power development, and for other beneficial public uses, including recreational purposes.
- (14) "For the purpose of determining annual charges, the ultimate horsepower capacity hereinafter authorized to be installed in the Company's project is 102,985 horsepower.
- (15) "The amount of annual charges to be paid under the license for the Company's project for the purpose of reimbursing the United States for the costs of Part I of the Act is reasonable as hereinafter fixed and specified.
- (16) "The following designated maps, plans, and specifications, filed as part of the Company's application conform to the Commission's rules and regulations, and should be approved as part of the license for the project:

Exhibit J (FPC No. 2004-24), Exhibit L, sheets 1 through 5 (FPC Nos. 2004-30 through 34), sheet 8 (FPC No. 2004-35), sheet 18 (FPC No. 2004-36), sheets 6 and 7 (FPC Nos. 2004-7 and 8), sheets 9 through 15 (FPC Nos. 2004-10 through 16), sheets 16 and 17 (FPC Nos. 2004-19 and 20), and Exhibit M."

License Issued

A 50 year license for Project 2004 was issued by the FPC on September 9, 1949.

An FPC Licensing Summary

- o First license ordered on the Connecticut River at Bellows Falls, March 1941
- o HWP requested to apply for licenses for its hydraulic properties, March 1942
- o License application filed, March 1944
- o November 1947 G & E filed an application for a preliminary permit from FPC to develop the Connecticut River at Holyoke
- o November 1947 Plans for counteroffensive by HWP underway
- o August 1948 HWP files new application for FPC license which included a new 15,000 kW unit at the dam
- o Formal hearings before FPC examiner begin in Holyoke February 15 and conclude March 9, 1949
- o Decision by Judge Baron rendered in favor of HWP June 1, 1949
- o 50 year FPC license issued to HWP on September 9, 1949

In Retrospect

The foregoing pages have chronicled in considerable detail the events leading up to and through the FPC trial. From the standpoint of one who was deeply involved in the hearings, and who is writing these words nearly 40 years later, I now venture some thoughts as to why HWP received the license.

A ContrastSeptember 30, 1948

FPC Attorney Willard W. Gatchell: "Providing the municipal plant retracts its previous application for a preliminary survey of the feasibility of developing Connecticut River power, and files an application for a federal license to construct and operate a hydro-electric development, and that the projected development substantially parallels the Water Power Co. plan, in all probability the municipal bid will receive primary consideration." 354

March 30, 1949

FPC Attorney Willard W. Gatchell: " - the staff has decided to recommend to the Examiner and to the Commission that a license be authorized for the redevelopment of this site by the Holyoke Water Power Company ---.--- we make the corollary recommendation that the application of the Gas and Electric Department of the City of Holyoke for a license for Project number 2014, as supplemented, be dismissed." 355

Within a period of six months, the license situation at Holyoke had completely turned around from what had appeared to be a near certainty that G & E, with its municipal priority, would receive the license, to HWP being the successful applicant. How and why did this happen?

Reasons for Success of HWP

- o Excellent legal counsel and engineering consultants. HWP was very well prepared for the trial.
- o An innovative plan which combined a new hydro installation at the dam with continued use, but with re-scheduled operations, of the existing hydro installation along the canals. This plan was much more economically feasible than that which the G & E eventually advocated.
- o Ability to begin construction immediately upon receipt of a license. All financing arrangements had been completed. There were no legislative or regulatory requirements to meet or properties to acquire.

Reasons for Failure of G&E Proposal

The major reasons for the lack of success of the G&E would seem to have been:

- o The changing of its plan in the midst of the hearings from one of retaining the canals, as FPC Attorney Gatchell had suggested to it, to one of abandoning them.
- o A lack of understanding of the economic benefits involved in the HWP plan of canal retention and in the rescheduled operations of hydro operations on the canals.
- o A seeming lack of concern for the costs resulting from canal abandonment. Some such costs were those of filling the canals with suitable materials, the problems associated with wooden grillage foundations under the mills, and a process water supply to the mills.
- o Lack of readiness to proceed promptly with the project. It did not have the requisite legal authority to go ahead. It had no commitment of the monies needed to finance the project.

Commentary

The licensing proceeding before the FPC was a crisis in the life of HWP. If G & E had been successful, the result might well have been the eventual demise of the company.

However, the success of HWP allowed it to expand its hydro operation and then to move on and assume a greatly increased role in the production of electricity from fossil fuel.

Annual MeetingsStockholders' Meetings

The first Annual Meeting of the HWP Stockholders took place on June 15, 1859. It was held in the "Counting Room" of the office of the former Hadley Falls Company. That building had become, by that time, the office of HWP.

The annual meetings of the stockholders continued there until 1871 when a new office was built at its present location. The meetings were held in the Director's Room of that office every year thereafter.

Stockholders' Dinners

Every year, at least since 1904, the stockholders were the guests of the company for dinner at one of the local hotels. The early dinners were held at the Hotel Hamilton, located near the office on Dwight Street. The menus of some of those dinners follow.

As the years moved on, the number of stockholders increased so much that the larger ballroom of the Nonotuck Hotel, later renamed the Hotel Roger Smith, was needed for the annual dinner. Following the dinner the management discussed with the stockholders the high points of the year's activities. Usually visual aids were used to illustrate significant developments.

The formal meeting held later at the company office was devoted to organizational matters. An editorial about the stockholders' meeting of 1949, which refers to the FPC licensing decision, is included herewith.

The last stockholders' meeting of HWP, as an independent company, was held in December 1966 prior to its affiliation with Northeast Utilities.

Employee Dinners

Beginning with the administration of REB II, an annual employee dinner was instituted. It followed the stockholders' meeting and was an evening affair. As occurred at the stockholders' meeting, the management always gave a report on the operations of the company and answered employee questions. These meetings were always more lively than the stockholders' meetings because of the very personal interest each employee had in the place where he was earning his livelihood.

TYPICAL MENUS FOR HWP
ANNUAL STOCKHOLDER'S DINNERS
1904 - 1913

Holyoke W. P. Co.

DINNER

Blue Points on Half Shell
Sallines _____ Horsradish
Purée of Tomato aux Crotons
Iced Celery _____ Pickled Peas
Roast Rhode Island Duckling Apple Sauce
Prime Rib of Beef Dish Gravy
Boiled Sweet Potatoes _____ Cucumber and Tomato Salad
ROMAN PUNCH
Fried Chicken à la Water Power
Saratoga Chips
Hamilton Apple Pie
Pineapple College Ice _____ Assorted Cake
Neufchatel Roquefort and American Cheese
Thin Water Crackers
Coffee _____ Sweet Cider
HOTEL HAMILTON, HOLYOKE, MASS.
October 19 1904

Menu
Stock turtle
Celery
Soft Shell Crabs Tartare
Roast Native Duckling Apple Sauce
Ribs of Beef with Gravy
Boiled Potatoes
Boiled Sweet Potatoes
Creamed Cauliflower
Pineapple Ice
Tomato & Lettuce Salad
Hot Apple Pie
Vanilla Ice Cream
Toasted Crackers
Cheese

Cigars
Coffee
Oct 21st 1908



1912

Menu
Chicken-Okra Soup
Celery
Roast Lamb, Mint Sauce
Or.
Roast Young Chicken
Boiled Sweet or Mashed Potatoes
Cauliflower in Cream
Pineapple Ice
Oyster Patties
Green Apple Pie à la Mode
Crackers
Cheese
Coffee

60 Guaranteed 1.50 per plate

Menu
Chicken-Okra
Majors
olives - celery
Oyster Patty
Roast Stuffed Native Chicken
Roast Ribs of Beef au Jus
Pineapple Ice
Crab Meat Salad
Apple Pie à la Mode
Toasted Crackers
Cheese
Coffee

Cigars
Coffee
October 23rd 1913

H. W. P. - As Of November 1949

There has never been an annual meeting of the stockholders of the Holyoke Water Power Co. that expressed such faith and hope as that held yesterday. There are 300 stockholders now. Not all of them were present for the 96th annual dinner meeting. But there were more than ever before. The high spirit of the occasion was voiced by President Barrett. It also sparkled, all thru the meeting.

Last year the HWP stockholders met under the threat of doom for the whole great picture of Holyoke's industrial life. The Federal government was assuming that the Holyoke Water Power Company was not developing all the power that was inherent in the Great Falls. Actually it was not. But it had a magnificent plan.

There came that historic hearing on the case when the federal authorities had to choose between two plans — those of the Holyoke Water Power Company and Holyoke Gas & Electric department, acting as a federal agent. Involved were the rights of every industry that is housed in those hives or palaces of work along the canals.

It was good to have that hearing. Holyoke people learned more than they ever hoped to know about their life-giving river. The nation made it a listening post for consequent action where private power developments were threatened with encroachments by Federal action. Much was decided here last spring.

Yesterday President Barrett could tell a story that changed the threatening shield in just the opposite direction. Where there was worry of dispossession a year ago this time, Mr. Barrett could say that for fifty years the waters of Connecticut River, as they break over the Holyoke dam, are under control of the Holyoke Water Power Company. For those

fifty years the great industrial buildings that tower beside the canals are secure—if there is any such thing as security a half a century hence.

The incredible has been accomplished in the first part of the construction for the new hydroelectric development. Weather has blessed the effort. This rainless period has raised the cost of producing power so that there is the comparatively small decrease of \$21,772 in net earnings for the year. This must have been more than offset by the lessened cost, and quicker completion of the major part of the tailrace construction.

Somehow, best of all, so far as Holyoke is concerned, is the great increase of understanding and goodwill between the people and industries and government of Holyoke and the Holyoke Water Power Company. Not since its very early days when the new HWP was practically giving away lands and power right in order to bring industries here has there been such good feeling between the land that feeds us and our city itself.

It is these intangibles that make the crown of relationships between men and organizations and nations. It must have been that President Barrett, and that strong body of men who try to direct this life force of Holyoke industry and people, can feel that their tribulations of a year back and their powerful will to save what Holyoke Water Power Co. means in the interests of the Holyoke public has its rich reward.

Where there was question now there is highest favor. The annual meeting of the Holyoke Water Power Company for 1949 was a meeting of the friends of Holyoke. Also it was powered by a superb engineering venture for the interests and benefits of all of us.

Hadley Falls Station #1Planning for Construction Begins

Immediately following the hearing in Washington before Judge Baron, at which the F.P.C. staff recommended that HWP be the licensee, definite steps were taken to start construction of Hadley Falls Station. Plans were made for two immediate projects, excavating the tailrace and underpinning of two piers of the South Hadley bridge.

Tailrace

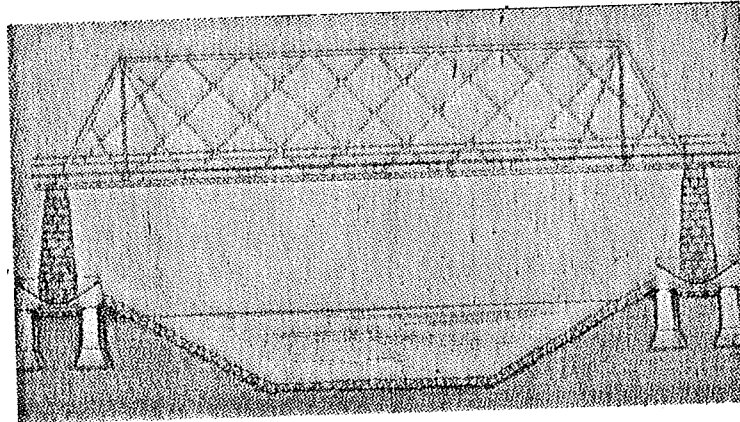
The purpose of the tailrace channel is to carry the discharge from the waterwheels back to the riverbed at an elevation which is 20 feet lower than the base of the dam. The head on the plant, which is the height the water falls, as it passes through the power plant, is thus increased from the 30 foot head at the dam to a total of 50 feet. The total length of the tailrace is 2,800 feet. Its construction required the removal of 285,000 tons of earth and 136,000 tons of rock.³⁶¹

Most of the rock and earth removed from the tailrace was carried across the riverbed in huge earth movers where it was used to build a breakwater on the South Hadley side of the river. The remainder was used to build a high level roadway from the South Hadley bridge to Hadley Station along the Holyoke side of the river.

The tailrace excavation began in August and was completed in December.

Underpinning Two Bridge Piers

The route of the tailrace passed between two granite bridge piers of the South Hadley bridge. Those piers were originally built upon timber grillages. Because of the depth of the tailrace and its proximity to the piers it was necessary to underpin them. This unusual project had to be completed before the tailrace excavation between the piers was done. A description of this work from the local newspaper follows:



EXACTING JOB of underpinning called for by the digging of the tailrace channel between the County Bridge piers is diagrammed here, as shown in a recent issue of the Engineering News-Record. Caissons supporting the concrete footings of the piers go to a depth of 15 feet. Originally, timber grillages directly underneath the piers were the only support.

The County bridge piers between which the tailrace flows were the subject of a technical article in a recent issue of the Engineering News-Record.

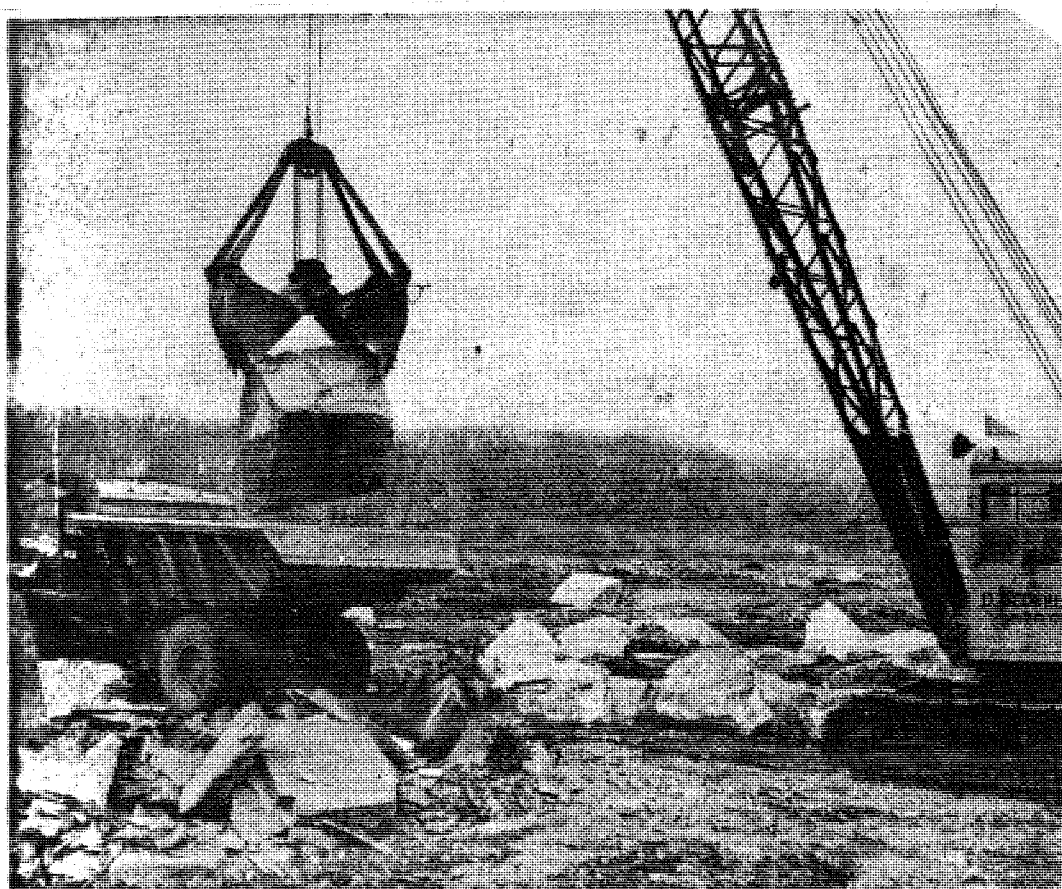
Constructed in 1872 by the late Contractor John Delaney, also builder of the recently razed Marble building on High and Dwight Sts., the piers have been hung in steel "cradles" set in concrete. This move was to guard against possible weakening of the piers by excavation of the tailrace channel between them.

The concrete footings in which the steel "cradle" is set in turn rest on caissons which go down for 10 feet at a diameter of 5 ft. 6 inches, then spread to 9 ft. 6 inches in diameter for the remaining 5 feet of depth.

Originally the piers rested on timber grillages barely below the river bed, and the sloping sides of the tailrace, as planned, were to reach almost to the bases of the piers.

Tailrace Rip Rap

As has been previously recorded herein, an extremely heavy flow of ice in the river, preceding the 1936 flood, tore off most of the granite blocks in the top five feet of the HWP dam. These blocks, numbering into the hundreds, were scattered about the riverbed below the dam. The following picture and description tell of their subsequent use as rip rap along the banks of the tailrace.



UP AND OVER like a lump of fudge in the jaws of the Daniel O'Connell's Sons crane operated by Edward J. Machnik of Chicopee, a seven-ton granite boulder is on its way to become part of the new tailrace project of the Holyoke Water Power Co. One of the blocks that was knocked from the crest of the dam by the flood waters of 1936, it will be placed in a stockpile to be used in rip-rapping that portion of the tailrace directly under the county bridge. 363

Summary

The ten years from 1940 to 1950 were ones of unusual significance to HWP. Following are some of the events which impacted the company:

- o World War II and the responsibility of maintaining electric service to industries supplying war material and to the U.S. Air Force Base at Westover Field.
- o Assumption by the Federal Power Commission of the regulation of the hydraulic facilities of the company.
- o Election of REB II as President and Treasurer upon the demise of REB I.
- o Contested licensing proceedings before the Federal Power Commission in which HWP prevailed over HG&E.
- o Start of construction of a major hydro-electric unit at the HWP dam.

1950 - 1967

1950 - 1967

This period in the history of HWP began with a major effort devoted to finishing the new Hadley Falls hydroelectric plant at the dam. Following the completion in 1949 of the tailrace, the work was now going to be concentrated in the area near the dam.

Hadley Falls StationConstruction

The tailrace excavation of the previous year was done in the fall and early winter months, normally a low water period. The work proceeded without significant interruption and was completed in record time.

The construction yet to be done consisted of building and equipping the power station and of erecting the new headworks to direct the water of the river to the hydro electric unit.

The Power Plant

After the high water had passed in the spring of 1950, work began on the construction of the power plant. The ledge in the foundation area of the plant had to be excavated to a depth of 70 feet. When the bottom of the excavation was reached it was at the same elevation as mean sea level.

During the winter and spring months of 1950, skilled carpenters were fabricating the massive wooden forms which would be placed in the excavation and around which concrete would be poured. In this manner, the cavernous water passages in the power plant were created. These passages had many curved surfaces in order to facilitate the water flow. Lumber from elm trees was available at that time and was used because it was supple and could be formed to make those curved surfaces.

When the excavation had been completed, and the form work finished, the constructing of the power plant began in the summer and continued throughout the balance of the year. The work suffered one major interruption in the late fall when heavy rains over the entire watershed caused the river to rise to a height of eight feet over the dam. The power plant area was completely flooded and work stopped for eighteen days. No serious damage occurred in the power plant area.

During the spring, summer and early fall, of 1951 structural work and machinery erection proceeded at a high pace leading to a completion date in early November.

Headworks and Cofferdam

The construction of the headworks involved the most worrisome part of the entire project from an engineering standpoint. A granite abutment wall connecting the old wood dam in the river with the stone dam had to be removed. In its place was to be built the new headworks. A cofferdam was required to hold back the water of the river while the abutment was removed and while the new headworks was constructed.

The cofferdam was built in the summer and fall of 1950. It consisted of two cells each constructed of sheet piling driven in a circle seventy feet in diameter. The cells were then filled with earth and rock and became a self-supporting dam. When built, they were believed to be among the largest cofferdam cells that had ever been used.

The schedule of constructing the cells was such as to have them in place before the normal low river flow season of 1951. This would allow the abutment to be removed and the headworks constructed at a time when the chances of high river flow and the over topping of the cells would be the least.

With the passing of the spring freshet, the work of removing the old abutment and the construction of the new headworks proceeded rapidly and without untoward incidents. It was with great relief that the HWP management finally saw the new headworks in place and the cofferdam cells removed.

Completion

The building of Hadley Falls Station was divided into four major components. These were the tailrace, the highway bridge underpinning, the headworks and the power plant. The first two were completed during the period from August through November of 1949. The headworks and power plant were built in the 23 month period from January 1950 to November 24 of 1951, when the first kilowatt hours were generated. The elapsed construction time for the entire project was only two years and four months.

Dedication Events

The completion of Hadley Falls Station was such a significant event in the history of HWP that the company commemorated it with several events. Persons who had played important roles in making the occasion possible were invited to join with the company. Among them was Willard W. Gatchell, Assistant General Counsel, of the Federal Power Commission. He had represented the Commission in the HWP-G&E contested licensing proceedings.

Here is a letter which Mr. Gatchell wrote regretting his inability to attend the dedication of the Hadley Falls Station:

"Washington, D.C.
November 27, 1951

Dear Mr. Barrett:

I appreciate very much your courtesy in inviting me to be present at the opening of the Hadley Falls Station on November 29th. I do not know what would give me any more pleasure than to attend these ceremonies and regret very much that pressing business keeps me in Washington.

The Hadley Falls Station I hope will be remembered by the people of your area as an illustration that at least one government bureau considers the rights of citizens as deserving fair treatment and as a monument to your own attitude of closer relations with the people.

Mr. Hayden and Mr. Crum asked me to extend their thanks as well. They too would like to be present but cannot make the trip.

Sincerely,

Willard W. Gatchell
Assistant General Counsel"

There follows accounts of the various events as reported by the management to the company directors.

"Employees Open House

On Saturday, November 24, we opened up the plant for the inspection of our employees and their families. Four hundred people, including 80 children came to the station from 12 noon to 5 p.m. Refreshments were served, small corsages were given to the employees' wives and balloons were given to the children. For a total cost of \$196, we felt that we did much to give the employees and their families a feeling of sharing in this development of the Company.

"Foremen's Dinner

On Tuesday evening, November 27, the Company invited to a dinner at the Roger Smith Hotel all of the foremen of Daniel O'Connell's Sons, the contractor, of our own company, and of the sub-contractors who had been active in the construction of the plant. We felt that the Company should express to them in some tangible way our appreciation of the unusual way in which they entered into the spirit of our job and had tried so hard to complete the construction in record time.

At this dinner we showed many pictures of the construction work. We also gave to each foreman an individually dedicated illustrated booklet about the Hadley Falls Station.

"Lawyers and Engineers Get-together

On Wednesday evening, November 28, a small dinner was held at the Roger Smith Hotel at which those persons who actively assisted us in our Federal Power Commission hearing were present. This group comprised Messrs. Burling, McGlothlin and Stratton, lawyers from Washington, Mr. Goodwin and Miss Malley, lawyers from Hartford, Messrs. Booth and Henderson from Jackson and Moreland, Messrs. Begley and Davenport, lawyers from Holyoke, and Miss McGrath with Messrs. Ladd, Walker, Day and Barrett from HWP.

"Dedication Program

On Thursday, November 29, over 200 invited guests joined with us at the Roger Smith Hotel for lunch preceding the formal opening of our new station. Those invited included our directors, lawyers and engineers, customers, manufacturers of our new equipment, contractors and sub-contractors, labor union representatives and public officials.

Following the luncheon, Governor Paul A. Dever and Mayor Henry J. Toepfert spoke to the group.

At the conclusion of the dinner the guests were taken to the power plant for brief dedication ceremonies. Governor Dever placed the plant in operation by closing the electric circuits with a push button. The guests then toured the plant accompanied by Company employees acting as guides.

"Illustrated Booklet

We had prepared an illustrated booklet showing the construction of our new plant which was given to each guest at the dedication dinner. The booklet was also sent to each stockholder of the Company.

There was an unusual interest shown in this booklet, with requests coming almost daily for additional copies. The Holyoke Public School system requested 250 copies."

Now It Can Be Told

The dates for the several events which comprised the dedication ceremonies had to be set many weeks in advance so that the invited guests including Governor Paul A. Dever of Massachusetts could arrange their schedules. The date chosen, November 29, proved to allow no margin for construction delays.

As earlier noted, the first electricity was generated on Saturday, November 24, the day of the Employees Open House. On the morning of Thursday, November 29, at about 9:30 the engineer in charge of the station went to the office of REB II to report that the thrust bearing of the unit had failed and that he could not run the generator. By that time, the Governor was on his way to Holyoke from Boston with the mission of formally placing the plant in operation.

It was finally agreed by the HWP management to allow the Governor to start up the plant but that the engineer could shut it down as soon as the temperature of the bearing reached a dangerous level.

When the guests had assembled at the Hadley Falls Station following the luncheon, REB II expressed to them the pleasure of HWP in having Governor Dever officially start the new electric generator. At this point, the Governor turned to REB II and said "I am sure you have tested this machine and that you are sure it will start". To this REB II responded with an emphatic "yes". The Governor pushed the button closing the circuit, the generator started up and hummed away to the clapping hands of the assembled guests.

The Governor was then escorted quickly from the station and the crowd gradually followed. Four and one half minutes after the generator started, the engineer had to shut it down because of the rapidly rising temperature of the bearing. By that time, the ceremony was over and no one except the HWP staff knew how close the company had come to what could have been a great embarrassment.

Following the dedication, the generator was dismantled and the bearing was sent back to the General Electric Company for repairs. This bearing is an extremely important component of the generating unit. It carries the entire load of the generator rotor, the waterwheel and the water turning the waterwheel, a total weight of 440 tons. The bearing was repaired and the generator was back running in about two weeks.

Commentary

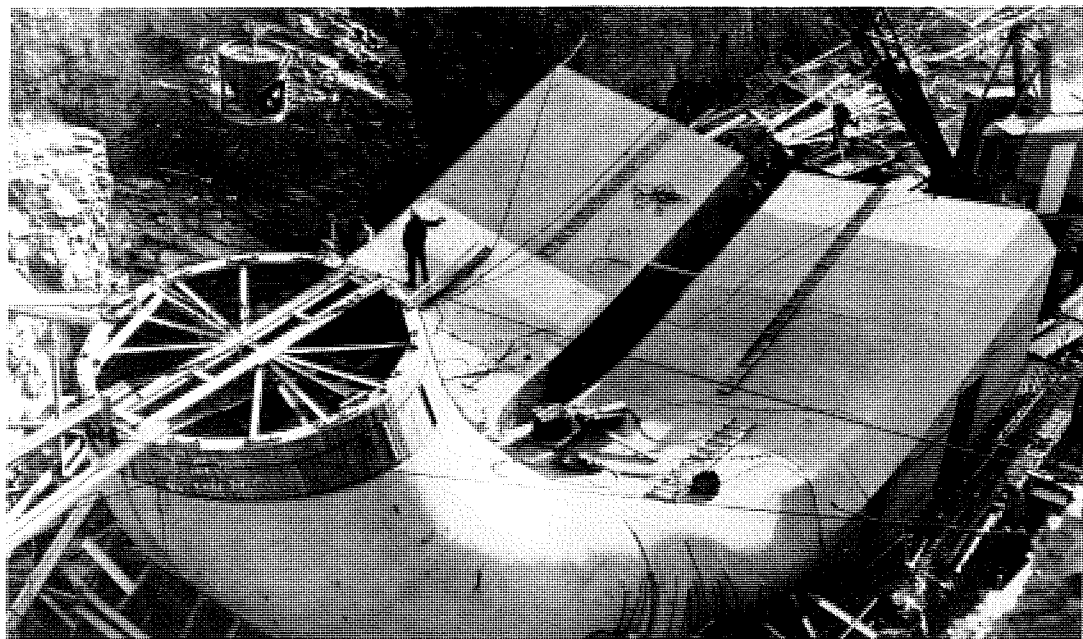
There follows a group of five pictures which begins with the construction of the tailrace, starting on August 23, 1949 and concludes with a picture of the Hadley Falls Station which was dedicated on November 29, 1951.

However, this series of five pictures is really the successful resolution of an issue which began on March 28, 1944. At that time, at the importuning of the Federal Power Commission, HWP filed an application to license its hydraulic properties on the Connecticut River. As has been chronicled herein, there ensued contested proceedings before the Commission which finally led to a 50 year license to HWP dated September 9, 1949.

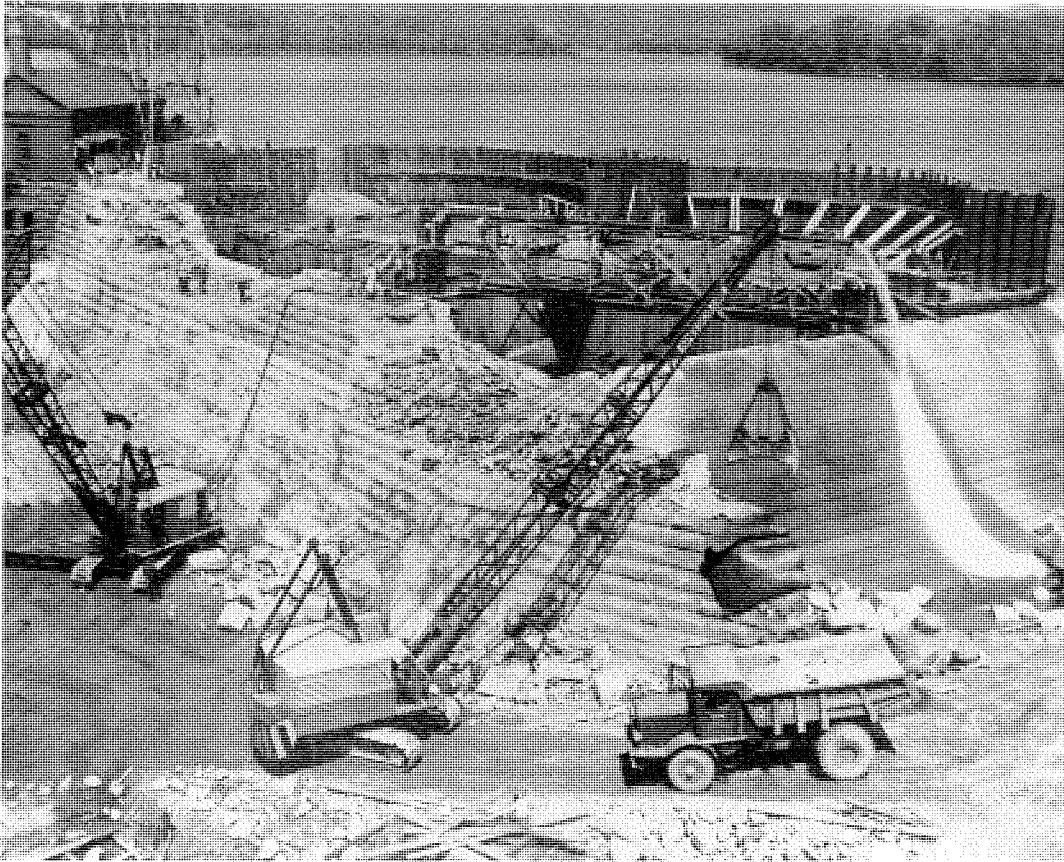
The fifth picture is that of Hadley Falls Station which stands today as a monument to the many HWP employees and associates who brought about this successful result.



Tailrace under construction - Fall of 1949

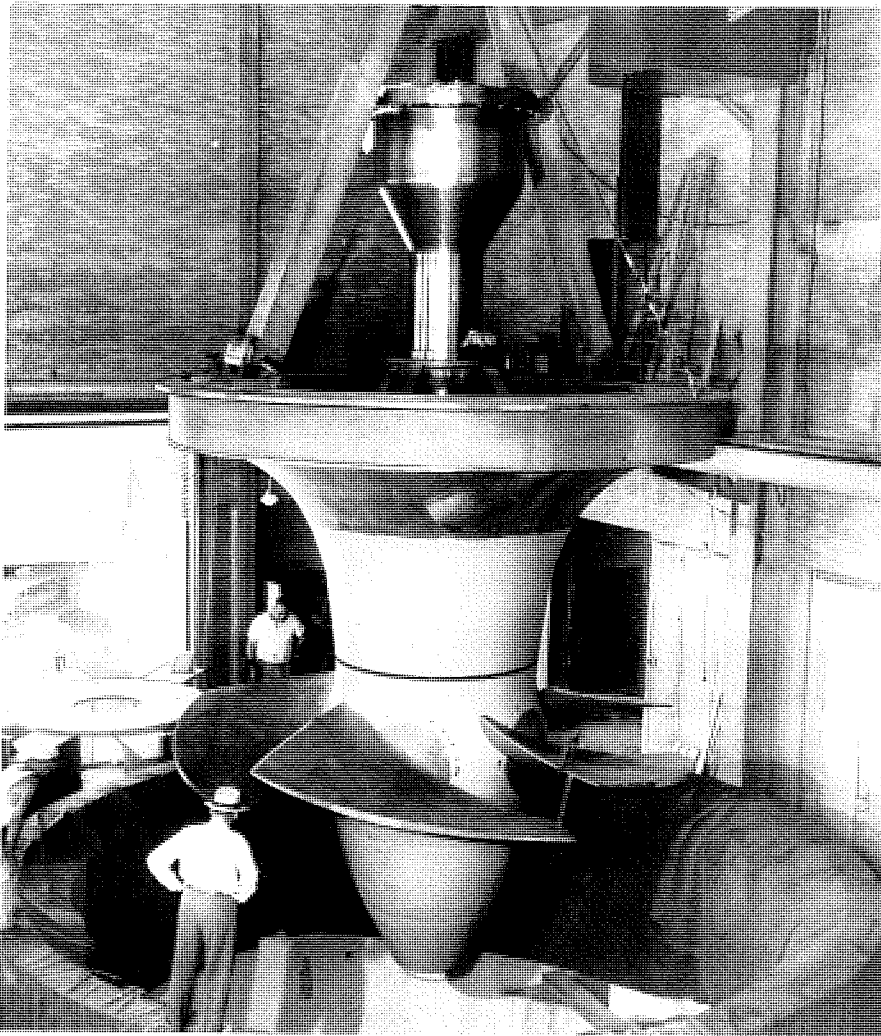


Giant Elbow leads to the twin-tailed exit of the water outlet. The passageway molded by this form takes the water as it leaves the waterwheel and discharges it into the tailrace.



River being held back by cofferdam cells in the background while the granite abutment in the foreground is being removed. The abutment was replaced by the headworks for Hadley Station. Photo taken on May 25, 1951.

Giving way swiftly before dynamite and crane, the abutment has turned over its function to the cofferdam.



Fully assembled, the waterwheel is being lowered into place far beneath the floor of the power house. Water directed through the substructure passages and against the large blades will rotate the wheel and turn the 15,000 kilowatt generator.



Hadley Falls Station
1951

The Fishway

History

Fishways have been a matter of concern on the Connecticut River at South Hadley and Holyoke ever since the Proprietors of the Locks and Canals built a dam across the river for navigation purposes in 1794. For the discussion of them in detail, the reader is referred to "Dams and Fishways at Holyoke and South Hadley" 1983 by REB II.

It should be mentioned here, however, that two prior fishways had been built at the dam by HWP by order of the Massachusetts Legislature. The first was in 1873, largely of wood construction. Both fishways were designed by the State and built and paid for by HWP. Both were failures.

F.P.C. License Requirement

Article 19 of HWP license 2004 says, "The Licensee shall construct, maintain, and operate such fish protective devices and shall comply with such special conditions in the interest of fish life as may be prescribed hereafter by the commission on recommendation of the Secretary of the Interior."

Excerpts from "Dams and Fishways"

The following discussion is drawn largely from "Dams and Fishways" and recounts the fishway construction efforts of HWP from 1949 through 1953. Where necessary, the writer has taken the liberty of making minor changes, or additions, for clarification purposes.

United States Fish and Wildlife Services

The initial governmental responsibility for overseeing the HWP fishery efforts was that of the United States Fish and Wildlife Service (F&W) a division of the Department of Interior.

F & W realized that shad were a difficult fish to move over a dam, much more so than salmon. Therefore, it advocated an experimental approach of temporary structures to test various methods. It also joined with HWP in financing laboratory model studies with live fish at the Alden Hydraulic Laboratory at Worcester Polytechnic Institute.

In a letter to the Mayor of Northampton F&W expressed "a reluctance on our part to be responsible for another concrete monument to failure."³⁶⁴

Mugnier

In order to equip itself with engineering talent to work exclusively on the fishway problem, the Company added to its staff Alston D. Mugnier, an engineer from the New England office of the U.S. Army Corps of Engineers.

Early Planning

Those working on the project followed the usual procedures of investigating all the published information about fishway facilities and by visiting existing installations. They soon found that there were no fishways for shad on the Atlantic Coast.

On the west coast, it was learned that there were basically two types of fishways. They were the conventional "Ice Harbor" ladder and the lock. It was also learned there that the shad was a difficult fish to move over a dam.

It was early decided that some scheme other than using a ladder should be tried. That method had failed twice at the HWP dam.

Pressure Lock

Rather than using an open lock system such as is used to raise and lower boats, Mugnier decided to concentrate on a pressure lock system. This latter system was a new approach to the problem using completely untried principles. The pressure lock scheme involved inducing the shad in the tailrace of the Hadley Station to leave the churning water at the exit of the draft tube and enter a corral area. From that area they were to be lifted by the pressure lock to the level of the water above the dam.

To get the shad from the tailrace to the corral was crucial and its solution was independent of any type of lock system. It was early found that, if a sufficient quantity of attraction water at high enough velocity was used, the shad would sense that stream in the tailrace and proceed along it into the corral.

It was soon learned that the major problem to be overcome with the pressure lock scheme was to find a way to attract the shad into the lock. This led to Mugnier's doing major studies on the unusual characteristics of shad.

Shad Research

Mugnier during 1951 did a considerable amount of original research. He observed the actions of alewives as they made their annual runs from the sea to freshwater on Cape Cod. He blindfolded shad and observed their actions in the Windsor Locks canal. In the corral of the fishway area, a variety of experiments were made using mirrors, electric lights and electric currents. All of these were done in an effort to get the fish to enter the pressure lock system.

The results of Mugnier's experiments were discussed in an article in the Saturday Evening Post of April 18, 1953, and are excerpted as follows:

"These things, of course, held for almost all fish and made them difficult enough, but Mugnier was finding out that shad are even more difficult than most. Even on spawning runs, when most fish ignore many hazards, shad remain wary and suspicious. They fear sudden changes from light to darkness and abrupt changes in the stream bed. They do things only in schools; they don't like narrow passages or shallow water, and their nervous systems and energy balance are queer. They can swim a thousand miles, but a little gentle handling usually kills them. They can't be attracted by bait or odors, because they don't hunt things to eat; they bite at fishermen's spinners or flies out of irritation, to get them out of the way. Their gill covers are stationary, and don't pump water like the gills of most fish; they must lie in a current or swim all the time, or they suffocate. Although they are beautifully streamlined and fine swimmers, they aren't very maneuverable. They can't reverse. If they get into corners they can't get out, and usually die. This is possibly one of the reasons they don't do well in conventional ladders with rectangular pools."

Pressure Lock Results

The pressure lock system was operated for three years. The number of shad lifted were: 1952-35, 1953-250, and 1954-226 for a total of 511.

In the fall of 1953, when the canals were drained for inspection, a total of about 85 baby shad, 6 inches long, were found in pools of water in the canal bed. They were undoubtedly part of a much larger group which had passed through the water wheels along the canal or through Hadley Station. These fish, spawned by some of the 250 shad lifted this year were the first shad to be born above the Holyoke dam since before 1849, over 100 years earlier.

By 1954, at the end of three years of experimental work, it became evident to HWP management that the pressure lock system would not be a satisfactory solution to the fish passage needs at Holyoke and should be abandoned.

Mugnier had left the employ of HWP in May 1952. In July 1954, he received patent No. 2,683,969 for the pressure lock system.

The Lift System

The usual methods of getting fish over a dam, namely with a ladder or with a lock, had both been unsuccessful with shad at Holyoke.

HWP now turned its efforts to a new untried method which was first suggested in a memorandum of the company to its files on July 11, 1952. A portion of that memorandum follows:

"Transporting Shad:

"We tried catching a shad in a net in the "corral", putting it in a wash tub and carrying the wash tub up to the headworks by means of the station elevator. The elapsed time was 3 minutes that the shad was in the wash tub. The shad stood the handling beautifully and went on upstream. It may well be that a conveyer system to transport shad from the "corral" to the headworks would be practical."³⁶⁵

The two prior methods of getting fish over dams required that they swim by their own efforts, either up through a ladder system or through a lock system. The method now to be tried would mechanically lift the fish vertically up 50 feet from the level of the water below the dam to the level of the water above it.

Design and Construction of Lift System

During late 1954 and early 1955, HWP engineers designed and ordered material to construct the beginnings of a lift system. The plan was to construct the under water portions as soon as high water dangers were past and to order, and have installed, the non-concrete portions of the scheme in time for the arrival of the shad.

Once again the policy of the Company was to be experimental. It was in line with the desires of F & W not to build "another concrete monument to failure."

A Lift is Built

The lift as constructed consisted of an under water rectangular concrete structure in the westerly end of the corral. Two opposite sides of the structure are open allowing a stream of fast flowing water to pass through it to attract the shad into the rectangular area.

At the westerly open side there is a stationary rack of steel bars through which the flowing water passes. The spacing between the bars is small enough so that the shad cannot pass through.

At the easterly open side there is a rack that can be lifted out of the water while the shad are being attracted into the structure. When there is a sufficient number of shad between the two racks, the easterly or downstream one is dropped into the water, trapping the fish between the two racks.

A large metal bucket, sized to fill the open area in the concrete structure, was fabricated and put into place. It was designed so that it could be lifted up underneath the trapped fish by a winch. The bucket of swimming fish was raised from the level of water in the corral up to a platform where men, with nets, caught the shad and transferred them to smaller buckets. These latter buckets were then hoisted by means of a second winch to the level of the walkway leading to the headworks. The buckets, with their fish, were then trundled across the walkway and emptied into the channel in the headworks leading to the river above the dam. The shad had been lifted up a total of 50 feet in this process.

Success at Last

With an exceptional effort on the part of HWP engineers, and the construction crew, the lift system was completed and went into operation on May 23, 1955. It operated for 35 days and passed a total of 4,899 shad. In contrast, three years operation of the pressure lock system had passed a total of 511 shad. This was the first fishway on the Atlantic coast to be used successfully by shad. In addition, as far as known by HWP, it was the first fishway to use a method to mechanically lift fish over the dam.

It Couldn't Be Done, But- *6/19/58*

Holyoke Shad

As an example of the old adage that goes "Where there's a will, there's a way," we would offer the first page item in yesterday's T-T of the shad carried up over the Holyoke dam and sent on their way to spawning grounds of their own choosing in the upper reaches of the river above the dam. To date this year well over 3000 shad have been, as the item stated "trapped, bucketed, hoisted and sent on their way" in the first two weeks of the operation and the end is not yet.

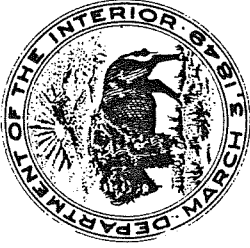
When permission was granted the Holyoke Water Power Co. to build its power station in the bed of the river and dig the canal to take the water away, one of the clauses in the agreement called for the building of a fish ladder at the dam. There have been fish ladders built there in the past but, like all but a very few fish ladders in the land, they did not do any part of a good job. The Water Power Co. made a deep study of the problem and provided a unique ladder to be built into the new development. A few shad were coaxed thru the ladder but the return on the investment made was small. Thousands of shad came up the canal to the power plant but few would enter the trap area and make their way by their own power up and over the dam.

The Water Power Co. might have pleaded that they had made an honest effort to help the shad situation in the river and continued to get a few shad into the upper river each year. But it didn't. Instead it went back to fundamentals and spent more thousands of dollars to build a new trap and an elevator system to replace the former structure. The company's own engineers did the planning and supervised the construction of the new ladder. It has had its first workout in the past two weeks and the results have drawn a highly commendatory bulletin from the United States Fish and Wildlife Bureau, which has had its observers on the spot during the run. The regional director goes to the heart of the whole business with his statement that "Without the persistent efforts and co-operation of the Holyoke Water Power Co., the successful solution of this fishery problem would have been impossible."

It's another of those things that "couldn't be done, but they did it."

U.S. Department of Interior Award

The U.S. Department of Interior, in recognition of the success of the HWP fishway awarded the company, on February 18, 1956, with its first ever, Conservation Service Award. The presentation was made in Boston at the annual meeting of Wildlife Conservation, Inc. by John L. Farley, Director of the U.S. Fish and Wildlife Service. The Award and his remarks are included herewith.



United States Department ^{of the} Interior

CONSERVATION SERVICE AWARD

In recognition of honorable, contributed services performed in connection with this Department's conservation activities

Folsythe Water Power Company

is hereby awarded this certificate

Given under my hand and seal this 18th day of January A.D. 1956

*Douglas Menden
Secretary of the Interior*

That Second Mile

(Remarks by John L. Farley, Director, Fish and Wildlife Service, at the Twenty-third Annual Meeting of Wildlife Conservation, Inc., John Hancock Hall, Boston, Mass., February 3, 1956)

An appropriate title to my few remarks would be "That Second Mile." If I were to choose a text, it would be "Whosoever shall compel (require) thee to go a mile, go with him twain." (Matt. 5: 41)

It is certainly unnecessary, in a group such as this, to prove the rewards of doing more than the minimum requirements for a job or a project. Progress and advancement seem to depend upon the willingness of individuals or organizations to put extra effort, time, or resources into the solution of problems.

In such an activity as the Fish and Wildlife Service, with its responsibilities for regulations and law enforcement, we are frequently called upon to cite individuals and organizations for failure to do the required things - to go the required mile. It is a distinct contrast and pleasure to find occasions to cite an individual or an organization for doing more than they are compelled to do - for going that second mile.

Tonight, I have the honor of representing the Secretary of the Interior, Douglas McKay, who wishes to recognize the willingness of a public utility organization to do some of the extra things.

The Holyoke Water Power Company, under the terms of a license issued by the Federal Power Commission in 1949, was required to build fish passage facilities at its dam. Older types of fish ladders worked beautifully in almost every respect except that shad refused to use them. After extensive cooperative studies and experimentation a new fish way was designed and put into operation in 1952. A few shad used it, but not enough to assure the re-establishment of a shad run above the dam.

The Company might have stubbornly resisted ideas for further development and construction, but did design and install new devices which in 1955 proved successful in getting about 5,000 shad over the Holyoke Dam. This was the first significant passage of shad above the dam for over a hundred years.

In recognition of the willingness of the Company to cooperate with conservation agencies, and of its accomplishments in the field of conservation and rehabilitation of our natural resources, the Fish and Wildlife Service nominated, and Secretary of the Interior Douglas McKay approved the Department of the Interior's Conservation Award to the Holyoke Water Power Company. This is the first award of this type made by the Department.

Mr. Barrett, I am very happy, on behalf of Secretary Douglas McKay, to present this certificate of award to you and your associates for going "That Second Mile."

The Fishway, 1955 and OnwardInitial Success

Planning for building a fishway at the dam began in 1949 with the issuance to HWP of the F.P.C. license. It was six years later, 1955, before the company was satisfied that, at last, it had designed and built a workable fishway.

The Conservation Service Award, given to HWP by the U.S. Department of Interior in January 1956, brought country-wide recognition to the Company for its contribution to the development of fish passage facilities.

Improvements - The Succeeding Years

From 1955 onward there have been many changes at the fishway which have improved its effectiveness. Some of these have been:

- o Changing from a manual operation requiring five or six men to a nearly fully automated lift system with only one operator.
- o Adding a second lift so that fish which swam up to the base of the dam, instead of up the tailrace, also could be lifted over the dam.
- o Building an observation platform so that the public, assisted by tour guides, can watch the lifting of the fish.
- o Creating an observation window where the public can see the fish, after they have been lifted, swim by on their way to the river above the dam.
- o Sponsoring a shad derby held at the height of the annual fish run in which several thousand fishermen compete for prizes for catching the largest shad in the junior and senior competitions.

The Results

Included herewith is a tabulation, on a yearly basis, of the several species of anadromous fish which have passed through the fishway since 1955. It will be noted that there was a major increase in the numbers of fish lifted beginning with 1975. The improvements to the fishway just mentioned were largely responsible for this increase.

ANNUAL ANADROMOUS FISH COUNT
HWP FISHWAY 1955-1988

YEAR	LIFT PERIOD	SHAD	SALMON	BLUEBACK HERRING	STRIPPED BASS	SEA LAMPREY
1955	May 23-June 28	4,899				
1956	May 24-July 2	7,731				
1957	May 13-June 7	8,845	1	16		
1958	May 23-June 27	5,705	1	29		2
1959	May 12-June 11	14,972		20		73
1960	May 13-June 23	15,076	2	796		17
1961	May 17-June 23	22,601		1,200		42
1962	May 19-June 19	21,346		19		209
1963	May 22-June 24	30,052		32		64
1964	May 12-June 25	35,397		13		537
1965	May 11-June 23	33,896		53		26
1966	May 24-June 29	16,212		54		2
1967	June 1-June 30	19,484		356		46
1968	May 11-June 27	24,693		not counted		not counted
1969	May 20-June 23	45,349		(Est.) 10,000		not counted
1970	May 14-June 29	65,751		1,900		not counted
1971	May 19-June 23	52,719		302		not counted
1972	May 23-July 3	25,572		188		not counted
1973	May 4-June 29	25,104		302		not counted
1974	May 7-June 26	53,147		504		not counted
1975	May 12-June 29	114,132	1	1,600		23,000
1976	May 4-June 16	346,185	1	4,700		32,000
1977	Apr. 30-June 7	196,311	1	33,000		52,000
1978	May 10-June 18	143,336	23	38,000		43,000
1979	May 3-July 8	254,894	19	40,000	103	31,000
1980	Apr. 19-June 30	376,757	119	198,000	148	34,000
1981	Apr. 28-June 30	376,639	316	419,733	510	53,549
1982	May 10-June 30	294,606	11	570,083	128	26,297
1983	May 13-June 26	527,508	23	442,313	226	29,252
1984	May 2-June 2	496,389	66	449,178	57	not counted
1985	Apr. 25-June 15	481,589	285	632,255	369	40,308
1986	Apr. 21-June 15	352,112	259	517,520	187	20,010
1987	Apr. 21-June 15	276,837	207	358,607	521	22,553
1988	Apr. 19-July 3	294,157	72	343,363	256	15,912
1989	Apr. 19-July 14	353,642	80	285,208	900	15,364

Transfer of Shad to Other Rivers

It early became recognized by the fishery agencies of several states that the HWP fishway facility provides the only opportunity in existence to obtain large quantities of live shad for propagation purposes. Thus, for many years, specially designed trucks from Rhode Island, Pennsylvania, New Hampshire, as well as Massachusetts, have come to the fishway and transported away hundreds of shad.

In the early years, the mortality of shad being transported was high. The trucks initially used were those that are standard for trout and which have square cornered tanks. The shad died because, as explained heretofore by Mugnier, they swam into a corner, couldn't back out and lost their ability to get oxygen. By using a round tank, in which the shad constantly swim around and around, they can be transported on a three-hour trip with less than 10% mortality.

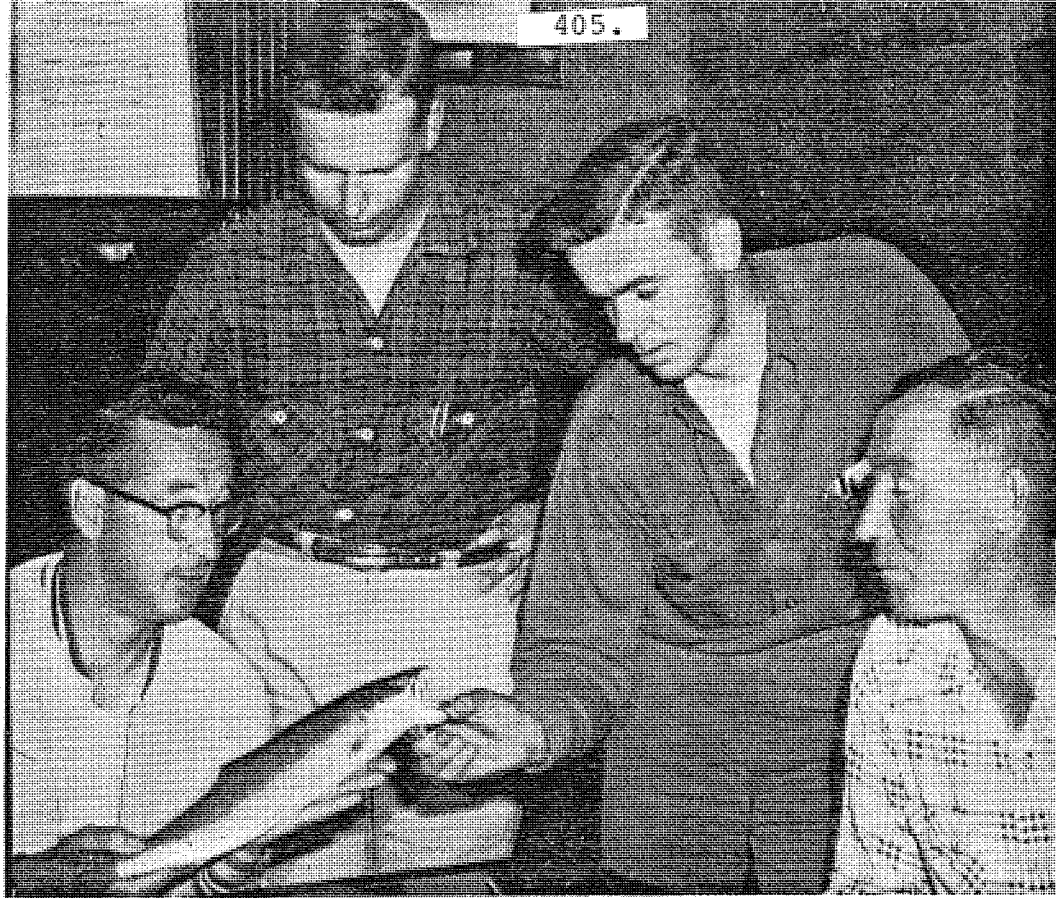
The tanks hold 500 gallons of Connecticut River water and carry 125-150 shad. The water is continually circulated with pumps. There are also valves which mix air or pure oxygen with the circulating water in order to maintain a high oxygen content.

Through this process of trucking, shad have been re-established in the Pawcatuck River in Rhode Island. The farthest distance in which shad have been trucked is to the Susquehanna River in Pennsylvania.

Return of the Salmon

The accompanying tabulation for the annual fish count at the HWP fishway records the arrival of one salmon in 1957. An account of that event is included herewith.

At this writing, a major effort is underway to re-establish a run of Connecticut River salmon. It began by obtaining fertilized salmon eggs from Maine rivers and taking them to the federal hatchery near Great Barrington. There the young salmon were raised to fingerling size. They were then transferred to other hatcheries until they became smolts, or two years old.



THEY DETERMINE IT A SALMON—Left to right, W. A. Tompkins, state biologist; James Coffin, associate state fish expert; M. E. Tagatz, Federal Fish and Wildlife department, and Paul Nichols, also Federal F and W department. 366

First In 64 Years

Handsome Atlantic Salmon Reaches Holyoke Dam

A page in local piscatorial history may have been written Saturday in the operation of the shad lift at the Holyoke Dam. Shad are the most numerous but not the only fish that are gathered into the big tank, scooped out into water filled barrels and lifted up by electric power to the level of the crest of the dam, dropped into an inspection tank and then ushered out into the above-the-dam waters. There are plenty of bass, an occasional trout, perch, bull-heads, and lamprey eels and what not.

About 10 a. m. Saturday two of the Holyoke Water Power Co. employes, George Richards and Henry Syrek, assigned to the "lift 'em up and put them over" process which has attracted wide attention in fish propagation circles by its success in recent years, saw what their sharp eyes thought might be a newcomer in the ranks. It was an all-silver bodied fish, built on racing lines and it seemed to resent more than any other fish in the tank the confining sides. They called attention to the stranger to the two Federal Fish and Game experts assigned to checking and counting the shad life product, Paul Nichols and M. E. Tagatz. The latter recognized the fish as a salmon and suggested the possibility that it might be an Atlan-

tic salmon.

That started action in several directions. The records kept thru the years indicate that the last time an Atlantic salmon was taken in the Connecticut River was back in the Gay Nineties—1893 to be exact. From time to time Atlantic salmon fry and fingerlings have been placed in the river by groups interested in seeing if the Long River might again be noted for its annual Atlantic Salmon run as it was a century back. But if the little fellows ever come to legal game size, they have not returned to their planting areas.

The Federal men were quite sure of their identification but in order to remove all possible doubt they suggested calling in the expert sat the State Division of Fish and Game. President Robert E. Barrett of the Water Power Co., who was quite as excited at the possibilities in the matter as anybody, put in a call to the headquarters of the State Division. State Biologist W. A. Tompkins, who, by the way, directed the cleaning out of the rough fish in Hampton Ponds last year, was soon on his way to Holyoke, with James A. Coffin, Jr., of Northboro, a fellow enthusiast in such matters as a companion. They arrived at the Water Power Co. offices on Canal St.

at 5:30 in the afternoon and found President Barrett, Everett R. Burkhardt, Water Power engineer in charge of the shad lift operation, and Messers Nichols and Tagatz and the silver sided fish awaiting them. The fish by the way, was now dead and frozen stiff by the deep freeze process.

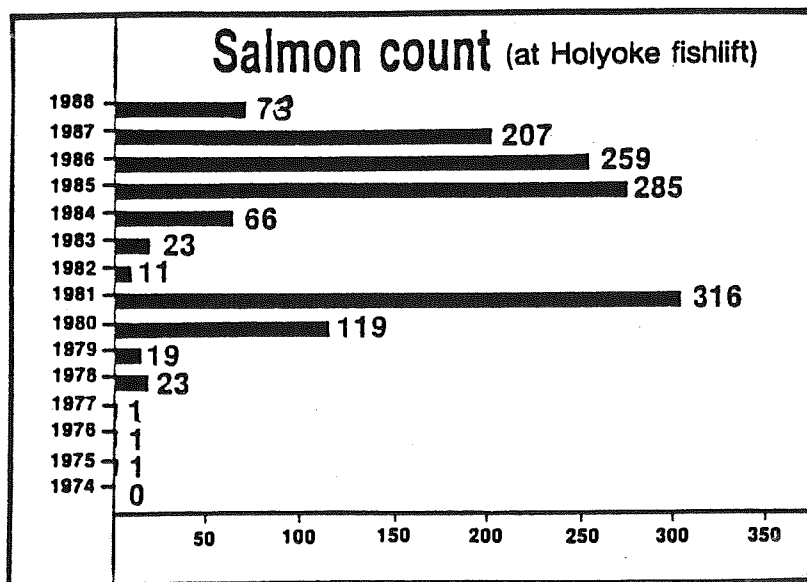
The State Biologist knows his fish but he brought along a couple of weighty tomes filled with such information as the number of teeth in the jaws of all kinds of game fish. This matter of teeth is really important in such identification effort. A flash light and magnifying glass were brought into use and after an exhaustive examination that lasted approximately half an hour Mr. Nichols straightened up and said "I give you back your Atlantic salmon, gentlemen." Then the news photographers got busy.

P.S. Sorry to have missed one important detail. The fish was 17 inches long and weighed exactly two pounds. From the historical viewpoint it was the biggest little fish that has come to Holyoke in more than two generations. We expect plenty of Safety Valve activity as the conservation minded public bends to its task.

These smolts were then placed in the river below the HWP dam and two years later some re-appeared at the fishway as adult salmon. They were then transferred to the Berkshire National Fish Hatchery at Great Barrington for breeding purposes. As this yearly process continues, a strain of salmon, more and more endemic to the Connecticut River, will develop. The numbers returning to the river each year should thus increase.

Results

When the salmon program was starting, the government agencies established a goal of 40,000 salmon annually to return to Holyoke. To date, the number of returning salmon is very small as the following graph shows.



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However, a laboratory, established by the U.S. Fish and Wildlife Service, is now under construction upstream of Holyoke at Turners Falls. Its purpose is to do fundamental research on both the upstream and downstream migration of anadromous fish. It is hoped that knowledge gained there will be helpful in increasing the salmon population in the river.

Atlantic Salmon - A Description

There follows a discussion about the life of salmon.

The Life Cycle of the Atlantic Salmon

"In October or November, at the spawning grounds, an adult female salmon uses her tail as a scoop to create an eight-to-ten-inch-deep depression in the gravel river bottom. Here she deposits 700 to 800 eggs per pound of body weight, which the male adult fertilizes.

"The eggs hatch in mid to late March as the water temperature begins to rise. The small fish, called alevin, are about one-half inch long and have an attached yolk sac. Alevin remain in the gravel until May or June, feeding on their yolk sacs. Then, these tiny salmon, almost perfectly formed, wiggle up through the gravel and out into the river.

"The small salmon stay in the river about two years as they continue to grow and change. Until they are two to three inches long, they are transparent and called fry. When they are about the length of a man's index finger, they are called fingerlings. Then, until they are about six inches long, they are called parr. Parr have nine to eleven black vertical bars with bright, red dots between them as camouflage among the rocks and weeds.

"In the spring of their second year of life, parr undergo an amazing change known as smoltification. They become bright silver in color and other internal changes take place. Smoltification signals young salmon to start down their home river to the ocean. The young salmon are "imprinted" with the chemical make-up of their home river to help them find their way back. With the spring runoff, the smolts head down river toward the sea.

"Most of the smolts journey about 2,500 miles from the mouth of the Connecticut River to a place off the west coast of Greenland, known as Davis Strait. If the salmon survive the rigors of the journey, predators and fishermen, they are four to six pounds and about 20 to 24 inches long after one year at sea. Some salmon return to the river after this one year at sea, and are called grilse. Most salmon remain two or more years at sea and weigh between 8 and 20 pounds before heading back home as bright or maiden salmon. Exceptionally large salmon may weigh as much as 40-50 pounds.

"There is some evidence that returning salmon are guided by a built-in radar system and/or celestial navigation. When the fish get close to their home rivers, their chemical memory helps them find their way.

"Salmon are extremely strong and are driven upriver by a powerful spawning instinct. They cease feeding when they enter fresh water, and lose 25 to 30 percent of their weight during the upriver journey. They can jump about ten feet to overcome barriers, occasionally dying as they crash on the rocky river bank. The majority of the fish which actually make it to the spawning grounds die after spawning. Just five to ten percent survive the round trip from Greenland to the river to Greenland again, and an even smaller percentage make it back to the river to spawn another time. But as many as six spawnings by one fish have been reported."³⁶⁸

Downstream Migration

The success of the fishway at Holyoke means that many adult shad, after spawning, return to the sea. In addition, vast numbers of fingerling shad, born in the river between the Holyoke and Turners Falls dam, move downstream to the ocean each fall.

A major research effort by the company and the governmental fish agencies is underway to try and assure that these fish will be able to migrate to the sea, without being unduly impeded by the HWP hydraulic installations.

The U.S. Fish and Wildlife laboratory at Turners Falls will be very helpful in this research.

Summary

The fishway facilities of HWP have played a major role in the enhancement of fish as a natural resource of the Connecticut River. Following are significant examples:

- o Constructing the first successful fishway for shad on the Atlantic seacoast.
- o Being the first fishway to use a method of mechanically raising fish over a dam, while they were continuously swimming in the lift.

- o Sponsoring an annual shad derby attracting thousands of fishermen.
- o Making shad available for transfer to other rivers for propagation purposes.
- o Playing an important role in the salmon restoration program with the fishway being used to capture the returning fish for breeding purposes.
- o Participating in a major effort to solve the problems involved in the downstream migration of fish.

Industrial Development

Introduction

The years 1950 - 1967 were active ones for the industrial development department of HWP. However, they were but a continuation of the efforts to expand the industrial base of the community which was begun by its predecessor company, the Hadley Falls Company, in 1849. A description of these efforts can be found in a previous publication of this writer.³⁶⁹

A Review

The earlier chapters of this present history have discussed several of the ways by which HWP, over the years, encouraged the expansion of Holyoke industry. A growing industrial base in the community meant an increasing market for its water power in the earlier years and for its electric power in the later years.

Some of the ways by which HWP encouraged industry were:

- o Reserving sites along the canals for mills which could use water power.
- o Aiding in the construction of factories by financing land purchases, and in some cases buildings, with mortgages.
- o Constructing a mill designed as an incubator for small industries. Dennison National, Holyoke's largest employer, got its start in this mill.
- o Constructing rows of six room brick cottages for sale to Holyoke workers.
- o Donating lands for churches, public parks, and playgrounds to better the human welfare of the community.

Renovation of Unused Paper Mills

As early as 1937, HWP began a program of converting unused Holyoke paper mills to buildings in which small industries could begin manufacturing operations.

Norman

The first mill purchased, and so converted, was the Norman, located on the Second Level Canal contiguous to HWP property. Over the years, several different small manufacturers has been its tenants. At this writing, the mill is fully occupied by a firm of paper converters which makes different sizes of paper rolls for office machines and other uses.

Beebe Holbrook, Massasoit and Wauregan (B & H)

This group of three paper mills located between the First and Second Level Canals, was purchased in 1944 and renovated to house several small industries. One of the industries which started in this complex was the Acme Chain Company. It grew to occupy 60,000 square feet of space in the property and to employ 325 people. It eventually outgrew the available mill space and moved to a new HWP designed industrial plant.

This was a perfect example of an industrial incubator fulfilling its basic function of nurturing a small industry.

The editor and owner of the local newspaper, after having toured the B & H, wrote the attached account of the several industries visited. The three mills were eventually sold to their individual tenants, having fulfilled the initial HWP objective of creating space for small industries

Two hydroelectric units on the B & H property totaling 500 kilowatts, have been retained as part of the company's electric generating capacity.

—Holyoke (Mass.) Transcript-Telegram, Monday, June 10, 1946

A Week At A Time

The new week started off with "different" kind of session of the Executive committee of the Chamber of Commerce.

President Robert E. Barrett of the Holyoke Water Power Co., who visits with the C. of C. every Monday noon, had invited us to take a look at some of the development the HWP has done in the old mill properties it had been buying during the war years.

Mr. Barrett was doing the thing very nicely, with the idea that we all arrived at each interesting story at the same time. He engaged a handsome Street Railway bus so that we could station-wagon it in unison. Believe it or not, it was the first time I have ever had a ride in a Holyoke Street

Railway bus. The old trolley cars knew me well until I learned to handle a Buick. I live down town and walk to everything. No need for a bus that way. I know a great many ways to get myself invited to ride to an event and I do pretty well with the wheel and a set of good tires myself.

The busses pause, coming and going, at my corner many times day and night but I know them not. So I luxuriated riding down Dwight street to the old Wauregan Mill which is now the home of many industries. It was an adventure in industries to go through the renovated mill. When I came to Holyoke that mill building was twelve years old. It was pointed out as the handsomest paper mill front in the city. By the time the Newtons got to building the Wauregan they had ideas of putting a good face on the office part of the building. They planted the walls with ivy.

There are 250,000 square feet of floor space in the building. There is a spaciousness about the different divisions there now, with splendid lighting. Indeed there is something labyrinthine about the property. You wander in and out and around and I'm not sure that I saw everything as it is.

The C. of C. executives always have go to get back on the job. The bank officials could see only the start of the tour. First we stepped into the Rene Remillard paper converting place with a stunning tropical vine climbing a make-believe tree. The last time I saw one of those was in the Cypress Gardens in Florida. I have tried to make them grow in Pine Eden but they won't stand a touch of frost.

The vine is for looks and for Mrs. Remillard's satisfaction. The room was filled with girls getting very fancy paper ready for very fancy boxes. I saw one sheet with the name "Eleanor" stamped on it and asked the girl who was working it if that might be for Mrs. Roosevelt.

Upstairs a group of women were making girls' dresses. Their work is pretty but they have to stick to one kind of cloth. If I were making dresses I'd never want to make two alike. Here again you felt that everything was clean and bright and light. Around the corner Howard Quirk was working out blueprints and black prints—very mysterious to me.

Upstairs we met attractive Tess Peffer, who with her brothers, were managing the department for J. W. Berwick. They were out of Chicago and had been in Canada before Holyoke. They make things of plastics and aluminum. We saw lamps but was more interested in the 18,000 square feet of floor space they have to develop. There are scores of very new tables and Miss Peffer explained that her brothers, Walter and Mervin, had made every one of them with their own hands. You can't buy them. They have scraped and polished and waxed the floors. The great room is rather empty yet but the management is very, very new.

Then we went into the L. Hopkins & Son Machine Shop.

In my quest for information I asked everybody everything I could think of. Up to this point I had asked them all where they came from. Mr. Hopkins, white-haired and alert and kindly, just said: "I came from Sycamore St." I didn't see how Sycamore St. could house all that machine business. But it did.

The Paul-Martin Rubber Co. was very intriguing. They make all kinds of things from both raw rubber and the synthetic and we were permitted to see great stacks of real rubber just lately out of the Far East—one of the things that helped thrust us into war—The enemy thought they could cripple us if they took our rubber away from us and we thought so too for a while.

I was greatly interested to see the way they make those plastic knife handles about which Atty. Resnic told me some months ago when he was looking for a place to get his new industry going. They call it laminated wood. They take wood reduced to the thinness of a web and press it together to get handsome color and texture effects.

Mr. Cramer showed me a gadget which should delight every housewife. They have a case fitted with knives—good steel knives. Every time you put your knife in it sharpens itself. What a joy to a housewife. I couldn't quite say how many places I may have missed in this story. They had to hurry me out of every plant. I was always meeting somebody or seeing something.

We were toiled down past the old Norman paper mill with its six industries. We saw the 18,000-

ton heap of coal that would have kept the city's wheels going for quite a long time of strike, and beyond that the 850,000 gallons of oil that can rest a while with the water running high over the dam. The wheels of Holyoke could have been kept going quite a while, even if coal and railroads were idling. The last industry we investigated—if that is a good word—was the Holyoke Wire & Cable Co., which has 150 people on its payroll, most of them women, and very nice looking women. Downstairs they insulate the wire with rubber or plastic or what they want to use. Upstairs it is machined to all sorts of lengths and finishes. Much of it is used for radios. For weeks I've been interested in following Joe Donaghue's almost unreal stories about the new industries that are getting themselves set in Holyoke, because Holyoke is a good place in which to work. So I was prepared for this. It does give a thrill to walk into the picture of industry branching its way into the new lines. And I admit to feeling rather set-up to have that elegant bus take me to my door and let me step out as a perfectly private passenger at that stage riding in a special bus. I think I will hire one some time. It wouldn't be possible to take all Holyoke on such a tour as Mr. Barrett personally conducted the Chamber of Commerce executive committee. But we ought to know more about what makes the life of Holyoke secure than we do. We try to study our new world relationships. We might take some our study time off to try to comprehend the wheels that do their ceaseless task of production thru the power that is harnessed by the Holyoke dam.

Parsons

The Parsons Mill located near the dam was purchased in 1948. There were two reasons which justified its acquisition. The most important one was that the property could be used as a storage area for materials needed for the building of HWP's Hadley #1 hydroelectric unit. It was also used for this purpose when Hadley #2 was built many years later.

The second reason for its acquisition was the hope that it, too, could perform an incubator function. Spaces were fitted out for several small industries. Two of them succeeded. One, Stonington Paper Tube moved to Easthampton. The other, Laminated Papers, a successful Holyoke manufacturer, moved from the Parsons to its own building.

When the HWP's need for these buildings ceased, the oldest of which was built prior to 1827, they were gradually razed. With the completion of Hadley #2, the need for storage space ended and the last of the Parsons buildings was torn down.

Springdale Industrial Park

Location

In the southerly part of the industrial area of Holyoke, there is a parcel of land of about 35 acres which is part of the original estate purchased by HWP in 1859. Until 1953, it had never been occupied by permanent buildings.

Need

When World War II ended, it was generally assumed that there would be a reduction in the need for manufacturing space. That assumption proved to be wrong. It early became evident that there was a demand for one-story industrial buildings located on land of sufficient area for expansion and parking.

Industrial Park Proposed

In early 1953, HWP decided to develop this tract as an industrial park and to market it aggressively as a location for modern industrial plants.

HWP Services

The company offered to prospective purchasers of land in its park the following assistance at no cost:

- o The services of one of the HWP engineers, with an architectural degree, to lay out and estimate the cost of a building designed to meet the prospective owner's needs.
- o A construction loan from HWP to pay building costs until permanent financing could be arranged.
- o The services of an HWP engineer to supervise the construction.

The above services varied from building to building depending upon the needs of the purchaser.

A Substantial Subsidy

The management of HWP realized it was making a substantial contribution to the cost of these buildings. It felt this was justified because:

- o Idle land was being converted into dollars at prices which yielded profits to the company.
- o New customers for electricity were being created.
- o New industries would henceforth be helping to carry the city's tax burden of which HWP was the largest tax payer.

The First Building

A builder of machines to wrap manufactured products was the first customer in the park. The building was of cinder block construction with brick veneer. It measured 100 X 200 feet and the construction cost was \$5 a square foot.

Results

The rapid growth of industrial buildings in Sringdale Industrial Park is to be seen in the following tabulation:

<u>Company</u>	<u>Date</u>	<u>Product</u>
Wrap-King	1953	Machines to wrap goods
Gravure Engraving	1955	Engraved rolls for printing presses
Holyoke Fabrics	1955	Textiles
Acme Chain	1956	Roller chain
Holyoke Wire Cloth	1956	Fourdrinier screens for paper-making machines
Lestoil	1957	Detergent
John Stark Laboratory	1958	Refinishing printing plates
Rexall Chemical (land only)	1959	Chemical for plastics manufacturing



Power For Industries

The Holyoke Water Power Company's scale model of its power system at the Holyoke dam, its Springdale industrial park, and the uses of electricity has been top hit at the Junior Chamber of Commerce-sponsored show in the War Memorial. The model was designed by hydraulic engineer Allin W. Ladd, at rear right. Assisting him with repairs is William Dzuris.

Industrial Show A Big Success

By every test, the first Holyoke industrial exhibition is a success.

More than 2000 persons visited the War Memorial building during Thursday's opening day festivities, and Junior Chamber of Commerce officials are confident that at least 8000 persons will visit the show today and tomorrow.

Hours today are: 2 to 9 p.m. Tomorrow's hours are 10 a.m. to 6 p.m.

Visitors to the show on Thursday marveled at the diversified industry represented in the 30 exhibits.

The exhibits represent the achievements of approximately 7000 Holyoke employees and executives.

An almost unanimous verdict is that the Holyoke Water Power Co. display is the hit of the show.

The display, which depicts in miniature the company's power facilities at the Holyoke dam and

the uses of electricity in a community, was designed by Allin W. Ladd, the firm's hydraulic engineer.

Assisting Ladd during the five-week construction period were: William Dzuris, George Dzuris, Bernard Bart and Joseph Kroll of the maintenance and hydraulic section.

Some of the features of the display are: 80 gallons of water coursing over a dam and thru a river; fish-swimming in a pool; and, an electric train.

About three dozen small fish were placed in the pool at the start of the show. About a half dozen died during the night, and Ladd added ice cubes this morning to lower the water temperature to the fishes' liking. Oatmeal is being used for fish food. 369A

Benefits

At this writing, Springdale Industrial Park has been in existence for over 30 years. During that period, it has continued to bring the benefits to Holyoke and HWP that were hoped for when the first building was completed in 1953.

Editorial

There is included herewith an editorial from the local newspaper which comments upon the HWP Springdale Industrial Park.

New Leadership Inspires Holyoke

The building of a new industrial plant in the more than half million dollar bracket in Holyoke is eye-blinking news if you think back only a few years to the mood and outlook of this city in the post-war recession. It would be the same kind of news in any New England mill town today.

It would be more surprising news in a good many other communities of our type than it is here, for the story of the Acme Chain's expansion plans comes well along a mounting curve of industrial activity in Holyoke. The new plant to go up in the Water Power Company's industrial park area in Springdale is the biggest but by no means the first to go up there. It will have four neighbors, three of which are already in operation.

There is such a thing as epidemology in industrial health. Slumps speed downward with gathering force and the whole community must be "treated" to halt and cure them. The reverse side of this, which Holyoke has reason to hope it is now seeing, is that good industrial health is catching too. Confidence spreads.

It spreads particularly effectively from the top. When industrial leadership shows its faith in the future of a community, everyone else takes heart. In Holyoke the new industrial strength being carefully and gradually built up through diversification has had many contributors, but none more effective than the Holyoke Water Power Co.

If this resurgence in Holyoke carries on as it now appears it may, and Holyoke does enter a new and better life as an industrial center and as a community.

ty, it will be worth some scholar's time to trace the beginnings, as an adopted daughter of our city once traced Holyoke's pre-World War II history. What a chapter could now be added to that history, especially under the heading of Holyoke Water Power Co.!

When did Holyoke get its first shot in the arm that revived confidence and industrial morale in the post-war period? Looking back, we think it may very well have been in 1949 when the Water Power Company got up and gave a rousing fight for the right to develop the resources of the Connecticut River itself. No body who sat in on any part of that battle in the War Memorial will ever forget it.

Perhaps at that time we thought it was just a victory

over federal interference. But the battle and the victory did something remarkable to everyone who was involved. It got Holyoke interested in itself again and started the growth of self-confidence that is Holyoke's greatest weapon in the hotly competitive industrial battle of today.

This is what can happen when industrial leadership sees its place in the community, accepts responsibility, and asserts itself strongly. The Holyoke Water Power Company is in a unique position to do this. Nevertheless the opportunity and we would even say the obligation exists for the other big brothers of our industrial community to do the same within their individual capabilities. Holyoke has been blessed with some strikingly loyal examples of this kind of leadership, but there is room for more.

Acquisition of Land for Industry

The Need

Ever since HWP was established in 1859, its available land, water power and electric power had combined to foster the growth of the company, its industrial customers and the community.

However, the rapid growth of Springdale Industrial Park had nearly exhausted one of those three elements, the companies supply of suitable land. It thus became clear that lands in other sections of the area should be acquired promptly and reserved for industrial use. HWP decided to take the lead in this effort.

HWP Begins to Buy

The First Purchases - Lower Westfield Road Area

In the summer of 1955, HWP made its first purchase of land in the southwesterly portion of the city. It was bordered by the railroad and in an area largely devoted to farm land. It consisted of 80 acres and was known as the Zmerchek tract. A year later, a second purchase was made in the same general area near Lower Westfield Road of a total of 28 acres from three parties known as Quinn, Jopson and Paul.³⁷¹

Zoning Needed

Meeting with City Officials

In an effort to impress upon city officials and community leaders, the critical need for acquiring land for industry, HWP held a dinner meeting of 50 people in the spring of 1956. On that occasion, the company urged the conversion of the no longer needed City Farm of 70 acres to industrial uses. In addition, it was suggested that the city officials give early consideration to zoning the entire area industrially.

Prior to the meeting, the guests were taken by bus to view the Springdale Industrial Park, the recent HWP land purchases, and the City Farm land. A photo of that meeting and a subsequent editorial are enclosed herein. Because of the significance of this meeting, a full account of it from the local press follows.

Plant Zoning Proposed For West Holyoke Area

Idea Said Necessary For Industrial Growth

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Convenience To H-W Railroad Noted By Barrett As Advantage

By DON DWIGHT

Specified areas in West Holyoke, including the City Farm property, should be zoned for industry exclusively if Holyoke is to continue to go forward, city government officials and other development-concerned individuals were told last night by Robert E. Barrett, Jr., president of the Holyoke Water Power Company.

Barrett made the plea, which received some strong support from among the group, after a bus tour thru the properties involved in the future planning and a dinner at the Log Cabin.

The HWP president pointed out that the Springdale Industrial Park land is almost completely filled, and that prospects for one final plant in the area looked bright, but that any future development industrially depends on suitable building sites.

Industry, when moving or expanding, looks for many factors in the site, but must find one vital requisite, access to railroads, Barrett stated. Holyoke is fortunate to have its own railroad, the Holyoke and Westfield line, and the land which lies along the track is the last area in the city which can be developed to attract industry, he asserted.

Barrett referred particularly to the rolling farmland owned by the city and under the jurisdiction of the Welfare Commission which lies between Lower Westfield Rd. and Homestead Ave. The land is approximately 90 acres. Two other tracts, owned by the Holyoke Water Power Co., one 90 and the other 28 acres, will be proposed by the company for industrial zoning.

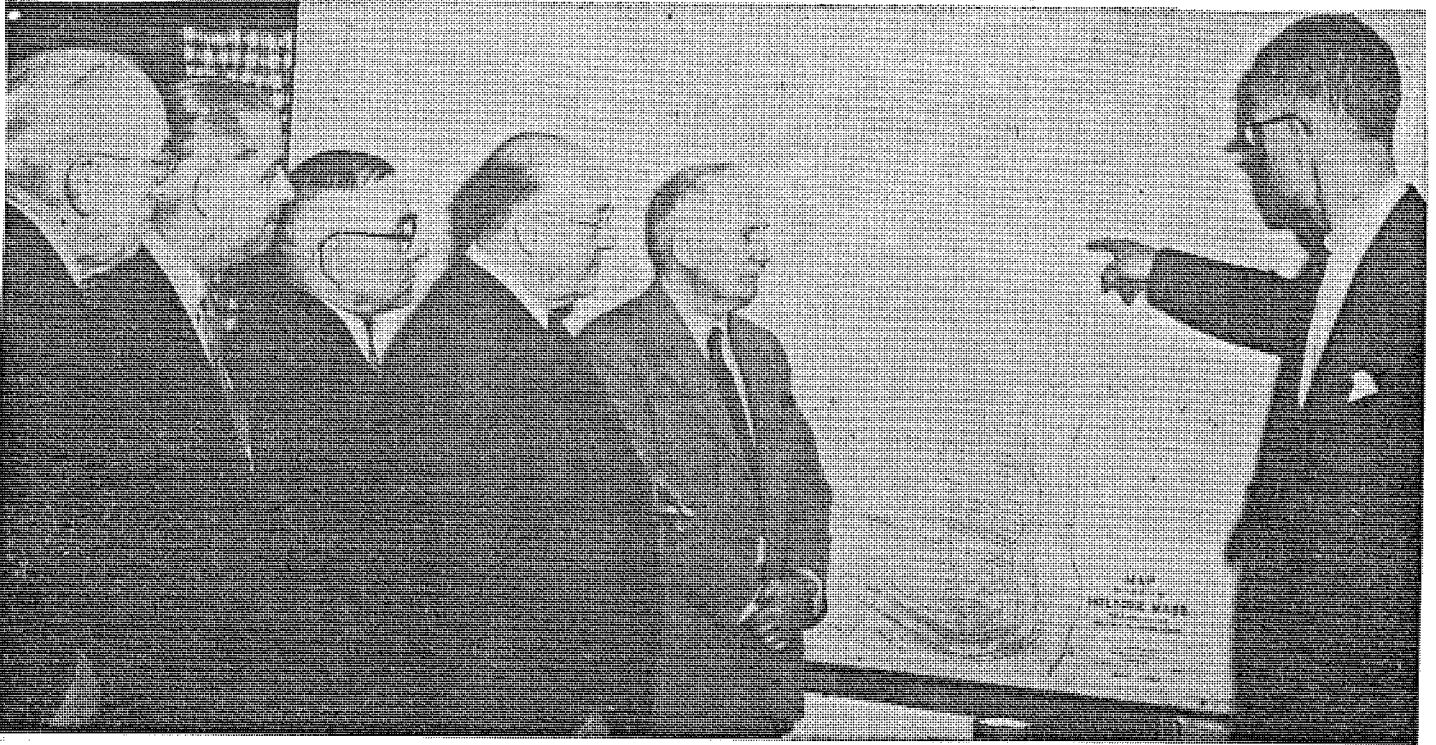
About 10 persons expressed opinions on the proposal for industrial zoning and all concurred with the need for industrial growth, and with the value of the tax dollar brought in by new plants. Barrett brought out the fact that the plant tax dollar is profit, while the residential revenue for taxation is break-even or loss for the city.

Convenience To Turnpike

Complete concurrence went with the idea expressed that the home development projects should go hand-in-hand with industrial progress. Barrett emphasized this point, but also stressed many home sites are still available while industry can go no further in Holyoke.

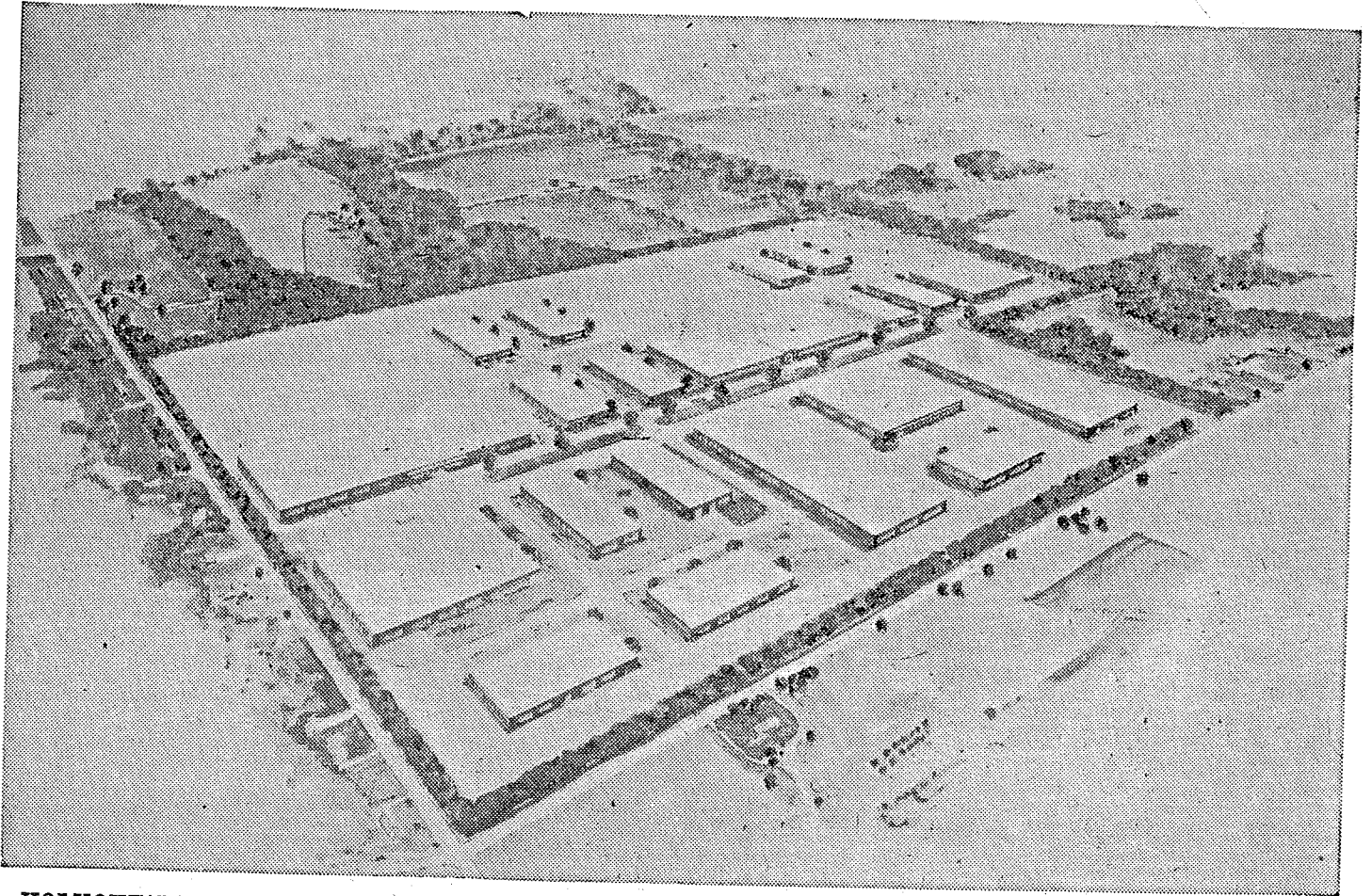
Senator Maurice A. Donahue expressed an idea brought out by the HWP head earlier in the evening when he said that the greatest industrial rebirth that the Commonwealth has experienced has developed along Route 128, and that the same result is expected from the new thruway which will open in November. He said that many cities and towns will be competing for industry, and that Holyoke will take its share if ready.

New Industrial District Envisioned



HOLYOKE'S FUTURE LIES TO THE WEST—Robert E. Barrett, Jr., president of the Holyoke Water Power Co., at right, points out the last remaining desirable area in the city for industrial expansion. The discussion took place last night at a dinner meeting sponsored by the Water Power Co. at the Log Cabin. The site in question includes the City Farm bounded by Lower Westfield Rd. and Homestead Ave., and land recently acquired by the H. W. P. Shown checking the map are, left to right, John F. Shea, chairman of the Board of Public Works; Atty. Samuel Resnic, president of the Board of Aldermen; Joseph Jubinville, City Clerk and acting Mayor; Charles H. Kent, president of the Chamber of Commerce; Atty. John S. Begley, and Barrett. 373

Proposed West Holyoke Industrial Development



HOLYOKE'S INDUSTRIAL FUTURE? The picture is a sketch of the proposed industrially-zoned area on the land now occupied by the City Farm. Holyoke Water Power Company President Robert E. Barrett, Jr., has asked municipal officials to zone the area exclusively for industry if hopes are held for any future growth of the city. Barrett has stressed that every available inch of land suitable for industry, which requires nearby railroad facilities, has been or will be filled in the imminent future, and that only the southwest corner of the city remains for development. The sketch, which shows Lower Westfield Rd. in the right foreground joining Homestead Ave. along the left hand side, gives an idea what might be accomplished. The modern one-story, smokestackless, brick plants would be constructed along lines similar to the industries located in the Springdale Industrial Park. The border of trees and foliage is planned to set the area apart from bordering residential areas. 374

We Must Expand, Or Else

The man who learns how to predict the future with accuracy is going to be quite a popular fellow. He could even become wealthy.

However, Holyoke must be content to accept the present situation of prophecy founded upon past experience, sound thinking and vision.

With this in mind, the recent proposal by the president of the Holyoke Water Power Company, Robert E. Barrett, Jr., deserves special scrutiny, for the projected industrial zoning of the City Farm is in itself a prophecy.

The Water Power head has stated the local situation briefly with the powerful argument that industry can expand in no other location, and without expanding industry the city's economy can only recede. Springdale Industrial Park is all but filled, and the southwest corner of the city, through which the Holyoke and Westfield rail line runs, is the last available land in the city suitable for industry.

We like to think that industry likes Holyoke, and that the particular climate, business and personnel-wise, makes this city a good place in which to live—and grow. However, we must realize that industry operates on the theory that growth is healthy, and it is the avowed intention or hope of any industry to be healthy. Growth in a business sense means, in most cases, a physical expansion.

A good example of a booming business which has outgrown its walls is Acme Chain. A very few years ago Acme was a small, suc-

cessful manufacturing outfit, content in its plant on Dwight St. The volume of business in the past several years has forced an expansion, and an 85,000 square-foot building is underway in the Springdale Industrial Park.

Acme Chain, we assume, wanted to stay in Holyoke, and we are certainly glad that it did, but this city would have been the jilted bridegroom had not the area for development been available. Regardless of personal wishes in the matter, the company would have been forced to move away if the physical square footage could not be found.

One more lot remains in the Springdale development, and negotiations are in progress for that spot. The question is, where do we go from here?

Suppose Industry X found itself bursting its seams, similar to Acme. Today Industry X would have no recourse but to expand elsewhere. And Holyoke and the area would be the losers.

But tomorrow? Tomorrow we may have an entirely new future if the proposed industrial zoning in West Holyoke becomes a reality. Then Industry X can find room within the limits of this city.

The irrefutable argument of grow or wither, presented so aptly by Mr. Barrett, calls for congratulations. We have reasons to be proud of our local leaders in all phases of activity, but at this moment a very special bow is in order for the long-range thinking and planning of Mr. Barrett and the Holyoke Water Power Co. 375

Zone Change

In June 1956, following the meeting with the city officials, HWP applied for an industrial zoning classification for its 28 acre tract. By February 1957, the petition had passed through the public hearing process and, in the fall of that year, the zone change passed the Board of Alderman. This was the first land to be industrially zoned in this section of the city.

Comments

The willingness of the city government to zone this tract of land for industry gave encouragement to HWP to purchase additional land as it became available.

Holyoke Regional Business Development Corporation

Formation

In early 1953, a group interested in the growth of industry in Holyoke formed a development corporation. It was chartered as a business corporation and named Regional Business Development Corporation (RBDC). Its initial capital was \$17,500 made up of five investments of \$3,500 from Hadley Falls Trust Company, Daniel O'Connell's Sons, HWP and Lawyers Samuel Resnic and John Begley. Its purpose was to foster the industrial growth of the Holyoke area. A detailed description of RBDC was carried in an article in the local press. It is included herewith.

Increase of Capital

In 1958, the capital was increased to \$50,000. Each original subscriber had doubled its investment and in addition, \$15,000 had been contributed by interested public citizens.

Holyoke Regional Business Development Corporation

In June 1962, the legislature chartered a new corporation which became the successor to RBDC. It was called Holyoke Regional Business Development Corporation (HRBDC). This new corporation was created by a special act of the legislature. It was a non-profit corporation and as such exempt from income taxes. This change in corporate status from that of RBDC meant that the lower costs of doing business by HRBDC, particularly the income tax exemption, could be passed on to those industries which it was helping.

RBDC to HRBDC

When HRBDC became operative, the functions of RBDC were transferred to it and RBDC was dissolved. At that time, its stockholders received back their original investment plus 5% interest.

Method of Operation of HRBDC

Following are the procedures that were used in the financing of an industrial project by HRBDC.

- o The basic document was a contract between HRBDC and an industry of high credit rating.
- o Under the contract, HRBDC borrowed the funds from local banks to purchase the site and to construct a building in accordance with the specifications of the industry.
- o The industry in its contract with HRBDC agreed to assume all financing charges for the project, all the real estate taxes, and a modest administrative fee to cover legal and auditing costs.
- o The security for the loan in this arrangement rested upon a mortgage on the property, the high credit rating of the industry involved and the expected fulfillment of its contract obligations with HRBDC.
- o HWP supplied to the development companies, at no charge, bookkeeping and corporate record keeping and routine administration services.

City Farm Land

In the spring of 1959, after many months of negotiation, RBDC purchased the so-called City Farm land. It was an area of about 62 acres and was bought from the municipality for \$50,000. The land had been zoned for an industrial park type of development.

At that time, the H. K. Porter Company (Porter) of Pittsburgh, Pennsylvania, had just purchased the George W. Prentiss Company of Holyoke, a manufacturer of steel wire. Porter then proposed to move the Prentiss operation to a new facility in Pennsylvania.

HRBDC, the successor to RBDC, then offered to build a manufacturing plant for Porter according to its specifications and to lease it to the company in accordance with the contractual terms previously outlined. Porter was convinced to stay in Holyoke and the facility was built on the former City Farm land.

The building was later transferred to the Worthington Corporation and subsequently to Atlas Copco. This latter company, instead of leasing the plant from HRBDC, has now purchased it.

Business Development Company To Stimulate Local Activity Formed

The Regional Business Development Corp. of Holyoke has been formed, it was reported to the executive board of the Holyoke Chamber of Commerce, at its meeting today by the special committee, George V. Wallace, Jr., chairman, appointed to give consideration to the revival of Holyoke Industries, Inc. or the creation of a similar local industrial development corporation.

Incorporators for organization purposes are Atty. John S. Begley, Atty. Samuel Resnic, Robert Holyoke Water Power Co.; George V. Wallace, Jr., president of the Hadley Falls Trust Co.; and Daniel J. O'Connell, president of Daniel O'Connell's Sons, Inc.

Initial officers of the corporation are president, Atty. Begley; vice president, Mrs. O'Connell, treasurer and clerk, Atty. Resnic and assistant treasurer, Joseph D. Kallicka, certified public accountant.

The authorized capital is 100,000 shares at a par value of \$10 each and the corporation starts with substantial commitments assuring the success of the organization effort. The shares are offered for sale to the general public within its sphere of operation. Further details will be announced shortly.

Because this is a community effort to accelerate industrial and mercantile activities in the area, in which everyone is invited to participate, Chamber of Commerce officers urged a careful reading of the purposes and powers of the corporation, which follows:

Purposes

"The purposes of the corporation shall be to promote, stimulate, develop and advance the business prosperity and economic welfare of the city of Holyoke and its vicinity; to encourage and assist thru loans, investments or other business transactions, in the location of new business and industry in the city of Holyoke and its vi-

city and to rehabilitate and assist existing business and industry; and so to stimulate and assist in the expansion of all kinds of business activity which will tend to promote the business development and maintain the economic stability of Holyoke and its vicinity, provide maximum opportunities for employment and encourage thrift; similarly, to cooperate and act in conjunction with other organizations, public or private, in the promotion and advancement of industrial and commercial developments and to provide financing for the promotion, development and conduct of all kinds of business activity.

"In furtherance of such purposes and in addition to the powers conferred on business corporations by the provisions of the General Laws the corporation shall, subject to the restrictions and limitations herein contained, have the following powers.

Powers

"a. To elect, appoint and employ officers, agents and employees; to make contracts and incur liabilities for any of the purposes of the corporation; to issue therefor its bonds, debentures, notes or other evidence of indebtedness, whether secured or unsecured, and to secure the same by mortgage, pledge, deed of trust or other lien on its property, franchises, rights and privileges of every kind and nature or any part thereof or interest therein, without securing stockholder approval.

"b. To make loans to any person, firm, corporation, joint stock company, association or trust, and to establish and regulate the terms and conditions with respect to any such loans and the charges for interest and service connected therewith.

"c. To purchase, receive, hold, lease or otherwise acquire, and to sell, convey, transfer, lease or otherwise dispose of real and personal property, together with such

rights and privileges as may be incidental and appurtenant thereto and the use thereof, including, but not restricted to, any real or personal property acquired by the corporation from time to time in the satisfaction of debts or enforcement of obligations.

"d. To acquire the good will, business, rights, real and personal property, and other assets, or any part thereof, or interest therein of any persons, firms, corporations, joint stock companies, associations or trusts, and to assume, undertake, or pay the obligations, debts and liabilities of such person, firm, corporation, joint stock company, association or trust; to acquire improved or unimproved real estate for the purpose of constructing industrial plants or other business establishments thereon for the purpose of disposing of such real estate to others for the construction of industrial plants or other business establishments; and to acquire, construct or reconstruct, alter, repair, maintain, operate, sell, convey, transfer, lease or otherwise dispose of industrial plants or business establishments.

"e. To acquire, subscribe for, own, hold, sell, assign, transfer, mortgage, pledge or otherwise dispose of the stock, shares, bonds, debentures, notes or other securities and evidence of interest in, or indebtedness of, any person, firm, corporation, joint stock company, association or trust, and while the owner or holder thereof to exercise all the rights, powers and privileges of ownership, including the right to vote thereon.

"f. To mortgage, pledge or otherwise encumber any property, right or thing of value, acquired pursuant to the powers contained herein as security for the payment of any part of the purchase price thereof.

"g. To cooperate with and avail itself of the facilities of the Department of Commerce and any similar governmental agencies; and to cooperate with and assist, and otherwise encourage organizations in Holyoke and the various communities in the vicinity thereof in the promotion, assistance and development of the business prosperity and economic welfare of such communities.

"h. To do all acts and things necessary or convenient to carry out the powers set forth herein."

Other HRBDC Plants

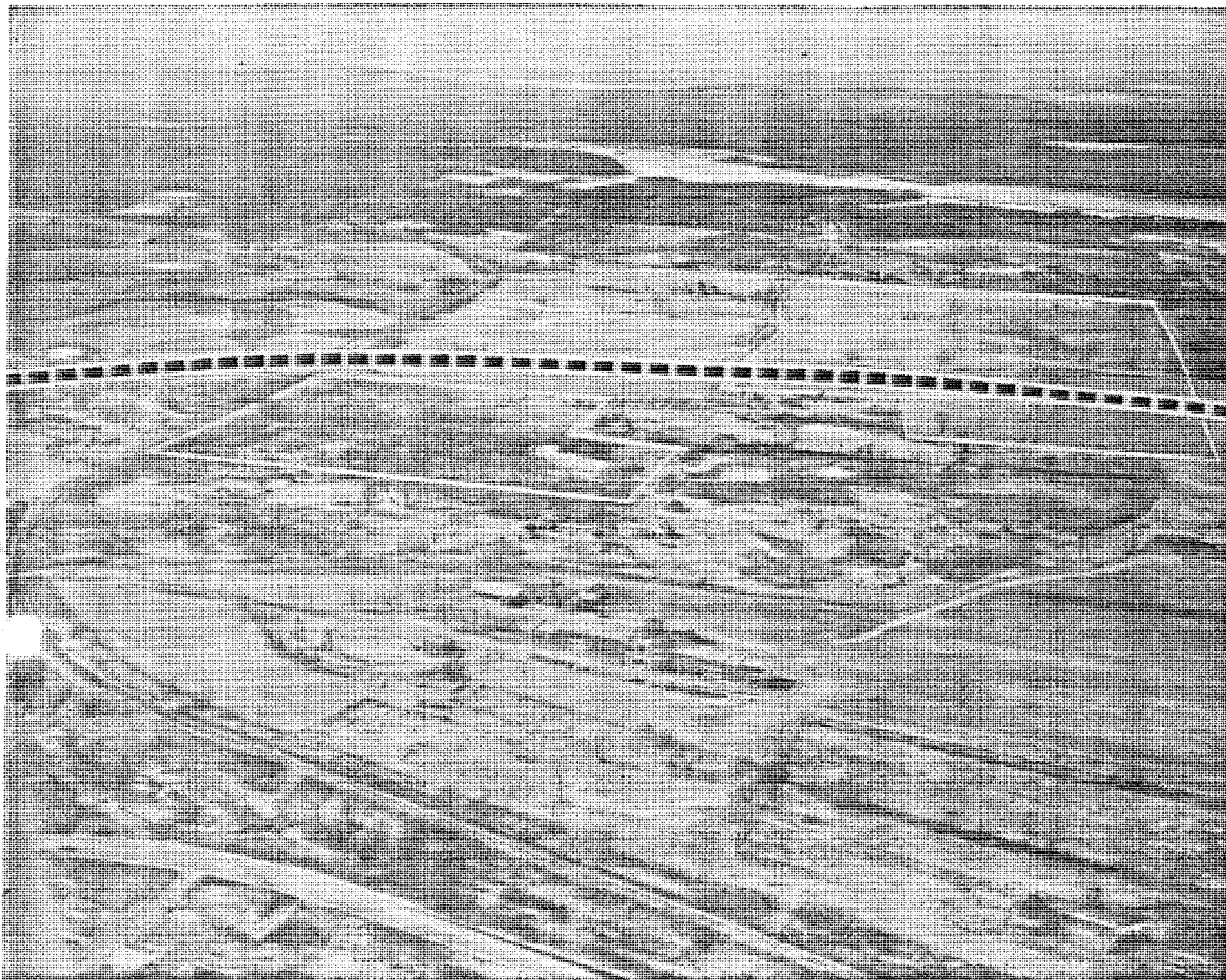
The only plant owned by HRBDC is that of Curtis Business Forms in Holyoke. Three additional plants built by HRBDC, but subsequently purchased by others, are those now owned by Ampad on Lower Westfield Road and Electronic Interconnect Systems and Ren Electronics in South Hadley.

Comment

The original purpose of RBDC and HRBDC of facilitating industrial growth was successful. Five industrial buildings are in existence today, which might well not have been, without its assistance. However, at this writing, other forms of low cost financing, such as industrial revenue bonds, now fulfill the needs formerly met by these two development companies.

Aerial View of HRBDC and HWP Lands

Included herewith is an aerial photograph of the two parcels of land which were the first to be industrially zoned in this section of Holyoke. The parcel outlined in white at the left of the picture is the HWP tract. The parcel at the right is the "City Farm" tract. The portion of the latter site on the near side of the I-91 location was sold to the Holiday Inn by HRBDC.



Where Holyoke Can Grow Industrially

VITALLY NEEDED TO KEEP HOLYOKE ABREAST—This aerial shot of the farm land west of the Holyoke Home Hospital shows the former City Farm land which is going to be re-zoned for a new industrial park, a development most vital to the welfare of Holyoke. The land in question is the white-bordered area off to the right, while the tree packed white-bordered area on the left, less ideal for development, is owned by the Holyoke Water Power Co. The dotted line thru the center is the proposed route of the new Interstate Highway 91 which is going to cut thru some of the needed property. This excellent shot, taken by Neil Doherty, shows the Holyoke-

Springfield road at the extreme bottom while the curving line to the left is the Holyoke & Westfield RR. The road coursing between the two designated plots of land is the Lower Westfield Rd., while on the top of the picture is the Ashley Ponds Reservoir and further on the Hugh McLean Reservoir. Holyoke has all but exhausted all its available industrial land and city officials have been harrassed by potential industrial builders here going to other communities with industrial parks. Much additional land ideal for future industrial expansion is in the general area but is unavailable at present. 377

Other Holyoke Land PurchasesEast Side of Whiting Farms Road

HWP purchased from William Whiting in 1962 a tract of 70 acres of farm land. That land spanned what is now known as Whiting Farms Road. On the HWP land, which is on the easterly side of the road, there are now located the plants of the local daily newspaper, a printer of bank checks and a computer center for a consortium of banks.

West Side of Whiting Farms Road

The HWP lands on the west side of Whiting Farms Road were made up of part of the William Whiting tract and of a purchase from Frank Cataldo in 1966 of 28 acres. The present industries located there are a distributor of electric equipment, a manufacturer of business forms, an office of a large paper converter, and a manufacturer of printing rolls for the publishing industry.

Mt. Tom Site

As a part of its program of purchasing land suitable for industrial development, HWP purchased from the Boston and Maine railroad, in late 1954, an 80-acre tract of land located between its railroad right of way and the Connecticut River in the northerly part of Holyoke. The price was \$30,000. It was already zoned for industry. A news account of the purchase is included herewith.

This tract was subsequently considered by HWP as a site for a pulp mill. It is now the location of its Mt. Tom power plant.

In 1961, the tract was enlarged to about 130 acres by the purchase of 48.5 acres of contiguous land from P. J. Kennedy.

Comments

The HWP policy of buying land with potential for future uses, particularly for industry, has always been profitable. There are two reasons why this has been true. They are:

- o The natural inflation which causes at least a gradual rise in its value along with all other commodities.
- o The law of supply and demand. As the amount of land available decreases the value of the remaining land increases.

Power Co. Purchases 80 Acres For Industry

O'Hare's Grove Area To Be Filled In Long-Range Development Program

The Holyoke Water Power Co. has bought the 80 acre tract of land comprising O'Hare's Grove with the long range plan of developing it for manufacturing. This land, extending north from the P. J. Kennedy proper-

ty in Smiths Ferry to Mount Tom Junction, covers the area between the Boston & Maine Railroad tracks and the Connecticut River. The B & M has owned the property for many years. In making the sale to the HWP, announcement is made that both are actively interested in the industrial development of this area and have worked closely together to conclude this transaction.

E. F. Reed, manager, Real Estate-Industrial Department of the B & M has expressed the view that the industrial development of this property can probably be more effectively accomplished through the activities of the Holyoke Water Power Co. than in any other way because of their extensive experience in this field in the Holyoke area. Reed has further stated that "The Railroad is very hopeful that this parcel of land will prove attractive to new or expanding industries and that the Railroad's industrial development department will assist in any way that it can in bringing new industries and new payroll to the Holyoke area."

The long term plans of the power company for this area include an extensive program of land filling to raise certain factory sites above flood water heights.

"There is nothing specific planned right now. We are looking into the future and are investing now for that time" said Robert E. Barrett, Jr., president of the HWP.

There are about 20 summer camps in that area, that also includes what used to be known as Collopy's Beach and later as Kane's Beach. These cottages are tenants-at-will on leased land. The so-called O'Hare's Grove center during World War II was used as headquarters for the Worthington Corp. Athletic Assn.

For the past decade, a portion of this tract has been used by the city for dumping refuse that can't be consumed in the municipal incinerator.

While the power company is planning to fill the land to grades above flood level, measures will be taken to prevent erosion of the river bank at the northerly end of the tract, near Mount Tom Junction, where the river swings around the bend.

"When fully developed, the site will offer to industrialists an area with excellent railroad and highway facilities, availability of large quantities of process water, and nearness to three centers of population, Holyoke, Easthampton and Northampton.

The purchase price was not announced. 378

Interstate I-91

Location

In late 1958, it became quite certain that highway I-91 was going to pass through the proposed new industrial area of Holyoke where HWP had begun purchasing land.

I-91 Lower Westfield Road Interchange

After the location of I-91 had been tentatively decided upon, it became evident in Holyoke that an interchange at Lower Westfield Road was critical to the successful development of the area. To HWP, it was clear that it should use its best efforts to try to convince the State and Federal officials of the need for that interchange.

First Conference with Mass. DPW

In mid summer of 1959, City Engineer Maher and REB II went to Boston to discuss the interchange with representatives of the Department of Public Works and their consulting engineers, Whitman and Howard. The public officials made it clear that an interchange at Lower Westfield Road was very much in doubt. The reasons were:

- o Sufficient traffic could not be generated at this point to justify an interchange.
- o There was no way to get access to Route 5.

Following the conference, HWP decided to retain consultants to help prepare the Holyoke case.

Consultants

HWP engaged Wilbur Smith and Associates of New Haven to assist in justifying the expected traffic at the interchange. That firm was well known as able traffic consultants and had done much work for the developers, Cabot, Cabot and Forbes, and thus, were familiar with the production of traffic by industrial parks.

HWP also retained the local engineering firm of Tighe and Bond to develop a way to make access available to the proposed interchange from Route 5.

At the same time, the company was keeping Congressmen Conte informed of its concern by frequent phone calls to William Dwight Jr. of Holyoke, his Washington Administrative Assistant. At Dwight's suggestion, HWP arranged an appointment with C. E. Hale of the Federal Bureau of Roads in Boston to discuss the need for the interchange.

Meeting with Federal Bureau of Roads

On November 16, Mayor Resnic, City Engineer Maher, Lawyer Begley and REB II met in Boston with Mr. Hall. The meeting failed to change the negative attitude of the Federal Bureau.

Meeting with Commission of Bureau of Public Roads Armstrong in Washington

On December 11, REB II and members of HRBDC flew to Washington to meet with Commissioner Armstrong of the Federal Bureau of Public Roads concerning the I-91 interchange. A member of Wilbur Smith, Associates, the traffic consultants, accompanied them.³⁷⁹

In early February of 1960, Donald Dwight of Holyoke, then Massachusetts Commissioner of the Department of Public Works, reported to REB II that Congressman Conte felt that Commissioner Armstrong of the Federal Bureau of Public Roads now favored the interchange.

Decision of Route Location Delayed

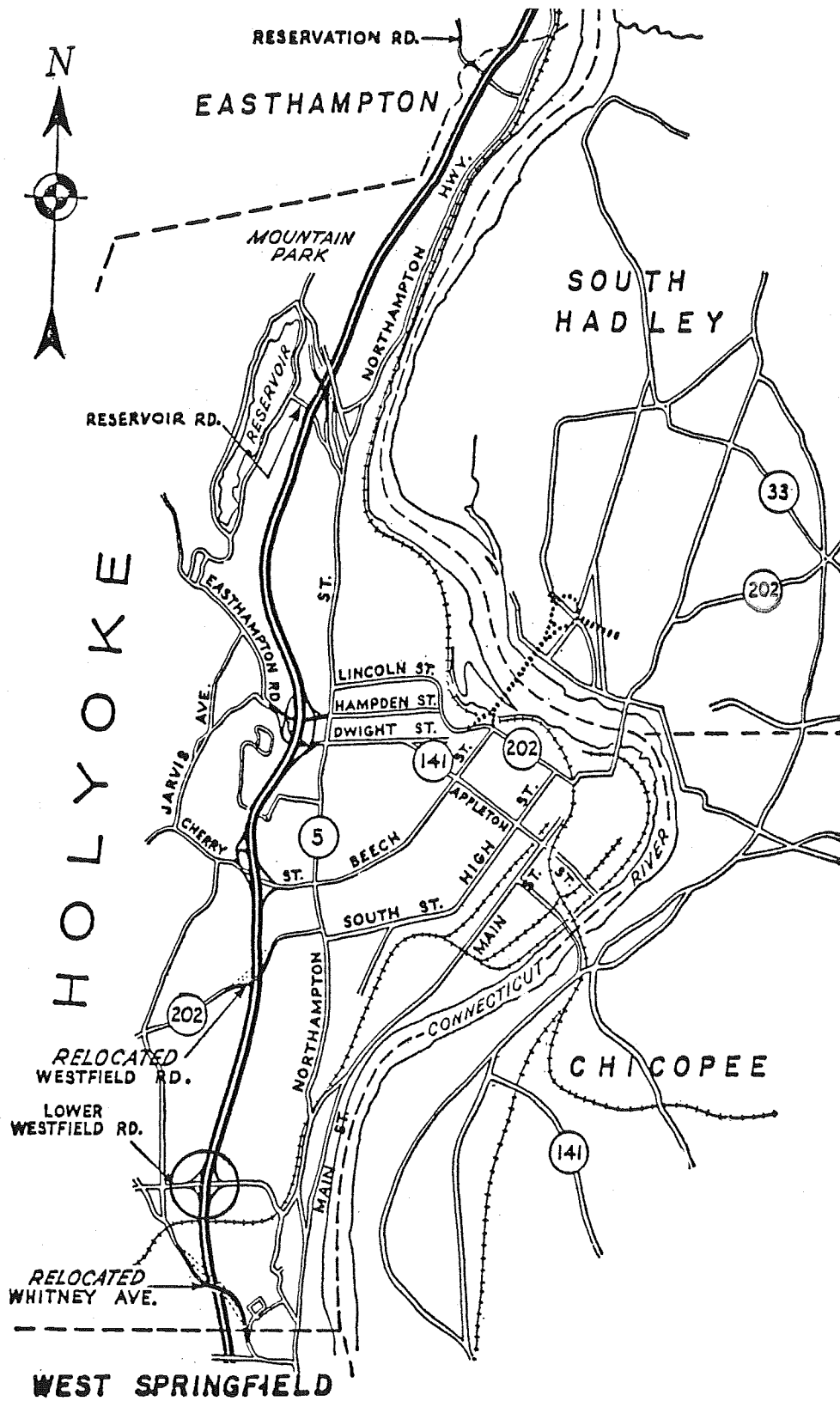
The routing of I-91 through Holyoke had aroused much controversy. One group wanted the highway to stay westerly of the built up industrial area for its entire distance. The other group wished to have a portion of the route pass close to the downtown commercial area of the city as an aid to the merchants.

The resolution of the controversy required the time to study the alternatives. As a result, the final decision was delayed until January 1962. When the announcement was made, it located the route westerly of the built up residential area. It also included the much sought for interchange at Lower Westfield Road. A plan of the route accompanied the announcement and is included herewith.

Summary

The following comments concerning the efforts to have the I-91 interchange at Lower Westfield Road should be made:

- o Much of the preceding discussion concerning the I-91 interchange involves the role of HWP as would be expected in this history of the company.
- o Its major contribution to the effort was that of retaining capable traffic and engineering experts to develop a technically sound justification of the interchange for the governmental officials to consider.
- o However, great credit for finally changing the minds of those officials must go to the many Holyoke citizens who used their influence with elected and appointed government officials in behalf of the interchange. Holyoke citizens have much expertise in those directions.
- o In retrospect, as these words are written in 1988 the decision to build this interchange was completely justified. The two reasons for denying the interchange originally, namely, insufficient traffic to justify it and lack of ability to connect to Route 5 have both subsequently been proven to have had no validity.
- o A visitor today to the section served by the interchange would find a commercial and industrial area representing millions and millions of invested dollars. That area would be lifeless without the interchange.
- o This interchange must be by far the busiest one on the entire length of I-91 north of Springfield.



THINGS TO COME — This is the latest map dealing with Interstate Highway Route 91, as it courses north from the Holyoke-West Spring-

field line to just beyond Reservation Rd. at the Mt. Tom Reservation in Smiths Ferry.

The circle at Lower Westfield Road indicates the slip on-slip off interchange for the industrial area.

Holyoke Transcript
January 6, 1962

Chicopee Industrial Development Corporation

By 1956, the success of HWP's Springdale Industrial Park had caused City of Chicopee officials to discuss with HWP a similar venture for their city. At the same time, the construction of the Massachusetts Turnpike was beginning to create opportunities for industrial land uses near to it in Chicopee.

Wells Farm

A 120-acre farm, closely located to the proposed Turnpike, came on to the market. Because of its potential as a site for industry, the Hadley Falls Trust Company (HFT) and HWP formed the jointly owned Chicopee Industrial Development Corporation (CIDC). CIDC then proceeded to take an option on the farm in order to keep it away from potential real estate developers.

Zoning

CIDC immediately petitioned the Chicopee Board of Alderman for an industrial zoning classification. At two public hearings, no opposition appeared. During the fall, the Board of Alderman granted the industrial classification.

Cabot, Cabot & Forbes (C.C.&F)

The land optioned by CIDC was strategically located near the Springfield exit of the Turnpike. The management of C.C.&F had been well known to the HWP staff for several years because of its industrial development work. CIDC felt that C.C.&F was much better prepared to market the site than it was. Accordingly, the property was sold to C.C.&F in early March 1957 shortly before its option was to expire.

The site has proven strategic. It and other lands in its vicinity have become sites for small industries, for inns such as Quality and Ramada and for other commercial uses.

Wall St. Journal

The Wall St. Journal is printed in its plant located on the site. From there it is distributed each day throughout New England.

HWP's Role

CIDC, formed jointly by HWP and HFT, was the catalyst which caused a commercial and industrial area to be developed for the City of Chicopee. By recognizing a strategic industrial site, and then guiding it into hands of capable developers, CIDC created a lasting tax income to the city, and a significant electrical load for HWP's customer, the Chicopee Electric Light Department. Neither HWP nor HFT made any profit from the transactions.

South Hadley Industrial Land

In 1962, HWP purchased a tract of 26.5 acres of land in South Hadley on Old Lyman Road. This property was contiguous to land along New Ludlow Road which was developing into a new commercial and industrial area. The purpose of the acquisition was to reserve a site in the town where small industries could be located.

This area has become a location for several building contractors as well as a small machine shop. The entire tract has been sold to others, the original goals of HWP having been fulfilled.

A Pulp Mill

Historical Background

The first venture in Holyoke to produce pulp from wood fibres for making paper occurred in 1876. A pulp mill using spruce and poplar wood chips and the so-called soda process was built by John and David Newton.

In 1880, the Chemical Paper Company (Chemical) mill was built. It was able to convert large amounts of wood fibres into pulp to supply its paper machines. The machinery of the Newton pulp mill was subsequently acquired by the Chemical and became part of its pulp making facility.

In 1892, the Mt. Tom Sulphite mill along the Connecticut River just north of Holyoke was built. It supplied pulp to many Holyoke mills until it shut down in 1947.³⁸⁰

Why a Pulp Mill for HWP?

The legislative act establishing HWP gives it broad corporate powers among which is the opportunity to engage in manufacturing. Its predecessor company, the Hadley Falls Company, whose charter was the basis of that of HWP, built and operated a large textile mill and a large machine shop in Holyoke.

In the early 1930's, HWP studied, in depth, the making of oxygen and hydrogen by electrolysis, as a means of absorbing excess hydroelectric energy. The results of the study were negative. However, the search for manufacturing opportunities continued.

A pulp mill would diversify the business of HWP and at the same time be a large user of its electric power.

The Rationale for Hardwood Pulp

In 1954, there were enough favorable circumstances to warrant a study by HWP of the manufacture of pulp from hardwood sources. Some of these were:

- o Recent technological developments had occurred in the manufacture of pulp from hardwoods which made the process more economically feasible.

- o The belief that there were large quantities of hardwood within a reasonable hauling distance of Holyoke to supply a pulp mill.
- o The assumption that there was a sizeable market for pulp among the paper mills in Western Massachusetts.
- o The availability of large quantities of water from the river for use in the manufacturing process.
- o A connection with Perkins - Goodwin Company of New York City which had large pulp and paper interests. This would give HWP access to expert technical advice and assistance.

Forest Survey

It was essential, early on, to determine whether sufficient hardwood was available on a sustained yield basis in the area to support a pulp mill. One of the best sources of that information was the James Sewall Company of Old Town, Maine. Accordingly, they were interviewed and retained by HWP.

The firm was able to bring to the problem materials and techniques unique to forestry surveys. Much of the information was obtained from aerial photography. The end result of their work was that there was sufficient hardwood in the forests, within an economic hauling distance, which was considered to be within a 50-mile radius of Holyoke.

Publicly Owned Forests

Much of the forest land in Western Massachusetts and lower Vermont and New Hampshire is owned by the Federal Government, the State Governments and the Metropolitan District Commission at Quabbin Reservoir.

Preliminary negotiations by the James Sewall Company were carried on with United States Forest Service representatives concerning the long term availability of hardwood trees. Subsequently, two representatives of the U.S. Forest Service spent a day at HWP discussing the potential raw material supply. The preliminary assessment by the Forest Service representatives was sufficiently favorable to warrant a continuation of the HWP efforts.

Private Forests

In addition to publicly owned forests in the potential pulp mill supply area, there is a large number of small wood lot owners. Collectively these persons own a total forest acreage sufficient to be an important factor in the supply of hardwood for a pulp mill.

Throughout the study period, however, no satisfactory way was found by HWP as to how to assure the project of a reliable source of wood from different wood lot owners, probably numbering in the hundreds.

Customer Survey

Each paper mill in Holyoke was visited in mid 1955 by REB II to try to gain a realistic appraisal by its management as to whether a local market existed for the pulp.

The mills visited were: American Writing Paper, Chemical, Newton, Franklin, Parsons, Whiting, Whiting and Company, Valley and Texon. Each mill owner gave solid support to having a local pulp mill.

Perkins - Goodwin

The interest of Perkins - Goodwin in the pulp mill project brought, not only the technical experience of their firm, but also the attention of others who had business relations with it. Among these were Anderson, Clayton of Houston, Texas; Merritt, Chapman and Scott, (MC & S) New York contractors; and Dr. Alfred Neal of the Federal Reserve Bank of New England.

The Site

At an early stage of investigation in 1954, one of the Perkins - Goodwin engineers came to Holyoke to look at the HWP Parsons paper mill as a possible pulp mill site. However, in November of 1954, as part of its program of buying land with industrial potential, HWP had purchased a tract of 80 acres along the river in its northern part of the city from the Boston and Main railroad. HWP then suggested to Perkins - Goodwin that this new land acquisition be considered as a pulp mill site. By early spring, engineers from MC & S had pronounced the 80-acre site as excellent for a pulp mill.

Consultant

By mid 1955, it was decided that the time had come to prepare a report on the pulp mill project that could be used as a foundation for either recommending, or not, that steps to proceed be taken. A Dr. Shepard, retiree of the Federal Reserve Bank, was retained to write the report. In early 1956, Mr. Shepard reported that he was optimistic about the possibility of pulp mill locating on the HWP site.

Change in Plans

While the report on the pulp mill was proceeding to its conclusion, another report concerning the electric generating needs of HWP was underway. As this latter report was being written, it became evident that the 80-acre tract for the pulp mill had a far better use for HWP as a site for a large electric generating station.

Commentary

It is fortunate that the pulp mill did not proceed because:

- o The local demand for pulp has decreased greatly. Of the nine Holyoke mills canvassed in 1955, only three remain today.
- o The rigid purity requirements for water discharges into the river today would have made the problem of treating the pulp mill effluent a difficult one.
- o The problem of acquiring lumber from so many small woodlot owners, would appear today to be an even greater problem than it did in 1955.

However, this chronicle of the pulp mill illustrates that decisions made originally for one specific purpose may prove, in the end, to be of far greater value to the company for reasons not originally contemplated. To illustrate:

- o The 80-acre site purchased from the B & M Railroad was bought as just one of several such purchases being made at the time as locations for industries. It was part of a program of HWP to reserve land on which future electric customers could build their plants.

- o Much effort was put into trying to develop such a customer in the form of a pulp mill, a large user of electric power.
- o However, when it became evident that HWP was going to need more electric generating capacity, it realized that this 80-acre tract was one of the best sites in New England on which to build a large modern power plant.
- o The site was by far more valuable to HWP for its own uses as a power plant than it ever could have been as the location for industries using its electric power.

Nuclear Power

During 1952, the peaceful use of atomic energy for the generation of electricity was beginning to be considered by the electric utilities. It was anticipated that the New England companies would aggressively seek to develop this new energy source.

However, it was not until mid 1954 that a group of eleven of the larger companies had been formed to build a New England nuclear power plant. HWP had been excluded from the group.

HWP immediately objected strenuously to its exclusion. It did so by meeting with the executive officers of the New England Electric System (NEES) who were the leaders of the project. The reason given for the exclusion was the small size of the company.

The company expressed its objection to its neighboring utilities in Western Massachusetts and Connecticut. HWP representatives also went to the Atomic Energy Commission in Washington and met with the Deputy General Manager. At each conference, there was a sympathetic response to the HWP position. The AEC officials subsequently telephoned the NEES officials to discuss the position of HWP.

As a result of the objections raised by HWP, the publicity announcing the nuclear project was changed to include the words, "it is hoped that other companies can join the project later."

The most helpful assistance came from Western Massachusetts Electric Company (WMEC) which offered to share with HWP its allotment of the nuclear energy output from the new plant in proportion to the respective loads of the two companies.

The newspaper article of the formation of the Yankee Atomic Electric Company, and the HWP announcement to employees are included herewith.

ATOMIC POWER PLANT TO MAKE ELECTRICITY FOR N. E. IS PLANNED

New Corporation Is Established to Promote Project

**Western Mass. Co. One of
11 Organizers; Current
Would Be for Home, Com-
mercial, Industrial Use**

A group of New England electric companies representing over 90 per cent of the electric output in the six-state area yesterday announced the organizing of a new company to generate electricity by means of atomic energy.

Cadwell Director

Among the companies is the Western Massachusetts Electric. Its president, Howard J. Cadwell of Greenfield, is a director of the new corporation.

It will be known as the Yankee Atomic Electric Co. and it proposes to enter into discussions with the United States Atomic Energy Commission looking toward construction of an atomic power plant in New England capable of turning out electricity for home, industrial and commercial purposes.

September 17, 1954

NOTICE TO ALL EMPLOYEES

In connection with the announcement in this morning's newspaper concerning the proposed atomic electric power plant in New England, we felt you would be interested in the following statement which has been prepared for release to the newspapers today:

"A further announcement was made today by Howard J. Cadwell and Robert E. Barrett, Jr., presidents respectively of Western Massachusetts Electric Company and Holyoke Water Power Company. They said that it is contemplated that Western Massachusetts Electric Company's participation in the output of the proposed atomic electric power plant would include provision for the Holyoke Water Power Company.

"Based on present plans, the Holyoke company's share would be proportionate to that company's sales as related to those of Western Massachusetts Electric Company.

"It is further contemplated that qualified Holyoke Water Power Company personnel would be associated in the development phases of the atomic power project".

Robert E. Barrett Jr.

HOLYOKE TRANSCRIPT, September 17, 1954

To Include HWP

Power Companies Form Atomic Firm

A proposed atomic electric power plant in New England, it was learned today, will include provision for the Holyoke Water Power Co.

Announcement of the new atomic plant came last night with the disclosure that a group of New England electric companies, representing over 90 per cent of the electric output in the six New England states were forming a new company to generate electricity by means of atomic energy.

Among the companies is the Western Massachusetts Electric which has its main offices in Springfield and which furnishes power to some 55 communities in this general area, including the towns of Easthampton, Westhampton, Southampton as well as Amherst and Hadley. It also furnishes power to Springfield and the towns in that general area. The president of the Western Mass. Electric is Howard J. Gadwell of Greenfield, who is one of the directors of the new corporation.

That the new atomic energy power is not of the immediate future is contained in the general newspaper release which states that it may take several years of experimental work before there is any determination as to what extent it can be used by New England electric companies.

A high State House official informed the Transcript-Telegram today that the new plant will be located, in all probability, in Western Massachusetts. Although there is no positive decision on the site, it will probably be located in the Deerfield River Valley. This type of location is desired because a rural locale is the best possible spot for a plant of this type.

President Gadwell of Western Mass. Electric and Robert E. Barrett, Jr., president of the Holyoke Water Power Co. today in a joint announcement said that it is contemplated that the Western Mass. Electric's participation in the output of the proposed atomic electric

power plan would include provision for the Holyoke power company.

They said that based on present plans the Holyoke company share would be proportional to that company's sales as related to those of Western Mass. Electric Co.

It is further contemplated that qualified Holyoke Water Power Co. personnel will be associated in the development phases of the atomic power project. It is assumed that there will be no major physical changes necessary at the Holyoke power company.

Observers say that it is significant that New England is moving into the production of electricity from atomic energy and that Holyoke will be a part of the big program.

The new corporation will be known as the Yankee Atomic Electric Co. and it proposes to enter into discussions with the United States Atomic Energy Commission looking toward construction of an atomic power plant in New England capable of turning out electricity for home, industrial and commercial purposes.

Electric utility organizations proposing to invest in the project are: New England Electric System, Boston Edison Co., Connecticut Light & Power Co., Hartford Electric Light Company, The Connecticut Power Co., Western Massachusetts Electric Co., Public Service Co. of New Hampshire, Eastern Utilities Associates, New England Gas and Electric Association, Central Vermont Public Service Corporation and Central Maine Power Co. Other companies may be added to this list at a later date.

Organization of the new corporation was announced by the company's president, William Webster, simultaneously with the filing of applications with the Massachusetts Department of Public Utilities for preliminary approvals in connection with the forming of the corporation.

Webster, who is also executive vice president of New England Electric System, said the new corporation hopes to work out arrangements whereby an experimental nuclear power plant can be located in New England at an early date.

"Through the construction and operation of the proposed plant," Webster said, "we expect to explore the economic and practical aspects of this type of electric generation. It may take several years of experimental work before we can determine to what extent atomic energy will be used in the future by New England's electric companies. The potentialities are unlimited, because the concentrated energy possessed by atomic fuels will simplify problems of plant location, fuel transportation and storage. We believe the new fuel is going to play an important role in New England's electric future and we feel that the lessons learned in the plant will produce the answer as to the extent we may depend upon electricity from the atom in formulating our short and long range expansion plans."

Webster pointed out that companies investing the necessary equity capital in the new organization plan to buy and distribute the entire output of the project, subject to approval of the State and Federal regulatory bodies. He said that if the proposed arrangements can be worked out satisfactorily, there is every reason to believe that within the foreseeable future the homes and factories of New England will be supplied in part with electric power from a plant deriving its heat from nuclear fission.

Directors of the new corporation are: Austin D. Barney of Hartford, Ralph D. Booth of Boston, Howard J. Cadwell of Greenfield, Floyd D. Campbell of Cambridge, Charles A. Coolidge of Boston, Albert A. Cree of Rutland, Vermont, Thomas G. Dignan of Boston, Sherman R. Knapp of Berlin, Connecticut, Irwin L. Moore of Boston, Guido R. Perera of Boston, Avery R. Schiller of Manchester, New Hampshire, William Webster of Boston and William F. Wyman of Augusta, Maine. Officers, in addition to Webster, are Harry Hanson, treasurer and Leeds A. Wheeler, clerk.

Mt. Tom Power PlantLoad Growth and Need for More Electric Generation

The following comparison gives an indication of the rate of growth of the HWP electric load:

	<u>1955</u>	<u>1954</u>	<u>%</u>
Peak Load-kW	41,800	36,100	16
	<u>1956</u>	<u>1955</u>	<u>%</u>
<u>Firm Sales-MWH</u>	<u>1st Quarter</u>	<u>1st Quarter</u>	<u>Increase</u>
Industrial Customers	23,553	19,569	20.4
City of Chicopee	18,619	16,823	10.7
Westover Air Force Base	5,051	4,333	16.6
Town of South Hadley	<u>6,367</u>	<u>5,201</u>	<u>22.4</u>
	53,590	45,926	16.7

The rate of growth, in early 1956, of both the electric peak load and the kilowatt hour sales was so great that management recommended to the directors that a study be undertaken immediately of three possibilities for new electric generation. These were:

- o A second hydroelectric generator at the dam.
- o Expansion of its Riverside steam electric station.
- o A new power plant constructed in conjunction with neighboring utilities.

Report to HWP Directors - Mt. Tom Project 381

In June 1956, a report was prepared for the directors. It found that the most promising solution to the need for additional generating capacity was for HWP to make arrangements to share with others in the output of a large modern generating station. The report also stressed that HWP had several unique advantages which suggested that it should take the lead in promoting such a project. Reasons for arriving at such a conclusion follow.

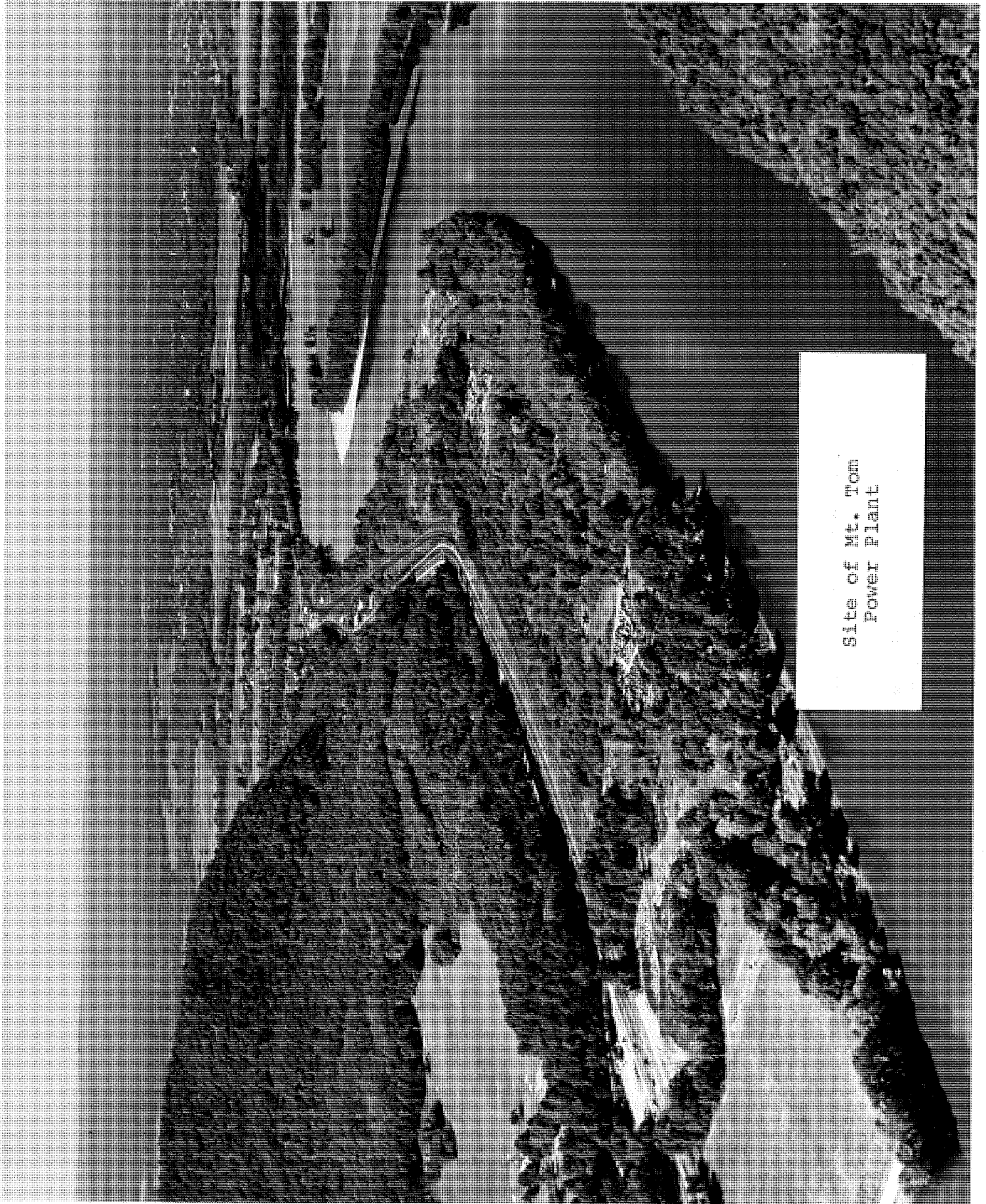
Unique Advantages of Mt. Tom Site

In 1954, as part of a program of acquiring suitable sites for industry, HWP had purchased from the Boston and Maine (B&M) Railroad an 80-acre tract of land in the northerly part of the city. It was named the Mt. Tom site. It was located between the railroad and the river.

During 1955 and through early 1956, the Mt. Tom site, as has been earlier noted, was actively being considered as a location for a hardwood pulp mill. It had now become clear that this site also was an excellent location for a large fossil fuel electric generating station. Here are some its advantages:

- o Deep Water: Because of the need for cool water in the summer for condensing the steam of the turbine generator, a location next to a deep water section of the river is important. The river at this site has probably as great a depth as exists between Holyoke and Turners Falls.
- o Size: The site was considered by the consulting engineers to be large enough to contain several units of 150,000 kW capacity.
- o Zoning: The site was already zoned for industry.
- o Transportation: The site was adjacent to Route 5 giving it good access to auto and truck transportation. It was also adjacent to the main line of the B&M Railroad making possible on-site delivery by rail of oil or coal for fuel. As of this writing, the site also has nearby access to Interstate Highway I-91.
- o Nearness to Electric Transmission Lines: A double circuit 69kV line of WMECO crosses the site. A double circuit 115KV line of the same company is within 4 miles of the site.

The Mt. Tom site met all the requirements for the location of a large modern electric power station. It was one of the very few such sites remaining in Western Massachusetts. As the owner of the site, HWP was in a strong position to suggest to neighboring utilities that it become the location of such a power plant. An aerial photograph of the site as purchased is included herewith.



Site of Mt. Tom
Power Plant

Financing Advantage of HWP

In 1956, the financial structure of Massachusetts utilities required a debt component which was no greater than the capital stock plus surplus. In other words, they were restricted to 50% debt - 50% equity by law.

In contrast, HWP was chartered as a manufacturing corporation in 1859. By special act of the legislature in 1938, it was empowered, among other things, to:

"issue from time to time such amount of bonds, coupon notes, and other evidences of indebtedness payable at periods of more than one year after date thereof as the Commissioner of Corporations may from time to time determine to be reasonably necessary for its corporate purposes".

HWP was not restricted to 50% debt - 50% equity financing. With the approval of the Commissioner of Corporations it could finance with a higher debt component. That would mean lower cost financing for the power plant.

Tax Advanatage of HWP

In Massachusetts, the machinery used by utilities is taxed by local communities. The tax rate is the same as that paid on the utility's real estate. However, the machinery used by industries is taxed by the state at a lower rate than those of the communities. This was a further incentive for the use of the Mt. Tom site.

Preliminary NegotiationsDiscussions with Neighboring Utilities

In preparing the Mt. Tom project report for the HWP directors, the management met with officials of both Western Massachusetts Electric Company(WMECO) and New England Power Company(NEPCO). The purpose of those meetings was to determine whether those two companies would be interested in jointly participating in a large generating station at the Mt. Tom site and, if so, what type of corporate structure would be preferred.

Initial Interest

The report to the directors made clear that there was definite interest in the project by WMECO and NEPCO. It also made clear that both of them, as well as the HWP management, preferred that the company build, finance and own the plant.

Financing

The financing for the project would be borrowed funds. The collateral for those funds would be a mortgage on the HWP property. Purchase power contracts from WMECO and NEPCO would be pledged as additional collateral.

Directors' Actions

At the June 27, 1956 meeting of the directors, the president was authorized to continue the study of the proposed Mt. Tom power plant, to retain outside counsel and to spend such funds as might be necessary.

Areas of Responsibility

It was realized by HWP that if a Mt. Tom power plant was to succeed it would require a maximum of cooperation and participation by the management of the three participating companies. Each of the three had the same objectives. These were to have a modern, efficient and economical source of electric power available by July 1, 1960.

The overall responsibility for reaching this goal was assumed by REB II, Howard J. Cadwell, president of WMECO and Robert Brandt, vice president of NEPCO. In each case, they were assisted by members of their engineering and financial staffs.

Common Concerns

- o Engineering Design
Each participant had experience in power plant construction. Concerns or suggestions arising from that experience were shared with the consulting engineers, Jackson and Moreland. Frequent meetings were held by Cadwell, Brandt and REB II.

o Contract Principles

Early priority was given by the three companies to formulating the basic principles of a three party electric contract. Such a document would be the basis upon which discussions could begin with the lending institutions and with the government regulatory agencies. It was also to be the foundation for the final negotiated contract among the companies.

HWP Responsibilities

Because HWP was to be the owner of the project, it was agreed by the three participants that it should assume the responsibility for obtaining the required financing. It would also seek the necessary government approvals. Routine contacts with the media would be handled by the company. Major statements would be cleared first with the other two participants.

News Announcement

It was agreed by the three companies that a public announcement should be made early, stating that preliminary studies were underway for a large power plant at the Mt. Tom site. Because HWP was required to contact so many government agencies, in connection with initial planning, knowledge of the project would otherwise soon find its way into the public domain.

On August 27, a statement telling of the plans for building Mt. Tom power plant was issued to the area newspapers. It is included herewith.

Consulting Engineers' Report

In September, Jackson and Moreland prepared a memorandum for HWP in which it developed the engineering and economic feasibility of the Mt. Tom project. It concluded with:

"It is our opinion that Holyoke Water Power Company has an unique opportunity to provide economical power from a plant constructed at the Mt. Tom

Power Co. Planning New Steam Plant Cost Is Estimated At \$15,000,000

Biggest Project In City History May Materialize In Smiths Ferry

The building of a multi-million dollar electric power generating station, the largest single undertaking ever contemplated in Holyoke, is a project that the Holyoke Water Power Co. is considering.

Preliminary studies have been completed and they show that a power plant of at least 100,000 kilowatts capacity should be built.

It will be located on the 80-acre site the company owns in the Smiths Ferry section, just south of Mt. Tom Junction. This is the area generally known as O'Hare's grove.

\$15,000,000 Cost Seen
Robert E. Barrett, Jr., president of the power firm, could give no actual statistics as to cost now. But those familiar with power plant construction have informed the Transcript-Telegram that it will run to \$15,000,000. This is the biggest building project in the city's history.

This new electric generator would be one of the largest in Western Massachusetts, and thru connections with the Western Massachusetts Electric Co., and the New England Electric System, would be designed to supply electricity for the growing demands in the western part of the state.

Would Treble Power
The Holyoke company at present can generate 15,000 kilowatts of hydroelectric power at its new station at the Holyoke dam and 42,500 kilowatts at its steam plant off Water St., on the river bank. This current capacity of 57,500 kw. will be nearly trebled with the new plant in Smiths Ferry.

While engineering studies for the electric generating station at the Mt. Tom site have been proceeding, it is known that alternate locations for electric generating expansions are continually being studied by neighboring utility companies in order to take care of growing electrical loads in Western Massachusetts. These loads are doubling every 12 to 15 years.

The final decision is yet to be made by the board of directors of Holyoke Water Power. However, extensive preliminary studies have been completed; and governmental officials, both state and national have been consulted.

Sale Of Output Eyed

Preliminary plans covering the purchase of the major portion of the output of this huge plant have been worked out with Western Massachusetts Electric Co. and the New England Electric System in the Connecticut Valley section of Massachusetts.

The remaining output will be used by the Holyoke Water Power Co., which is having a steady growth of its electric power load. This new power plant would bring to Holyoke and the surrounding area the benefits of the most economical source of steam electric power for a plant of its size known to present day.

electrical engineers. It will be designed to use both oil and coal.

The tract at Mt. Tom Junction, which was bought by the Holyoke firm in the fall of 1954, is one of the few remaining ideal locations for a large electric generating station in Western Massachusetts.

It is located adjacent to the main line tracks of the Boston & Maine Railroad for economical delivery of fuel. It is on Route 5 for ease of truck deliveries. And most important, it is bordered by one of the deepest sections of the Connecticut River where the large amounts of cool water needed for condensing purposes may be obtained. It is already zoned for industry.

30 Houses On Tract

At present there are 30 houses on the tract, most summer cottages. The power company owns all of them, and the occupants are tenants at will.

It is expected that engineering and economic studies can be completed this fall. If these studies favor the Mt. Tom Junction location as the power plant site, and there is every indication that they will, preliminary construction will probably get underway as early as next spring.

Completion would be scheduled for the late summer of 1960. Jackson and Moreland, long time engineering consultants for the Holyoke Water Power Co., have been at work on the preliminary phases of this power plant project for several months. This is a Boston firm, and it designed the hydro-electric station at the

Holyoke dam. Atomic Power Later

While the company is aware of the many developments now taking place in the field of atomic generation of electric power, nevertheless it is its best judgment that, at this time, the most efficient and reliable method of producing steam generated electricity for its customers is from coal and oil.

"However, in future years, when atomic electricity becomes economically competitive and of proven safety for operation within city limits, the company feels that its Mt. Tom Junction site will be an ideal location at which to expand its operations into the atomic electric generation field," said Mr. Barrett.

Some time ago consideration was given this location for the site of a pulp manufacturing plant. This plan was abandoned under the press of necessity for power generating expansion for the area.

Holyoke Transcript
Monday
August 27, 1956

site: first, the Company has the immediate legal ability to finance the plant on a high debt basis; second, the Company owns a plant location which offers economic plant construction; and finally, the plant is geographically strategically located with respect to adjacent transmission lines to serve the Central and Western parts of Western Massachusetts.

"For these reasons, we believe that the Company should make every effort to proceed with such a development at the earliest reasonable date."

Contract Agreement and Approvals

Memorandum of Understanding

On November 21, 1956, a memorandum of understanding was signed by the three company officers. It set forth the basic structure of the contracts, which would be signed later, when the details had been completed.³⁸²

The memorandum was sufficiently explicit, however, so that field work on the site could begin, equipment could be ordered, arrangements for financing explored and preparations for construction set in motion.

Special Stockholders' and Directors' Meeting

At a special meeting of the HWP stockholders on April 16, 1957, the company was authorized to proceed with the construction of Mt. Tom power plant. At a directors' meeting following the stockholders' meeting, REB II was further authorized, among other things, "to do any and all things to complete the project".³⁸³

Mt. Tom Power Plant Contract

The final documents comprising the agreements for construction of the Mt. Tom power plant were signed on October 14, 1957. In addition to the three original participants, HWP, WMECO and NEPCO, a fourth company, Holyoke Power and Electric Company (HP&E) was included.

HP&E, a subsidiary of HWP, is a party to the Mt. Tom contracts because, unlike its parent, it is a public utility with the power of eminent domain. Thus,

it could procure the necessary transmission line rights-of-way from Mt. Tom power plant to the interconnection with the 115KV facilities of WMECO and HWP in Chicopee. HWP would also deliver electricity to WMECO and NEPCO over a 69KV line that goes to a substation of WMECO at Mt. Tom Junction.

Financing

The funds required for constructing the plant were obtained from 15 life insurance companies of which 12 were New England companies and three were from New York City. Western Massachusetts companies participating were Berkshire Life Insurance of Pittsfield and Massachusetts Mutual Life Insurance Company and Monarch Life Insurance Company of Springfield.

First mortgage bonds amounting to 22 million dollars with a 5% interest rate were issued to the insurance companies payable over a 30-year period. In addition, 4.4 million dollars were borrowed to refinance some previously issued HWP bonds.

Federal Power Commission Financing Approval

On December 27, 1957, the FPC approved the HWP arrangements with the consortium of life insurance companies to finance the power plant. This was the last governmental approval required.

Site Work Starts

Weston Observatory

Seismological exploration of the Mt. Tom site was begun in late 1956 by experts from the Weston Observatory of Boston College. Under the direction of Rev. James W. Skehan S.J., the depth to ledge from the ground surface was determined at 80 different locations throughout the site. The method was to set off small charges of dynamite, buried beneath the surface of the ground, and measure the time it took for the sound to reach an impenetrable level of the ledge. Delicate instruments measured not only the depth to ledge but also told the type of underground materials through which the sound waves passed.

The result of the survey was that there were two areas on the site where ledge was available at reasonable depth below ground level. It was decided to use the northerly of the two sites as the location for the new plant.

Core Drilling

With the approximate location of the ledge determined it was then necessary to find its depth below ground level and its geological characteristics. This was done by boring down through the overburden and then drilling out cores of rock.

Site Clearance

At various locations on the tract, there were summer camps and a few permanent homes. They numbered 30 in all. The title to these structures rested in HWP as the owner of the land. The occupants were just tenants at will. The company immediately undertook the assignment, as diplomatically as possible, of asking the tenants to leave, then razed the buildings.

The Plant Gets Built

Although there remained several agreements still in negotiation, HWP felt confident in the late summer that they would be completed soon. Hoping to take advantage of several months of good weather, the decision was made on August 19, 1957, to start work.

Major Responsibilities

General Construction - Daniel O'Connell's Sons, Holyoke
 Equipment Erection - Thomas O'Connor, Inc., Cambridge
 Engineering Design - Jackson and Moreland, Boston
 Architectural Design - Alderman and MacNeish, West
 Springfield
 On-site Administration - HWP Staff

Major Equipment Suppliers

Steam Turbine and Generator - General Electric Company
 Transformers, Switchgear and Motors - Westinghouse
 Electric Corporation
 Steam Boiler - Riley Stoker Company
 Pumps, Compressors and Condenser - Worthington Corporation
 Structural Steel - Haarmann Steel Co. - Chicopee

Construction Schedule and Costs

Work on the construction of the power plant continued without interruption from August 1957 until it was officially declared in commercial operation on July 1, 1960. During that interval, the largest single project ever undertaken in Holyoke³⁸⁴ had come to completion without serious incident. It was on time and below budget.

When the construction schedule for the project was set in the spring of 1957, "first steam to the turbine" was set for March 1, 1960. That event occurred on March 7.³⁸⁵

In the early planning, it was estimated that the total cost would be \$30,500,000. The actual cost was \$27,500,000, \$3,000,000 less than projected.³⁸⁶

Mt. Tom Highlights

- o When the excavation exposed the ledge, 35 feet below ground level, one could clearly see the striations where the glacier, thousands of years ago, had moved across it. The striations, which are parallel scratches or grooves, were caused by small stones, under the tremendous weight of the glacier, being forced against the surface of the ledge.
- o A distinctive feature of the plant is its outdoor boiler. It is believed that this is the farthest north that a power station boiler has been of an "all-weather" design, requiring no building to enclose it. The design was chosen to save money. It has proven to be satisfactory.
- o The condenser made by the Worthington Corporation in New Jersey was so big that it could not be delivered by train. It came over the highways accompanied most of the way by police escort. Because of the traffic, it had to cross the George Washington Bridge between 2 a.m. and 4 a.m.
- o When built, the chimney, which is 370 feet high, was the tallest in New England.
- o During the three year construction period of the project, 190 different concerns from Holyoke, Chicopee and South Hadley supplied materials or services which became a part of the plant.

- o During the excavation for the power plant foundations, several 5,200 year old white oak trees were found buried 33 feet below ground level. The age of 5,200 years was determined by using the carbon-14 radioactive isotope method. A news item about them is included herewith.
- o Mt. Tom's boiler burns about 1,000 tons of coal every 24 hours. This is equivalent to the contents of one 50-ton coal car every hour.
- o The ash which remains from the burning of pulverized fuel, such as at Mt. Tom, has properties which may make it an acceptable substitute for a percentage of the cement used in concrete. To demonstrate this use, HWP purchased 540 tons of the pulverized fuel ash from the Connecticut Light and Power Company and used it to replace 20% of the cement in the concrete walls and foundations of the plant. Its use reduced the cost of the plant and produced completely satisfactory concrete.

At this writing, pulverized fuel ash from Mt. Tom is being used as one of the ingredients in the manufacture of cement at a cement plant near Albany, New York.

- o When the Mt. Tom site was purchased, it was found that the river was wearing away the land on the Holyoke shore at a rapid rate. The company felt that immediate action was required to halt the damage to the land before an irreparable loss occurred. An agreement was reached with the Massachusetts Department of Public Works to equally share with HWP the cost of lining the river bank with riprap. A total length of 2,880 feet of river bank was protected in this manner.
- o At the height of construction, a force of 450 union craftsmen were employed on the project.

Plant Dedication

The dedication of the Mt. Tom power plant took place on September 14, 1960, as one of a series of events which commemorated 111 years of power development in Holyoke by HWP and by its immediate predecessor, the Hadley Falls Company. A section devoted to that Anniversary follows.



AN INTERESTING find in the excavation for the Mt. Tom Power Plant was the tree trunk found 33 feet below the surface of the ground, a section of which is shown above. Modern scientific methods using radioisotopes determined its age to be more than 50 centuries.

Plant Site Excavations Bared 5000-Year-Old Oak; Geologists Show Interest

"A song to the oak, the brave, old oak, who hath ruled in the greenwood long!" wrote Henry Fothergill Chorley, poet of the mid-19th century.

An ancient forebear of Chorley's oak lay beneath the ground at Smiths Ferry for 50 centuries—from the time it "ruled in the greenwood" until it was dug up at the Mt. Tom Power Plant site in Smiths Ferry.

The tree trunk, perfectly preserved, was found 33 feet below ground level as steam shovels excavated for the power plant. It was recovered from its watery resting place and a sample was sent to Isotopes, Inc., of Westwood, N. J.

Latest techniques for detecting age, using the carbon-14 radioisotope method showed the trunk to be anywhere from 5070 to 5370 years old, harking back to about 1000 years before the ancient Egyptians entered the course of world history.

The find attracted the interest of geologists from Amherst College, Harvard University and the United States government. Prof. John C. Hoff of the geology department at Mount Holyoke Col-

lege was quick to bring a group of students to view the excavation.

Prof. I. W. Bailey of Harvard University said the species of the tree was oak of the white, swamp or chestnut variety.

Also in the excavation, some 10 feet below the level of the tree find, were pine cones, twigs and butternuts, all well preserved by the wetness of the earth at that depth.

Masses of leaves were discovered matted against the bedrock, and others were found between silt layers exposed in the walls of the excavation.

These leaves, preserved and identified by students at Mount Holyoke College, were found to be from the following kinds of trees: Willow, cottonwood, hornbeam, black birch, gray birch, beech, white oak, yellow oak, elm, sycamore, maple, ash, sugar maple, basswood and hemlock.

Because they were found below the level of the tree trunk, it was assumed the leaves were at least as old as the tree. All the varieties of trees represented by the leaves are common in the Connecticut Valley today. 387

Commercial Operation - A Very Efficient Plant

July 1, 1960, was the first day when the new power plant was considered to be ready for commercial operation. As early as 1961, the Mt. Tom plant had established an enviable record as an efficient producer of electric power. In a report by the Federal Power Commission, in the category of annual system heat rates below 10,000 BTU, HWP (Mt. Tom) had the eighth lowest heat rate among 15 qualifying systems nationwide. It was 9,685 BTU per kWh. A tabulation listing the 15 qualifying systems is included herewith.

In 1962, out of 10 qualifying systems below 9700 BTU per kWh it ranked fourth at 9,449 BTU per kWh and in 1963 it ranked eighth at 9,589 BTU per kWh.

At this writing, Mt. Tom power plant is producing electricity at the lowest cost and with the highest plant capacity factor of any fossil fuel generating station on the Northeast Utilities system.

FPC Rates Systems, Plants, Units

American Electric Power Co has the most efficient heat rate of any multiple-plant electric utility system in the US, according to Federal Power Commission's recently released report on steam plant costs. AEP thus topples Tennessee Valley Authority from the top place which it held in the previous year's listing.

FPC's report listing the most efficient systems, plants, and units (see charts on this page) ranks each according to heat rate per net kwhr. It is based on operating data for the year 1961. Although TVA lost its top spot it still improved its heat rate from a year earlier.

Ohio Valley Electric Corp was ranked first in heat rate for one- and two-plant systems.

Philadelphia Electric Co's Eddystone Plant rated first for lowest average annual heat rate for a single plant, and Eddystone No. 1 took top honors for lowest heat rate for a single unit. The new lists are based on data from 530 plants.

FPC says that reports were not complete this year and estimates that "a few more unreported units had annual heat rates which would have placed them well within the category of the first 25 units."

Generating Units With Best Heat Rates—1961 (Full Year at 50% Plant Factor or Better)

Unit	Btu/ Net Kwhr	Steam Conditions
Eddystone No. 1	8,743	5,000 psi, 1,200/1,050/1,050F
" No. 2	8,773	3,500 psi, 1,050/1,050/1,050F
Breed No. 1	8,819	3,500 psi, 1,050/1,050/1,050F
Dickerson No. 2	8,942	2,400 psi, 1,050/1,000F
State Line No. 3	9,066	2,000 psi, 1,050/1,050F
Dickerson No. 1	9,069	2,400 psi, 1,050/1,000F
Waukegan No. 7	9,070	2,000 psi, 1,050/1,000F
Clifty Creek No. 4	9,108	2,000 psi, 1,050/1,000F
" " No. 6	9,148	2,000 psi, 1,050/1,000F
Kyger Creek No. 1	9,152	2,000 psi, 1,050/1,000F
Clifty Creek No. 5	9,154	2,000 psi, 1,050/1,000F
South Oak No. 1	9,175	2,400 psi, 1,050/1,000F
Clifty Creek No. 3	9,183	2,000 psi, 1,050/1,000F
Segco No. 2	9,185	2,000 psi, 1,000/1,000F
Gallatin No. 3	9,190	2,000 psi, 1,050/1,050F
Danskammer No. 3	9,194	2,400 psi, 1,050/1,000F
Clifty Creek No. 1	9,199	2,000 psi, 1,050/1,000F
Will County No. 3	9,207	2,000 psi, 1,050/1,000F
Clifty Creek No. 2	9,219	2,000 psi, 1,050/1,000F
Gallatin No. 4	9,230	2,000 psi, 1,050/1,050F
Bay Shore No. 1	9,237	2,000 psi, 1,050/1,000F
John Sevier No. 1	9,250	1,800 psi, 1,050/1,050F
Delaware No. 7	9,254	1,800 psi, 1,000/1,000F
Segco No. 1	9,261	2,000 psi, 1,000/1,000F
Joliet No. 6	9,267	2,000 psi, 1,050/1,000F

Annual System Heat Rates Below 10,000 Btu—1961

Company or System	Average Btu/ Net Kwhr	Average Cents/ Million Btu	Steam Produc- tion Mills/ Net Kwhr
Ohio Valley Elec*	9,239	21.50	2.32
American Electric Power	9,363	18.43	2.26
Tennessee Valley Authority	9,500	18.59	2.21
Duke Power	9,546	26.91	2.95
Niagara Mohawk Power	9,637	33.01	4.15
Central Hudson Gas & Elec.	9,655	33.94	4.16
Consumers Power	9,675	31.60	3.77
Holyoke Water Power*	9,685	33.60	4.17
Electric Energy*	9,733	18.50	2.19
Detroit Edison	9,740	31.00	4.12
Southern California Edison	9,845	34.38	3.76
S. Carolina Electric & Gas	9,886	29.09	3.25
Dayton Power & Light	9,897	25.76	3.26
Potomac Electric Power	9,939	31.00	3.88
Cleveland Elec. Illum.	9,997	26.86	3.62

* One- and two-plant systems, others are multiple-plant systems.

Plants with Average Annual Heat Rates Below 9,500 Btu Per Net Kwhr—1961

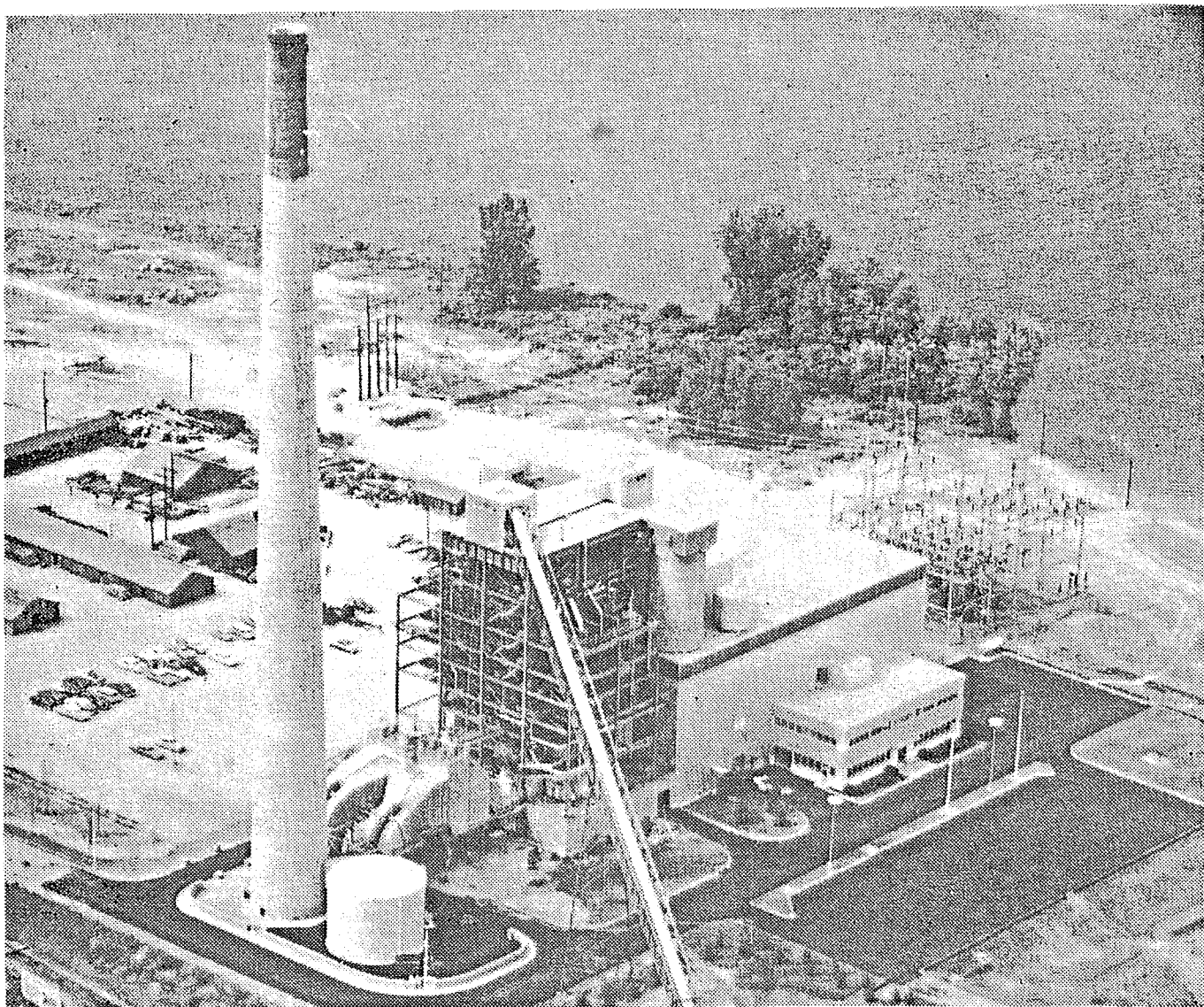
Plant Name	Heat Rate Btu/ Net Kwhr	Standing in 1960	Plant Name	Heat Rate Btu/ Net Kwhr	Standing in 1960
Eddystone	8,760	6	Tanners Creek	9,213	10
Breed	8,819		Kammer	9,223	9
Mercer*	8,894		Segco	9,226	27
Dickerson	9,006	2	Bay Shore	9,264	15
Clinch River	9,022	1	Sevier, John	9,280	17
Karn, D. E.	9,060	7	Gallatin	9,290	18
Kanawha River	9,086	3	Kyger Creek	9,335	13
Allen, G. G.	9,100	4	Bergen*	9,338	31
Sporn, Philip	9,123	22	Milliken	9,349	20
River Rouge	9,160	14	Huntley	9,404	97
Clifty Creek	9,168	5	Shawville	9,424	50
Muskingum River	9,180	8	Cromby	9,435	25
Sammis	9,182	21	Eastlake	9,435	34
Mandalay Beach**	9,197	11	Dunkirk	9,442	19
South Oak Creek	9,197		N. Oak Creek	9,461	24
St. Clair	9,200	12	Johnsonville "B"	9,480	33
McMeekin, Silas*	9,211	16	Kingston	9,490	39

* burns coal and gas

** burns oil and gas

All others burn coal only

Newest Facility Of Holyoke Water Power Co.



MT. TOM POWER PLANT, viewed (above) in an aerial photograph, represents a look to the future by the Holyoke Water Power Co. A century ago the Company was engaged in building the canal system that was to establish Holyoke as an industrial city. From groundbreaking to completion, the 137,500-kilowatt Mt. Tom plant required nearly three years' work. All the labor, equipment, materials and services used were obtained locally to the greatest possible extent. A taxpaying plant, it is the newest facility of a firm that is owned by 1702 stockholders, 457 of whom live in the Holyoke area.

111th Anniversary

Under normal circumstances, HWP might well have celebrated in 1949, the 100th anniversary of the start of the hydraulic development in Holyoke. However, that year the one in which the contested Federal Power Commission licensing application was coming to a conclusion, an issue which had required the complete commitment of the HWP staff.

A second logical date might have been to celebrate the 100th anniversary of HWP which was incorporated in 1859. However, 1959 found the company immersed in the construction of Mt. Tom power plant.

The resolution of the matter was to have a celebration in 1960, which was called the 111th Anniversary, and which could recognize the accomplishments of the company and the community throughout the years back to 1849. A comprehensive group of events was planned.

First Announcement

On March 30, HWP published a full page advertisement in the local newspaper which told about the birth of Holyoke in 1849, a small village to be powered by the waters of the river. It then, discussed Holyoke in 1960, a thriving industrial city, about to add to its assets one of the largest and most efficient electric power plants in New England. That advertisement is included herein.

Tree Planting

During the spring, the company planted 800 trees along the banks of the canals. These were flowering crab trees which eventually grew to be quite a colorful spectacle each year.

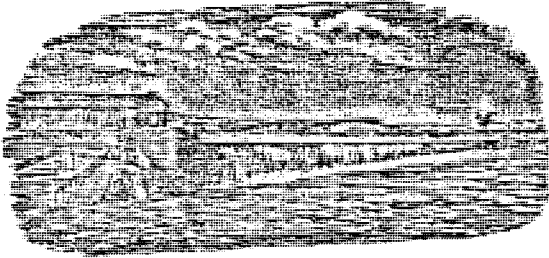
Fountains

Five jet-type fountains were placed in the Second Level Canal. The vertical jet streams, driven by an electric pump, rise to a height of 50 feet. Each fountain also has a cup shaped water spray system at its base.

Transcript Telegram - March 30, 1960

THIS IS OUR 111TH ANNIVERSARY YEAR

From the historic wooden dam of 1849 ... to the modern and efficient Mt. Tom Power Plant of 1960!



1849

A new industrial community, Holyoke, was being born in the year 1849. The construction of the wooden dam, impounding the waters of the Connecticut River — a pioneering engineering feat — was being finished. The work of digging the canals was well underway. Here was being created the biggest single source of hydraulic power in the eastern part of the country, not to be surpassed in size until the falls at Niagara were harnessed 45 years later.

This was a young and vigorous group of 3700 adventurous people who had come to help build this new community, then known as Ireland Depot, part of the Third Parish of West Springfield. They were here to construct one of the first planned industrial cities in the country.

Efforts were already being made to have the village chartered by the Legislature as a separate town. Speculation was great as to the name by which it should be called. Would it be New City, Millville, Spindletown, Hampden City or some other name yet to be suggested? It would be yet another year before the choice of "Holyoke" would be made.

Boats from up the river were passing down into the canals through locks bringing quarry stone for mill foundations. Buildings to be used as textile factories, a machine shop and tenement houses were under construction — all of which would be still in active use 111 years later.

In September 1849, the first newspaper, the Hampden Freeman, began publishing the village news. And in November, the first fire engine was purchased, prophetically and perhaps prematurely named "Holyoke No. 1".

This was the year in which the first contract was written for the use of water power from the canal system, an agreement which has been followed by the successors of both the purchaser and the seller, continuously for 111 years.

1849 was a year of action — a year in which a great natural resource — the Connecticut River — was being harnessed for the economic benefit of the community. It was a year of deeds, not words. As one writer of the day expressed it, "The broad, deep volume of the majestic Connecticut needs not to be swelled by our feeble words."

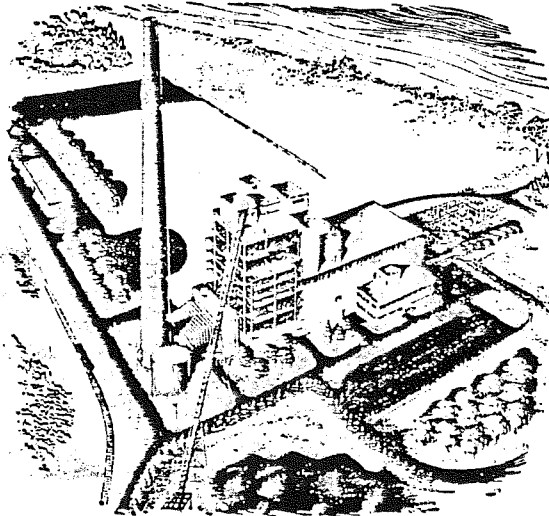
1960

This is the year when a great new source of electricity becomes available to supply expanding needs of Holyoke industries and of the neighboring communities of Chicopee and South Hadley. Three years in its construction, Mt. Tom Power Plant, with one of the largest and most efficient generating units in New England, will shortly be in commercial operation.

The waters of the Connecticut River, harnessed by the hydraulic power development of 1849 and enlarged greatly throughout the intervening years, are no longer sufficient to supply the electricity needs of the area. Mt. Tom Power Plant has been built to make electricity from coal. It will burn a carload every hour. It will supply the expanding electric power requirements of our customers for many years to come as well as a portion of the needs of neighboring utility companies.

Holyoke, grown from a village of 3700 people in 1849 to a thriving industrial city in 1960, has fulfilled the dreams of those who planned and laid out its streets, its parks, its industrial and commercial areas over a century ago. Once again, it is a community moving ahead rapidly to develop its potentials as a manufacturing city. Modern industrial parks bring assurance of a bright future.

Today we stand already well embarked into our second century of developing the power resources of the community. We do so with full confidence in the economic future and well being of this area and its people.



HWP

HOLYOKE WATER POWER COMPANY
"Powering Community Progress for Over a Century"



Water Power Park

An area of berme land along the Second Level Canal opposite the fountains was developed as a park with appropriate plantings of trees and shrubs. A monument was placed in the park as a memorial to the planners and builders of the canal system. Mounted on the monument is a waterwheel of the type used in Holyoke mills.

South Hadley Canal Plaque

As part of the anniversary program, HWP felt it appropriate to commemorate the South Hadley Canal, the first navigable waterway in the United States. Accordingly, a sandstone slab from the riverbed was erected upon an appropriate site in South Hadley and a bronze plaque attached to it. The plaque memorializes an original unique method of raising or lowering boats from one level to another by means of an inclined plane.

Weekly Plant Tours

During the late spring and summer, the HWP management invited, each week, customers and community leaders to a plant inspection followed by luncheon. There were five or six people in each group. In this manner, 120 different persons had an opportunity to inspect the plant and understand its operation.

Schedule of Anniversary Events

Following is a schedule of events which made up the anniversary program:

- Thursday - September 8 - Dedication of Monument commemorating the South Hadley Canal.
- Friday -- September 9 - Dedication of Holyoke Water Power Park with its waterwheel monument commemorating the founders of the hydraulic system - and with the five fountains in the canal.
- Sunday - September 11 - Open House at Mt. Tom Power Plant for Company employees, their families and friends.
- Tuesday - September 13 - Centenarian Dinner on top of Mt. Holyoke with 100 year old area firms as Company guests.
- Wednesday-September 14 - Dedication of Mt. Tom Power Plant. Publication of 16 page Holyoke Water Power Company supplement to the HOLYOKE TRANSCRIPT.
- Saturday -September 17
through
Sunday - September 25 - Open House at Mt. Tom Power Plant for general public.

Centenarian Dinner

Representatives of 14 area enterprises and communities which had been in existence for 100 years or more were invited to a dinner of celebration on the top of Mount Holyoke on September 13. Local governments invited were the cities of Holyoke and Chicopee and the Town of South Hadley. The centenarian businesses were American Writing Paper Company, Boston and Maine Railroad, Thomas S. Childs,, Inc., Edward F. Day Funeral Home, Hadley Falls Trust Company, Holyoke Savings Bank, Holyoke Transcript-Telegram, Parsons Paper Company, Prentiss Wire Mills, and J. Russell and Company. The 14th invitee was Mount Holyoke College, established in 1837.

Dedication of Mt. Tom Power Plant

Over 300 invited guests participated in the highlight of the 111th Anniversary celebration, the dedication of Mt. Tom power plant. The event took place under a large tent erected on the parking area of the plant. A smorgasbord luncheon preceded the formal program.

The speakers following the luncheon were Governor Foster Furcolo, U.S. Representative Silvio O. Conte, Mayor Samuel Resnic and REB II. A flag raising ceremony, with a color guard from Westover Field, concluded the formal event. Tours of the power plant for the invited guests completed the dedication ceremony.

Tours for the Public

For the eight days, Saturday, September 17 to Sunday, September 25, the plant was open for inspection by the public. On the first Sunday, 3,880 people came and overtaxed the company personnel trying to handle so many guests.

Special Section of Holyoke Transcript September 14, 1960

A major feature of the 111th Anniversary celebration was the publication on the day of the plant dedication, of a 16-page section of the Holyoke Transcript. It was devoted only to the Holyoke Water Power Company and its predecessor companies, the Hadley Falls company and the Proprietors of the Locks and Canals on the Connecticut River. It also included historical information about the Holyoke and South Hadley areas. The text was largely written by the HWP staff. HWP paid for this special section at advertising rates.

All issues of the Holyoke Transcript, from January 1884 to the present, have been placed on microfilm and are available in the Holyoke Public Library. The 16 page HWP 111th Anniversary section is thus available there for reference use by future historians.

The 111th Anniversary celebration came to a close on September 25, the last day of open house for the public at Mt. Tom power plant.

Electric Equipment Manufacturers' Conspiracy
and the Anti-Trust Suit

Government Action

Shortly after the completion of Mt. Tom Power Plant, it became known that the Federal Government was charging the electric equipment manufacturers with violation of the anti-trust laws. The news came as a complete surprise to HWP. The period of the alleged conspiracy was 1956-1960 which was just the period when the company was purchasing its equipment for the Mt. Tom Power Plant.

HWP Purchasing Policy

HWP relied upon its consulting engineers, Jackson and Moreland (J&M) to prepare the specifications for equipment purchases, to evaluate the proposals, and to assist in negotiations. It was early decided to negotiate with General Electric Company (GE) for the turbo generator and with Westinghouse for the other major equipment items such as the main transformer and the large motors.

Preparing for Legal Action

The conspiracy caused two problems for HWP and for all others which had purchased equipment. The first was to determine the costs of all the equipment purchased during the conspiracy. The second was to prosecute the companies and to obtain damages.

To assist in determining the costs of the equipment a group of 150 companies throughout the country banded together and retained Stone and Webster Engineering Corporation to collect and collate the information. HWP was one of the companies in the group. Nevius Curtis of the company staff assembled the HWP information. Curtis was later to become the chief executive officer of Delmarva Power & Light Company with headquarters in Wilmington, Delaware.

Another group of 44 of the utilities in the eastern United States banded together to retain counsel and take legal action against the conspirators. The chairman of the group, who played a very important role in the proceedings, was Lelan F. Sillin Jr., then chief executive officer of Central Hudson Gas and Electric Company and who later became Chief Executive Officer of Northeast Utilities. New York City counsel was retained to prepare the case.

The Settlements

After three years of legal proceedings and negotiations, GE and Westinghouse settled their cases out of court. GE returned to its customers 7 percent of the purchase prices which, for HWP, was \$341,125. The Westinghouse settlement to HWP was \$150,000.³⁸⁸

Comment

The writer was responsible for ordering several millions of dollars of electrical equipment, during the period of the conspiracy, from GE and Westinghouse and a lesser amount from Allis Chalmers. In the process, he had bargained directly with the manufacturer's representatives and was counseled and assisted at all times by one of the ablest consulting engineering firms in New England, Jackson and Moreland.

How the conspiracy operated, one can only surmise. However, it seems reasonable to assume that the top officials in each company, responsible for equipment pricing, joined together with their counterparts in the other companies, as a consortium, to share information.

One can conjecture that one scenario might be that, when quotations on large pieces of equipment were sought by utilities, the consortium would allocate the items among its members. An allocated company would then quote prices based on there being no competition. The companies that were not allocated would then quote slightly higher non-competitive prices. In this manner, the prices paid by the utilities would always be higher than they would have been in a strictly competitive environment.

To one who had thought he had bargained well and had received the lowest possible prices, the revelation of the conspiracy was astonishing. For it to have continued for a four year period, without leaking out to the public, from some source in those three large companies, is suprising.

Pumped Storage

In the late 1950's, the concept of using hydroelectric equipment to fulfill short-hour peak load requirements was beginning to come into use. It was called pumped storage and required two separate water storage reservoirs. The economics of pumped storage are such that the most profitable installations are those with a minimum of horizontal separation between the reservoirs and a maximum of vertical separation.

In the spring of 1960, REB II took his vacation in Europe and visited the 100 megawatt Geestacht pumped storage plant of the Hamburg Electric Company on the Elbe River. He also visited the Ffestiniog pumped storage plant in Wales owned by the Central Electricity Generating Board of Great Britain. He came home much impressed with the Geestacht installation and felt that this concept should be studied by HWP.

An engineer from the HWP staff was soon assigned exclusively to the pumped storage investigation. An upper reservoir site was found that had sufficient preliminary promise to warrant further study. It was located on the south side of Route 141 in Holyoke between the Animal Hospital and the Log Cabin restaurant. It could contain sufficient water to supply a 150,000 kilowatt generating station which would be located on the Connecticut River opposite the entrance of Mountain Park on HWP owned land.

The river water would be pumped to the upper reservoir through a steel pipe using low cost off-peak energy and then flow back to the river during on peak hours. The daily cycle would be 7 hours pumping and 5 hours generating. The pipe was to be carried across the Whiting Street Reservoir on rock fill with equalizing pipes to maintain constant water level in the reservoir.

By 1963, field studies were underway to determine foundation conditions at the reservoir site. This brought about newspaper publicity concerning the project. One such account is included herewith.

When the engineering and economic studies were completed, the project proved to be not feasible for HWP. The construction costs were too high. Some of the disadvantages to the project which affected its cost effectiveness were:

- o The long horizontal distance between the upper reservoir and the river requiring about a mile of 20-foot diameter steel pipe.

- o The costs of caring for the interference of the penstock pipe with Routes 5, I-91 and 141 and the two roads around the reservoir.
- o The anticipated extra costs of assuring Holyoke citizens that there could be no contamination of Whiting Street Reservoir with Connecticut River water either from overtopping of the upper reservoir or leaks in the steel penstock.

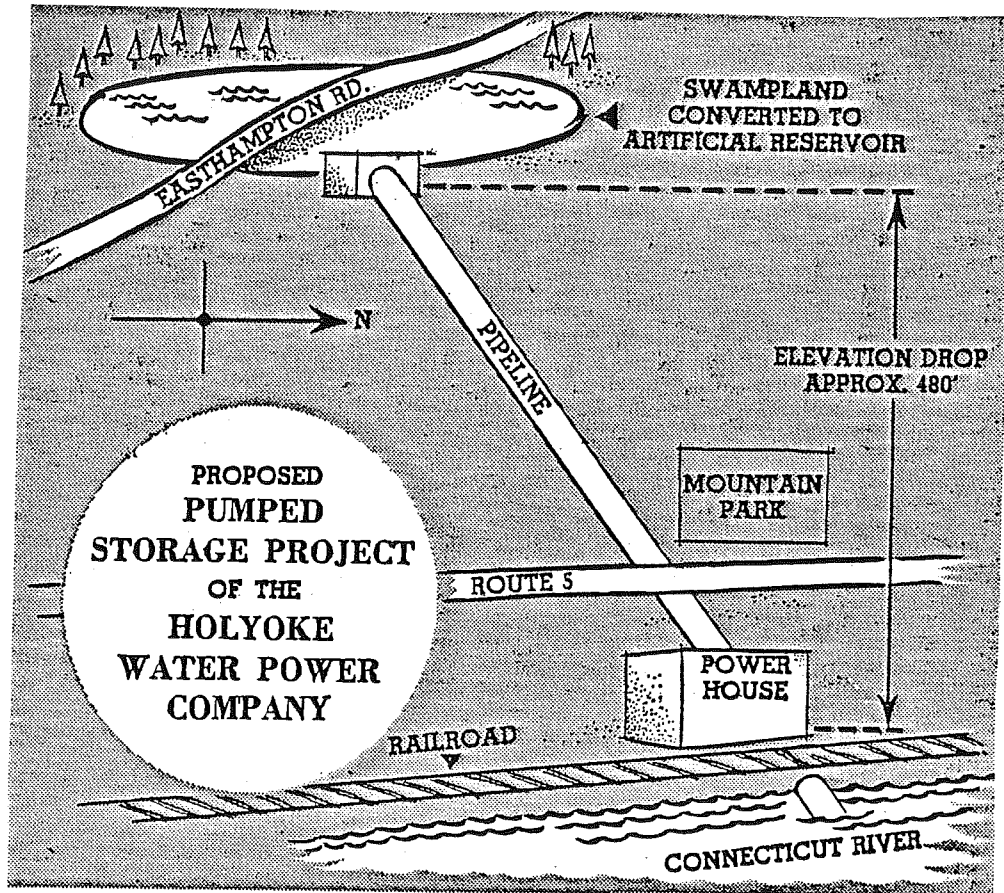
A few years after the proposed HWP pumped storage project was made public, Western Massachusetts Electric Company (WMECO) announced its Northfield Mountain Pumped Storage Project. This project of 1 million kilowatts capacity was completed in 1973 and has been very successful.

Howard Cadwell, former president of WMECO, subsequently told REB II that, after reading the newspaper publicity about the HWP pumped storage project, he asked his engineers to explore possible locations in Franklin County. The Northfield Mountain site was chosen after that search.

Further Reflections

At the time of this writing, two situations involving the river have changed markedly since 1963. They are:

- o The public has much greater interest in the river, particularly for recreational boating. A daily lowering of the elevation of the river (the lower reservoir), by pumping it to the upper reservoir, and keeping the level down ready to receive the discharge from the upper reservoir, would interfere today with the elevation of the water in the river for the boaters. It was estimated that the daily lowering of the river would have been one to two feet. Such a variation would be intolerable today during the boating season.
- o In addition, the lowering of the water in the pond as described above would also reduce the head on the two 15,000 kilowatt hydroelectric units at the dam causing a lessening in the output of those electric generators.



POWER FOR THE FUTURE—This is an artist's conception of a new, intriguing power generating plant, capable of out-kilowatting the gigantic Mt. Tom Power Plant, which the Holyoke Water Power Co. has under penetrating study. The huge reservoir of water which would have to be created on both sides of the Easthampton Rd., in the swampy area on the Holyoke side of the Log Cabin Restaurant is shown in the upper left of this sketch. The

pipeline, which will be a massive 18 to 20 feet in diameter, would course down 5000 feet of rough terrain from the reservoir under the proposed Route 91 and today's Route 5 to a power house near the Connecticut River. 389

Lease Proposal

In early 1964, HWP proposed to the people of Holyoke that they lease their electric utility operations to HWP. This became known as "the lease proposal" and was a controversial issue in Holyoke for about a year.

Presentation to Board of Alderman

On March 9, HWP went before the Board of Alderman to explain its proposal. The presentation that evening both verbally and by charts explained in detail the economics of the proposal.

Seeking Public Support

The details of the plan were explained in a series of newspaper advertisements beginning in July 1964 and concluding in March 1965. A brochure titled "The Lease Proposal in a Nutshell" was published by HWP and given wide distribution.³⁹⁰ The proposal was also discussed with various public groups.

Legislature Permission Required

In order for the proposal to become effective, it required the affirmative vote of the Holyoke electorate. The permission of the Massachusetts Legislature was required in order that the question could be placed upon the city ballot.

Major Elements of the Proposal

- o HWP to lease HG&E for a period of 30 years.
- o Annual lease payment to be \$1,250,000.
- o No increase in rates unless approved by DPU.
- o HWP would pay for, and own, all replacements or additions to the system. These to be returned to the city at the end of the lease at net book cost.
- o HWP would pay local taxes on the machinery in both the HWP and HG&E plants because it would be serving the entire community like other utilities.
- o HWP would retain all full-time employees.
- o HWP to operate the system on a break even basis.

- o HWP would make its profit from earning a rate of return on the additions and improvements which would be made to take care of load growth. It would also make savings because its production costs of electricity were considerably less than those of HG&E. In addition it would make savings by combining the two organizations and reducing personnel through attrition and retirement.
- o HWP estimated that in the year 1970 it would have a net income of \$276,300 from the lease proposal.

Legislative Hearing

HWP entered a bill in the 1965 legislative session which would allow the question to be voted upon by the Holyoke electorate. Subsequently, HG&E entered a bill in the Legislature to obtain authority to purchase the Holyoke electric distribution facilities of HWP.

On March 3, the legislative committee responsible for the HWP bill came to Holyoke to hold its public hearing in the high school's 875 seat auditorium. The seats were filled and spectators were standing. In addition, the proceedings were carried by the school's TV system so people could see and hear the proceedings in the classrooms.

The Presentations³⁹¹

At the hearing, HWP was represented by REB II, Vice President Day and lawyers Begley and Moriarty. The HG&E, which had been adamantly opposed to the lease proposal ever since it had been announced, was represented by Manager King and lawyer Ferriter.

The main arguments of HWP were:

- o The lease proposal was economically sound and of benefit to both the City of Holyoke and HWP.
- o The people of Holyoke should have the opportunity to express their preference by voting to accept or reject the proposal.

The main arguments of HG&E were:

- o The plan was an effort to "plow under" the municipal plant.
- o Accurate accounting showed that the HWP could not meet its rental payment without increasing rates.

During its presentation, HWP announced that it had retained Opinion Research Corporation to conduct a poll

on the lease proposal issues in Holyoke. 268 persons were interviewed, 75% felt that the matters at issue should be decided by referendum vote, 16% by their elected representatives and 9% had no opinion.

Position of Local Legislators

As the hearings neared conclusion, the legislators representing Holyoke spoke. Representative Chmura urged that both the HWP and HG&E bills be denied. Senator Donahue who was also President of the Senate urged that the lease question not be placed on the ballot at that time. Representative Bartley echoed Donahue's position. With the local legislative delegation opposed to the lease proposal, it was clear to HWP that the legislation which it required would not be forthcoming.

Statements and Editorial Following the Hearing 392

"We of course feel that the citizens of Holyoke are ready to vote upon this issue and that they should have the opportunity to do so as soon as possible.

"However we respect the views of Sen. Maurice A. Donahue and our local representatives and we understand their desire to make additional studies of the proposal and to search out all facets of the issue before arriving at a final decision.

"In the meanwhile, the lease proposal is still there. The acceptance of the 30-year plan would mean a net benefit to the city of \$52 million. We know that it is a good business proposition for both the city and the HWP. And we feel that the legislators will agree with us when they have completely explored the problem."

REBII

"I am sorry the people won't get an opportunity to vote on it," Mayor Daniel F. Dibble said.

He said it should be up to the people to decide. The people originated the Gas & Electric Dept. "It's just too big an issue for 16 men to decide," he added.

Mayor Dibble pointed out the people in Mass. have the right of petition although he didn't suggest who might start a petition for a referendum.

Mayor Dibble

Night of the long knives

It was the night of the long knives as the rights of the people were cut up, chewed, digested and spat back into their faces.

At no time was any real consideration given to the proposition that the people ought to have a right to vote on the issue that might very well have been the path out of darkness and depression. The outcome was pre-ordained. The politicians decided the people would not have the right to vote. And when the politicians decide you, the people, have not the right to vote, that is that.

The myth of objectivity in the public hearing was destroyed when it became obvious the Gas & Electric Department had done its homework with the members of the Power and Light Committee. The votes were there from the start. It only took the stiletto shaft applied by Senator

Maurice Donahue to administer the kindly death blow to whatever hopes the people might have had of being able to decide for themselves what is good for the city.

The blade-work was beautiful. The people were permitted to believe they were to have a say. The trappings of a legislative hearing — and the attendant expense — were produced. The proponents were allowed to state their case. Then the opponents.

All was mere window dressing that was stripped away in one slice by the appearance of the politicians and the coup de grace by Senator Donahue.

The night of the long knives was a sad one for Holyoke. It was also a brilliant example of how the selfish interests of few can deny the rights of the majority.

Editorial

Comment

The defeat of the lease proposal was a political result and bore no relationship to its merits. Over a year of concentrated effort by HWP had gone into preparing and advocating the proposal. The political scene would have had to change markedly to warrant another such effort.

The Tax Status CaseHistorical Background

HWP was chartered in 1859 by an act of the Massachusetts Legislature. That act, among other things, authorized it to create a water power to be used by it for manufacturing purposes and to be sold or leased to other persons for like purposes.³⁹³ The Company was also subject to the Revised Statutes of 1836 which were the business corporation laws of that time.³⁹⁴ From 1903 through 1936, HWP was classified by the Commonwealth as a business corporation.³⁹⁵

In 1936 and 1937, legislation was passed which exempted from local taxation the machinery of a manufacturing company. However, the machinery of public utilities remained locally taxed. In 1937, following the passage of this legislation, the Commission of Corporations and Taxation classified HWP as a manufacturing corporation. When the machinery of manufacturers was removed from local taxation, the state taxed it instead but at a lower tax rate.

The Holyoke Gas and Electric Department (HG&E), being publicly owned, does not pay any local, state, or federal taxes. The relief from taxation, of course, gives it an economic advantage over HWP, as the two concerns compete with each other in Holyoke for the industrial electric power business.

Assessors Levy Local Machinery Tax

The Holyoke Board of Assessors, in 1964, at the urging of HG&E, levied a tax on the HWP machinery of \$586,815.³⁹⁶ The state tax on the machinery that year was about \$60,000. The motive of the HG&E in seeking the much higher machinery tax upon HWP was undoubtedly to try to increase its competitive advantage over HWP.

Commissioner of Corporations Uphold HWP Tax Status

In the process of levying the machinery tax upon HWP, the Board of Assessors pressed the Commissioner of Corporations to change the company's classification from manufacturing to public utility. The Commissioner declined to make that change.

Appellate Tax Board Trial

The Assessors then appealed the decision of the Commissioner to the State Appellate Tax Board, which heard the case in February 1967. Although, the litigation was between the Board of Assessors and the Tax Board, HWP was given the right to intervene. The facts in the case were presented by HWP witnesses. They were REB II, Vice President Ralph E. Day and Attorney John S. Begley. Direct examination of the witnesses was by HWP Holyoke Attorney John F. Moriarty. Cross examination of the HWP witnesses was by lawyers of the Boston firm of Hale and Dorr.

The Assessors presented no witnesses. Manager Francis H. King of HG&E was in attendance throughout the trial helping the lawyers for the Assessors to formulate their cross examination questions.

Arguments of HWP for Tax Status as a Manufacturer

At the hearings before the Tax Board, company witnesses stressed the following reasons why its machinery should not be taxed like that of a public utility:

- o It has no franchise area. It can serve only industrial customers whose requirements are at least 100 horsepower. Each of its Holyoke customers can procure its electricity from HG&E if it so desires.
- o It has no right of eminent domain as do public utilities.
- o It has engaged in many non-utility functions such as:
 - o Owning and operating an hydraulic canal system delivering water from the Connecticut River to industries for water power and process uses.
 - o Generating and selling high-pressure steam for heating and process uses.

- o Operating a real estate business, selling and buying land.
- o Renovating mill buildings and renting them to small industries.
- o Loaning money, either with direct loans or with mortgages.
- o Building and owning gasoline stations.
- o Creating an industrial park and designing, building and selling most of the buildings in it.

Appellate Tax Board Decision

The Tax Board rendered its decision in August 1967. It upheld the classification of HWP as a manufacturer. The Board of Assessors then appealed the Tax Board decision to the Massachusetts Supreme Court.

Supreme Court Decision

The argument of the Board of Assessors before the Supreme Court was made by Miles St. Clair, a noted trial lawyer of the Boston firm of Hale and Dorr. The HWP lawyer who argued the company position was John F. Moriarty of Holyoke. On January 15, 1969, the Supreme Court handed down its decision. It completely sustained the manufacturing classification of HWP. That decision is among the exhibits prepared in conjunction with this history.³⁹⁷

Northeast Blackout

On November 9, 1965, at 5:28 in early evening, the lights went out in all New England except Maine and in the northeast part of New York state. Another exception occurred in South Hadley and the areas of Holyoke not served by HWP. HWP played a significant role in maintaining electric service in those two communities.

At HWP, Mt. Tom Power Plant, Riverside Station and Boatlock Station were all shut down. HWP personnel assumed initially that whatever had caused the shutdown was of local origin and set about starting up the generating equipment. It was not until much later in the evening that HWP received word that the blackout was area wide.

Riverside Station

Riverside was a combination hydro and steam electric generating station. A direct current generator, necessary for supplying excitation current to the hydro and steam electric generators, was run by either an electric motor or a steam turbine. The blackout had completely shut down both the steam turbine generators and the hydroelectric generators. Although the exciter had two different sources of power, neither was available to run it. Riverside could not start up by itself.

By great good fortune, one HWP electric generator was not shut down by the blackout. It was the Hadley hydroelectric generator at its dam, a 15,000 kW unit. An electric circuit from Hadley to Riverside was alive and brought the electricity for lighting and to start the motor driven exciter. Soon all the Riverside generators were running. Boatlock Station soon followed. HWP began picking up its Holyoke industrial customers about one hour after the blackout began.

Hadley Station

At the time of the blackout, the Hadley unit fortunately did not shut down but automatically separated itself from the rest of the HWP system, except Riverside Station, and continued to produce electricity. In so doing, it rendered yeoman service.

Mt. Tom Power Plant

This station was completely shut down. It restored electric generation later than Riverside because it is connected directly to the high-voltage transmission system. It took time for that system to reconstitute itself. Mt. Tom came back on line at 7:03 and began supplying electricity to HWP customers and to neighboring utilities.

South Hadley and Holyoke - Islands of Light in a Sea of Darkness

There was no interruption to the customers of the municipal plant of South Hadley for which HWP was the sole supplier. Also, there was no interruption of service to the customers of HG&E.

South Hadley

The HWP electric circuits serving South Hadley passed through Hadley Station en route to the transmission lines crossing over the Connecticut river to the town. The combination of Hadley Station electric generation and the transmission lines crossing the river to South Hadley meant that the town was unaffected by the blackout.

Holyoke Gas and Electric Department (HG&E)

Following is a chronological account of the events, related to the blackout, which took place between HWP and HG&E:

- o The electric service to HG&E customers was not interrupted by the blackout.
- o HWP began restoring electric service to its customers at 6:20, one hour after the blackout began, and all customers were picked up by 6:45 p.m. HG&E offered electric power to HWP during the blackout, an offer which was accepted at 8:15 p.m. and used until 8:55 p.m. The company publicly expressed in the local newspaper of 11/10/65 its appreciation for HG&E help.
- o The local newspaper carried the following items concerning HG&E in its issue of 11/10/65:

- o The effect of the blackout had traveled over the HG&E - HWP tie lines and had shut down the municipal steam turbine electric generators

HG&E immediately cut away from the HWP tie line.

HG&E started up its jet turbine to take the place of its steam turbine generators. Within two and three quarter minutes, customers were provided with 100 percent electrical output.

- o On 11/13/65, HWP explained to the local newspaper the role that the company had played in supplying electricity during the time HG&E needed to start up its jet turbine. This article also carries the statement of the HG&E manager that the tie to HWP was immediately cut, upon the first indication of trouble. That article is included herewith.
- o On 11/15/65, the HG&E manager issued a scathing prepared statement to the press accusing HWP of "absolute misrepresentation of fact" and "of unwarranted and ungrateful statements". That article is also included herewith.
- o On 11/17/65, after the technical staffs of both the HWP and HG&E had met together, a statement was issued jointly by both parties. It is included herewith. An important part of that statement is the following:

"These charts show that at the time of the area failure, the systems of the two organizations were electrically connected with each other and remained tied together for approximately the next 20 minutes."
- o The joint statement completely confirmed the statements made by HWP on 11/13/65. It also showed that the assertion by the HG&E manager, that the tie line was immediately cut off, was highly inaccurate. The caustic comments of 11/15/65 also seem to have been entirely unjustified. That article is also included herewith.
- o No retraction of the 11/15/65 statement by the HG&E manager was ever made nor was any expression of appreciation ever given to HWP for its assistance.

HWP Co. Said To Have Played Big Role In Keeping G&E On

By MICHAEL McCARTNEY

Holyoke Water Power Company officials, having studied the local effects of the northeastern Grid System failure which blacked-out most of the northeast Tuesday night, said today that its emergency tie-in line with the Gas and Electric Department played a vital part in enabling the municipally owned supplier to keep the city completely illuminated.

Without the tie-in line between the private and public suppliers, the HWP spokesmen said, the Gas and Electric Department would have lost the power needed to supply a great portion of Holyoke.

Gas and Electric Dept. manager Frank H. King said Wednesday that his personnel immediately cut off the tie-in when the first indication of a disturbance in the Grid System came over the connecting wire, blowing out the flames in two steam generating boilers. The G&E then started its \$850,000, jet operated turbine to supply 100 per cent power to the city, King had reported.

HWP Clarifies Situation

But HWP vice president Robert Walker and HWP Community Relations Director John Hickey gave the following account of the crucial minutes:

The Grid System failure affected the HWP, a member firm, and the trouble was transmitted over the tie-in line to the Gas and Electric Dept., blowing out flames in two boilers.

The G&E personnel immediately decided to use the peak power turbine to pick up the resulting drop in output, the HWP men said, but the time required to get the emergency unit into operation is 2.75 minutes.

Since electricity travels at almost the speed of light, Walker emphasized, a time lapse of almost three minutes between such a power drop and power pickup is drastically long and the G&E equipment could not have withstood the drain for such a long period and still provide complete lighting in the city unless one of two things

happened.

Split Second Action Unlikely

One alternative would have been for the G&E personnel to act instantaneously to throw a switch, cutting off the power to one part of the city to lessen the drain until such time as it could get its turbine in operation. But such a move, according to Hickey, would have to have been accomplished in a matter of seconds and is, therefore, "unlikely." The G&E people would first have to notice what was happening, then make a judgement, then a decision, and then act — all in a matter of seconds.

What Happened

The other explanation, Hickey and Walker said, is that power was being transmitted over the tie-in line from the HWP's hydro-electric plant to the G&E during the crucial 2.75 minutes, enabling the municipal supplier's equipment to stand up under the drain until the turbine was in full operation, preventing the G&E from having to shut down its supply to part of the city. This, in fact, is what happened according to recording instruments.

Also, King had said that the municipal supplier was not a member of the Grid System and would not have been affected at all if the emergency tie-in to the HWP had not existed.

But Hickey and Walker said that the city benefits from the tie-in line and that it has "bailed the G&E out of trouble many times" since it was put in use. In that sense, Hickey said, the G&E is actually connected to the Grid System.

After the G&E's turbine reached peak capacity, the Department had an excess amount of electricity and it offered to assist the HWP in re-starting its industrial supply equipment.

The HWP accepted the offer, and Wednesday, was quick to make a public acknowledgment of gratitude for the assistance.

King, however, made no mention of the assistance his Department received from the HWP during the critical first

few minutes and it is presumed that his failure to do so prompted the HWP Co. to explain its part in making Holyoke one of but three cities in the state with full lighting during the massive blackout.

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City G. & E. Manager Rebuts HWP

In a prepared statement, released this morning, King said:

"The citizens of Holyoke are no doubt much surprised at the manner the Holyoke Water Power Co. took to say 'thank you' for the assistance given them by the Gas and Electric Department during the recent black-out.

"The statement is an obvious attempt by the HWP officials to hide their embarrassment in having their customers in the area out of service while the city of Holyoke remained in service.

"There is no reason for them to feel this way, although we are sorry for their trouble. However, it does seem that alibies of this level and nature with absolute misrepresentation of fact, tend to increase their reasons for the embarrassment.

"In spite of these unwarranted and ungrateful statements, the Department still stands ready, if needed, to assist the HWP again in any emergency so that the electrical consumers of the area can have service.

"For those interested, nevertheless, actual operating and technical data is available at the Department to show exactly what happened.

"We want to again thank the mayor and the Board of Aldermen for their foresight in assisting the Department to install this gas turbine." 400

Statement Given Jointly By Utilities

The following statement, issued jointly by both utilities, was released this morning:

"Both organizations have compared charts giving information concerning electrical conditions between the two systems at the time of the incident. The charts of both organizations agree with each other.

"These charts show that at the time of the area failure, the systems of the two organizations were electrically connected with each other and remained tied together for approximately the next 20 minutes.

"During the period while the systems were still tied together, power flowed back and forth between the two systems. During this period, the Worthington jet turbine of the G&E which was quickly started by the Department operator, helped to carry the G&E load and also supplied power to HWP later in the evening.

"Both organizations agree that the fact that the two systems were tied together was mutually helpful during the emergency.

"It was agreed that both systems took the best possible steps for continuity of service with full consideration to area consumers at all times." 401

City of Chicopee

The largest customer of HWP was the City of Chicopee Electric Light Department, the load of which included Westover Field. The entire city was plunged into darkness along with the rest of the Northeast at 5:28. However, by 7:50, electric service had been completely restored. Chicopee was the first affected city in the area to achieve full recovery.

Comment

If Hadley Station had not stayed in operation throughout the blackout, the following would have occurred:

- o South Hadley would have been blacked out.
- o HG&E customers would have had at least a short blackout.
- o HWP would have had a much longer delay in starting up Riverside Station and returning service to its customers.

What Caused the Blackout?

The event which triggered the blackout occurred in Canada at the 1,225,000 kW Beck Station of the Hydroelectric Commission of Ontario. Five transmission lines leaving that station were heavily loaded to make up for a deficiency caused by an outage at a Toronto plant of three 300,000 kW turbines. One of those transmission lines opened up because of being overloaded. This progressively overloaded each of the other four until each line had opened up.

With no Canadian load for the Beck Station, its electricity flowed across the river over its connection of the Niagara Station of the Power Authority of the State of New York (PASNY) which was generating 1,800,000 kW. The combined output of the two stations was more than the transmission system could accommodate. This caused the backbone 345kV and 230kV lines across mid-state New York to open.

Eastern New York and southern New England were now left with a deficiency of electricity which could not be made up from the spinning reserve. That reserve was mostly in steam plants which could not respond fast enough to maintain frequency. The system finally collapsed and the lights went out. 402

A Unique Continuum

HWP became owner of the former Hadley Falls Company property on March 24, 1859. From that day forward, the company has been responsible for guiding a sizeable part of the flow of the Connecticut River through its canal system at Holyoke.

A gate house, under the control of an HWP employee, regulates the flow of water diverted from the river to its canals. These gate house operators work on shifts so that there is one of them on duty at all times.

Operations requiring attendants every day for 24 hours must have been rare in 1859. However, with the advent of central station generation of electricity, in 1889, HWP's 24 hour a day operations extended to its hydro and fossil fuel electric generating stations.

HWP may well be unique in being a business corporation which has been in existence for 130 years and has never shut down. It has had employees on duty for every hour, of every day, of every year of that continuum.

Directors and Presidents

Accompanying this section of the history is a chart on which the name of every HWP director is listed with his years of service indicated by a horizontal line opposite his name. The term of office of the company presidents is listed in the lower right corner of the chart.

In 1859, the first year of the company, there were two boards of directors. The first one elected was chosen immediately following incorporation of the Holyoke Water Power Company. That company had been formed to bid in at the Receivers auction the properties of the bankrupt Hadley Falls Company. However, the first group, largely from the Boston area, was outbid by Alfred Smith of Hartford. He then assumed control of the Holyoke Water Power Company and elected another group of six directors. Four of those elected were from Hartford, Connecticut, one from Chicopee, Massachusetts, and one from Northampton, Massachusetts.

Affiliation with Northeast Utilities

In early 1965, there was the announcement of the proposed merger of Hartford Electric Light Company, Connecticut Light and Power Company, and Western Massachusetts Electric Company into a holding company called Northeast Utilities (NU). That proposed merger was consummated as of July 1, 1966.

HWP - NU Affiliation Discussions

HWP management, early on after the NU formation, suggested to the Directors that discussions take place that might lead to it becoming an NU affiliate. Such discussions between the managements of the two organizations then occurred. Sufficient progress had been made by October 14, 1966, so that an announcement of a possible affiliation was made to HWP stockholders. It is included herein.

The announcement of the possible affiliation received broad coverage in the local press. It was also discussed editorially and in a supplementary article the next day. These three articles are included herewith.

HWP Reasons for Affiliation

1. Expansion of Electric Generating Capacity Not Feasible
 - a. Because its financial capacity had been stretched to the limit with the building of Mt. Tom power plant.
 - b. Only power plants much larger than Mt. Tom were then being built.
 - c. Atomic power plants were being built by consortia and Holyoke was not a feasible location.
 - d. Additional opportunity for economic hydroelectric power development was limited.
2. Load Growth from New Customers Limited
 - a. Sales of electricity were confined by law to customers over 100 horsepower in demand.
 - b. Most all of HWP's land, suitable for manufacturing, had been sold. Little was left to offer to over 100 horsepower customers.
 - c. Massachusetts was changing from manufacturing, to service type industries which HWP could not legally serve.



HOLYOKE WATER POWER COMPANY, HOLYOKE, MASSACHUSETTS

ROBERT E. BARRETT, JR.
PRESIDENT

October 14, 1966

To the Stockholders of Holyoke Water Power Company:

This is to inform you that studies are being made which might lead to the eventual affiliation of Holyoke Water Power Company with Western Massachusetts Electric Company, Hartford Electric Light Company and The Connecticut Light and Power Company as part of the recently formed Northeast Utilities.

These studies are aimed at determining whether the affiliation of our Company with Northeast Utilities would be mutually advantageous to the respective companies, their investors, their customers and to the public. If such studies should be favorable, then any proposal would be subject to approval by regulatory authorities and acceptance by the stockholders. No action with respect to this matter will be taken at the annual meeting of the stockholders on December 8.

It will be a matter of weeks before the studies are completed and we shall keep you advised of developments.

Robert E. Barrett Jr.

President

3. Ancillary Benefits

Stockholders: They would become shareholders in a large corporation listed on the New York Stock Exchange. They would gain flexibility for the buying and selling of shares. They would also participate in the growth prospects of a much larger company, with a diversification of service territories.

The financial benefits of the proposed merger to HWP stockholders, based upon the following pre-affiliation statistics, are shown below:⁴⁰³

	<u>HWP</u>	<u>NU</u>
Price of Stock	\$29 7/8	\$17 1/4
Annual Dividend	\$ 1.60	.86

At the rate of 2.25 NU shares to be exchanged for one HWP share, the value received by HWP shareholders was $2.25 \times 17.25 = \$38.81$. That compares to \$29.88 or an increase of \$8.97 per share.

The annual dividend on 2.25 shares of NU stock at .86 per share received by HWP shareholders was $2.25 \times .86 = \$1.93$ compared to \$1.60 an increase of 33 cents per share.

Employees: They would have the opportunity to gain the job security, training and benefits available in a large company, serving a wide geographical area.

Customers: They would have the assurance that the resources of the largest electricity supplier in New England would be available for maintaining their electric service. Also, the unique benefit of having two competitive sources of electricity would continue.

NU Reasons for Affiliation

1. Mt. Tom power plant

One of the major customers of HWP's Mt. Tom power plant was Western Massachusetts Electric Company (WMECO), one of the three members of NU. As a

result, NU management was well aware that this plant was the lowest cost fossil fuel plant on the NU system. It was also the most reliable of such plants. In addition, it was located on a site with major expansion possibilities.

2. Hydraulic System

The two major hydroelectric installations in 1966 on the Connecticut River in Massachusetts were those at Holyoke (HWP) and Turners Falls (NU). In addition, NU owned a series of hydroelectric plants on the nearby Chicopee River and was operating the Cobble Mountain hydroelectric plant on the Little River in Granville for the City of Springfield.

An affiliation with HWP would allow improved coordination of the operation of the two major Connecticut River hydroelectric installations. Also, efficiencies could result by combining under one management the operation and maintenance of the HWP, Chicopee River and Cobble Mountain hydroelectric installations.

3. HWP Personnel

An affiliation would make available to NU the experience of a cadre of persons experienced in the construction, management, operation and maintenance of both hydroelectric and steam electric generating facilities.

4. Financial Position of HWP

In 1966, the financial condition of HWP was sound and was as follows:

o Net Income	\$ 1,121,910
o Dividends	696,000
o Surplus	12,963,242
o Capital Stock	2,400,000

5. Electric Sales Prospects

At the time of the affiliation, HWP was the sole supplier of electricity to the Town of South Hadley and to the City of Chicopee, both of which had been experiencing good growth in the residential composition of their loads. This tended to more than counter balance the lack of growth in electric sales to HWP's Holyoke industrial customers and to give prospects of continued corporate growth.

Power Co. Here May Join Big Group

Studies Made Toward Possible Affiliation With Western Mass.-Connecticut Combine; H. Water Power Co. Would Keep Local Role

A feasibility study of the merger of the Holyoke Water Power Co. with the recently formed Northeast Utilities is underway and will be completed in several weeks.

Any proposed merger resulting from the study would be subject to approval of the Securities and Exchange Commission in Washington and the stockholders of HWP.

The announcement of the merger possibility was made jointly today by President Robert E. Barrett, Jr., of the local utility and Howard J. Cadwell, executive committee chairman of Northeast Utilities and the former chief executive at Western Mass. Electric Co.

Northeast Utilities is an affiliation of three major power companies in southwestern New England that came to pass on July 1 of this year. In addition to Western Massachusetts Electric Co., the affiliates are the Connecticut Light and Power Co. and the Hartford Electric Light Co.

The Northeast system is a participant in the new generation and transmission complex now being built in New England known as the Big 11 Power Loop. The Big 11 system represents a one-and-a-half billion plant investment in New England that is designed to serve the area's power needs for the next decade.

The feasibility study is aimed at determining if the merger would be mutually advantageous to the companies, their investors, their customers and the public, according to the joint announcement.

Barrett said that the study contemplates that the Holyoke Water Power Co. would retain local management of its electrical operations and would continue its active participation in industrial and community development.

If the study indicates an advantageous merger, and if SEC and stockholder approval is obtained, Northeast Utilities would acquire all the stock of HWP, now held by some 2,000 stockholders, in exchange for stock in Northeast. Holyoke Water Power Co. would continue as a corporate entity, with a single stockholder. The 2,000 stockholders of HWP would join the 115,000 stockholders of Northeast who formerly were stockholders in the three affiliated power companies mentioned above.

The asking price of Holyoke Water Power Co., according to today's listing is \$29 $\frac{3}{4}$ a share while Northeast is asking \$17 $\frac{1}{4}$. The study would determine the ratio of stock exchange.

In addition to the merger study with Holyoke Water Power Co., Northeast is considering amalgamation with two other major New England power companies, Boston Edison and the New England Electric System.

Northeastern stated in a report to its stockholders that such affiliation could have "significant advantages" for the entire New England region. The basic reason put forth is that "dramatic changes in recent years in the technology of generation and transmission of electricity" indicate the desirability of the merger.

Northeast is now the 16th largest electric utility in the nation. While merger with Holyoke Water Power Co. if accomplished, would not change its rating significantly, the contemplated union with Boston Edison and New England could. The study of this larger merger is expected to require two years.

The Holyoke Water Power Co. was organized by an act of the Legislature in 1859, for the purpose of acquiring and developing the properties of the Hadley Falls Co. which had literally created the city of Holyoke starting in 1858.

The new company acquired from Hadley Falls the wooden dam it had built across the river in 1849; the canal system; and 1,100 acres of land on both sides of the river.

This marked the turning point in the city's history as the HWP proceeded to develop the land area to a greater extent than its predecessor, laying out an extensive street system, and reserving land for parks, playgrounds and other public conveniences.

The three corporations which now form Northeast are engaged principally in the generation and purchase of electric energy, and its transmission, sale and distribution. CL&P and HELCO are also engaged, to a lesser extent, in the purchase, distribution and sale of gas.

All three have continued to function as separate operating companies in their respective and adjoining service areas. Those areas cover most of the State of Connecticut and the western part of Massachusetts . . . 5,892 square miles and almost one million customers.

One of the chief reasons for the formation of NU stems from the fact that improved technology has greatly increased the optimum size of electric power generating units which operate at greater efficiency and lower cost. The combining of markets of the three operating companies has provided the outlet needed to support these large-sized generators, and assures the full economies of large-scale operation.

Northeast Utilities is constructing a 600,000 kilowatt nuclear fuel plant at Millstone Point, Connecticut, to be completed in 1969. It is also planning the 1,000,000 kilowatt pumped storage hydro-electric plant at Northfield Mountain on the Connecticut River. This is expected to go into operation in 1971.

In addition to these new facilities, wholly owned by Northeast, it also has a 44% participation in the ownership and output of the nuclear plant of the Connecticut Yankee Atomic Power Co. Scheduled for completion by next year, the one-half million kilowatt unit is located at Haddam Neck, Conn.

Since 1961 the Northeast companies have shared to the extent of 31.5% in the pioneering Yankee Atomic plant at Rowe.

Some statistics on Northeast Utilities are: assets, \$874 million; employees, 6,400; electric capacity, 2,227,450 kilowatts.

Chief officers of Northeast are: Sherman R. Knapp, president and chief executive officer; Raymond A. Gibson, chairman of the board and Howard J. Cadwell, chairman of the executive committee. 404

Holyoke Holyoke Telegram Transcript

EDITORIAL PAGE — OCT. 15, 1966 — PAGE 4

A change in Holyoke

Yesterday's announcement by the Holyoke Water Power Company hit with stunning impact. It is not that we have had no previous experience with local firms amalgamating with others more powerful and farther away, but the Holyoke Water Power Company is Holyoke. It made Holyoke what it is today, and is shaping what it will be in the future.

The decision cannot be greeted but with mixed emotions. No matter what might be said, we shall be losing a locally-owned business that has contributed more to our city than any other. Yet, the economics of our times engendered by the need for bigness and large resources mean that the Holyoke Water Power Company will be a stronger operation. It will be better able to compete in a market place inhabited by giants. Thus the company and the community in which it makes its headquarters will be better off.

What will the decision mean to Holyoke? Such an answer cannot be forthcoming at this time. Certainly there will be changes. It would be naive to think a stronger, more competitive, but no longer locally owned Water Power Company could play the same role in the community as it has done since its inception in 1859. Things cannot help but be different — not necessarily worse nor better, but

different.

Would the decision have been otherwise had there not been the harrassment of recent years; if there had been full recognition accorded the company's role in the community? The chances are it would not. The Holyoke Water Power Company has long demonstrated it can withstand an almost intolerable amount of abuse, and it has long since given up any hope of receiving its due share of credit.

No, the decision was made primarily on the basis of economics. To survive in today's competitive world, a company, just as an individual, must constantly look into the future and be prepared to meet the exigencies of that future. In the case of the Holyoke Water Power Company, that meant aligning itself with other firms in order to renew its sinews and continue to provide the people, its customers, with the best possible service.

We cannot rejoice. Yet we must recognize the necessity of the change, and must prepare ourselves for other changes. Time does not stand still. People and institutions do not remain inviolate. Constancy is a thing of a mere moment. The future will be different. It must be different. The decision by the Holyoke Water Power Company is part of this ever changing scene.

The warmest best wishes of a grateful community are in order.

A company and a city

The contemplated merger of the Holyoke Water Power Co. with Northeast Utilities, one of the giants in the power industry, is cause for sober thought hereabouts. Holyoke Water Power Co. has been too intimately bound up in the history of this community for anyone to be apathetic toward the impending change.

Indeed, the history of the Holyoke Water Power Co. is the history of Holyoke. Holyoke is a city built by power, and the power in the 19th century was provided by water. The Hadley Falls Company, the direct predecessor of Holyoke Water, built the dam, laid out the canals, planned the streets, and built the mills and the workers' housing.

The Hadley Falls Company was financed from Boston. What would induce a Boston investor to put his money into this scheme to develop a manufacturing city in a virtual wilderness back in 1847? The river. The river and the natural falls held the potential for cheap power. The dam and the canal system converted this potential into a significant industrial asset.

Because the investors in the Hadley Falls Company did not realize an immediate fortune from their rather imaginative experiment 100 miles west of Boston, they became discouraged and wanted out. It was at this juncture, in 1859, that the Holyoke Water Power Co. was organized, buying the stock and assets of the Hadley Falls Company. HWP has been an integral part of the community ever since.

The 1860s were rocky, particularly with the supply for the cotton mills disrupted by the Civil War. It was not until the 1870s and the start of the paper manufacturing in Holyoke that the city's real growth began.

The city enjoyed some palmy years in the last part of the 19th century. Local money and investment supplanted the outside financing, and the paper industry thrived. The Holyoke Water Power Co. shared these good times.

Then, close to the turn of the century, the boom leveled off. Once again, power was basic to this changed condition. Holyoke prospered originally because the manufacturer had to be close to the source of the power, and the river was the source. By 1900, however, power could go to the manufacturer, and the river location was no longer vital. Important, yes, but not vital.

The rise of the trusts in thread and paper manufacturing was the dominating characteristic of the local economy in the early 20th century. Holyoke's economy was sound and so was the Holyoke Water Power Co. The effects of the boom of the '20s, depression of the '30s, and war of the '40s are too recent and familiar to merit rehashing.

The 1950s saw the economy's wheel come full circle. Whereas the city began under the auspices of outside capital, and gradually developed its own internal financial strength and local ownership, it looked again to the outside for financing in the postwar period. Local ownerships declined, slowly at first with an isolated sale here and there, and then accelerating to a point where local ownership has become the exception.

And now, the Holyoke Water Power Co.—a solidly local organization despite a stockholders' list with many addresses on it—appears to be taking the merger trail. The revolution of the wheel will be complete.

The reasons are many. They are the same reasons that persuaded such industries as Prentiss Wire, Parsons Paper, Newton Paper, Whiting Paper, Tecifax, Plastic Coating, American Writing, Lestoil—the list goes on and on—to merge their interests and assets with larger national firms. They are woven around the need to expand or wither away. Competition in the market place is too intense for the average small manufacturer unless he has a unique product or organization. And the fiscal needs for expansion to meet the competition of the "biggs" are far beyond the capability of the purely local industries.

Thus it goes, according to the cliché, that the biggs get bigger. Their per unit costs are reduced. Their buying power enhanced. Their distribution systems magnified.

Nowhere do these conditions prevail more obviously than in the power industry. Cheap power, the goal of producers and consumers alike for generations, has been elusive in New England, but the producers feel that they have the answer in bigness.

Certainly the Holyoke Water Power Co. or any other local utility could not finance an atomic power plant. The approximately \$30 million invested in the Mt. Tom power plant comes close to the outside limit that HWP could present to the financial community. The Mt. Tom plant was a magnificent contribution to the worth of the company and to the economy of the city when it was built, but it would never be built again. It is too small. It cannot generate power at the levels that any new plant today must generate. If Holyoke Water Power Co. is to expand, it feels that it cannot expand on its own.

We think about the proposed merger with a sense of resignation, a sense that it is probably inevitable—if not now, then later. But we have a deep sense of regret about losing the sense of closeness that Holyoke Water Power Co. has always shared with the community.

This sense of closeness may make no difference in the megalopolis of the last third of the 20th century, but we will have to digest the new concepts slowly. The habits of more than a hundred years are not easily changed. 407

Special HWP Directors' Meeting

On November 9, 1966, a special meeting of the Directors was held to discuss the proposed affiliation of HWP with Northeast Utilities. Such an affiliation had previously been informally discussed with members of the Board.

The purpose of this meeting was to consider the offer of NU of 2.25 shares of its stock for each share of HWP stock. REB II explained that HWP and NU had jointly retained a firm of utility analysts, Reis and Chandler, with both companies to arrive at fair terms for the stock exchange. He further said that HWP had independently retained the investment firm of Smith Barney as a financial advisor. He said that the HWP management staff and financial advisor felt the rate of 2.25 shares of NU stock for each share of HWP stock was fair and equitable and wished to recommend its acceptance by the Board.

The Board of Directors then voted to approve the affiliation of HWP with NU including the offer of 2.25 common shares of NU stock for each HWP share.

Securities and Exchange Commission(SEC)

In order for the affiliation of HWP with NU to take place, the approvals of the Securities and Exchange Commission and of the HWP stockholders were required.

Hearing 12/16/66

Hearings before the SEC opened in Washington on December 16, 1966. This session was devoted to placing into the record the pre-hearing testimony of the principal witnesses. Howard J. Cadwell, Chairman of the NU Executive Committee and REB II were the principal witnesses for their respective companies.

Testimony submitted by the Holyoke Gas and Electric Department at the hearing made it evident that it was taking an adversarial position concerning the affiliation.⁴⁰⁸

Hearing 1/18/67

This session was mainly devoted to the cross examination of Cadwell and REB II by George Spiegel of the Washington law firm of Spiegel and McDiarmid. That firm specialized in representing publicly owned utilities in litigation with private utilities.⁴⁰⁹

Hearing 1/25/67

This day was largely devoted to the direct and cross examination of Manager King of the HG&E. The main thrust of the HG&E position was to urge upon the SEC that a group of conditions be put upon HWP as a part of any approval of the proposed merger.

Conditions Urged by G&E to SEC⁴¹⁰

- o Order a different method of acquisition of HWP by NU.
- o Make a full investigation of the effect, of the proposed affiliation, on the economic, legal, and electrical status of the city and HG&E.
- o Require full disclosure of the beneficial stock owners of HWP.
- o Require a full investigation of whether the Connecticut River water is being used in the best interest of the public.

- o Investigate the indentured mill powers along the canal system to determine if they are in the public interest.
- o HWP should give up its local industrial customers to HG&E.
- o NU to make available to HG&E generation and transmission services on the same basis as it provides these services to HWP.
- o NU to allow HG&E to participate in Northfield Mountain Pumped Storage plant and to use present and proposed transmission lines at same rates as allowed as affiliates.
- o HWP generation and transmission facilities to be recognized as part of an integrated electric public utility system.
- o NU to underwrite and guarantee HWP obligations to maintain canal walls and to provide emergency power to HG&E under state law.
- o HWP to release indentured canal mill powers from appurtenancy to particular real estate.
- o HWP to permit HG&E to install a 15,000 kW unit at the dam, if HWP does not do so within a year.

Condition Urged by both HG&E and City of Holyoke to SEC
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- o HWP should pay local taxes on its machinery, as a utility, rather than a state tax as a manufacturer.

SEC Staff Report

On April 21, 1967, the SEC staff issued a report recommending to the Commission that none of the conditions requested by HG&E be included in the decision of the Commission. It also found that the affiliation served the public interest by "tending towards the economical and efficient development of an integrated public utility system."

SEC Decision

On August 18, 1967, the SEC issued an order approving the application for affiliation of HWP and NU. The order contained none of the conditions which had been requested by HG&E and the City of Holyoke.

Stockholders Notification and Stock Exchange

On August 22, 1967, the HWP stockholders were notified of the approval by the SEC of the proposed affiliation. They were also urged by the management to accept the stock exchange offer of NU.

By September 29, 1967, NU was able to notify the stockholders that more than 80 percent of the outstanding shares of HWP stock had accepted the exchange offer. Accordingly, the exchange was declared effective as of September 30, 1967.

HWP - Subsidiary of NU

The announcement that HWP and NU were studying the possibility of affiliation was made on October 14, 1967. Less than one year later, and despite contested proceedings before the SEC, HWP had become a subsidiary of NU. Thus, did the life of HWP, as an independent company, come to an end after a continuous existence of 108 years, from 1859 to 1967.

A Tribute to HWP Employees

The preceding pages have told of many of the facilities built by HWP during the years from 1859 through 1967. Among them were a dam, canals, buildings for industry, an industrial park, a hydraulic testing flume, hydro and fossil fuel electric power plants, electric distribution and transmission lines, and a fish lift.

All of these projects added to the material resources of the company. Their costs were included among the assets on the company's financial balance sheet. However, each of them would have remained just stone, concrete, steel and machinery, were it not for the diverse skills of generations of HWP employees. Their abilities to operate, maintain, and administer these facilities, enhanced by their loyalty, cooperation and self reliance, breathed life into structures and equipment which otherwise would have remained inanimate. In the process, the latent energy bound up in falling water and fossil fuels has been transformed into electricity for public benefit.

The maximum number of regular HWP employees, during the period of this history was 139, occurring in 1967. That number included many occupying positions which required continuous 24 hour daily coverage. The total of those employees, over the years, would be numbered in the hundreds. Today they are remembered, not by name, but by their devoted service, which made possible the record of HWP accomplishment contained in the pages of this book. Without them this history could not have been written.

Epilogue

The writer now sets down these last words which bring to a conclusion the account of a continuous corporate involvement on the Connecticut River from 1792 to 1967, a period of 175 years. The first volume of this history was completed in 1985. It begins in 1792 with the Proprietors of the Locks and Canals on the Connecticut River and then tells of the Hadley Falls Company of 1827 and the Hadley Falls Company of 1848.

This second volume tells about the Holyoke Water Power Company throughout its entire existence from 1859 to 1967 a period of 108 years.

As one looks back over this period of 175 years there is one central theme which has played a continuous role in the lives of each of the four corporations which make up this quadrumvirate. It is the Connecticut River and the efforts of each of these companies to develop that resource in the public interest.

In 1792, it was in the developing a navigation canal that the Proprietors used an overshot water wheel to supply the power to lift boats above the river rapids. Later a lock system proved more efficient. The portaging of goods around the rapids was eliminated.

In 1827, the original Hadley Falls Company built the first textile mill in the area to replace hand looms. It was built near the river and was powered by falling water supplied by a crude wing dam and canal.

In 1848, a major hydraulic development was undertaken by the second Hadley Falls Company which built a dam across the river and laid out an extensive hydraulic canal system. This was the foundation stone for a major industrial city, Holyoke.

In 1859, the Holyoke Water Power Company took over the property of the Hadley Falls Company and during the next 108 years expanded the utilization of the resources of the river with its development of hydroelectric power and steam electric power.

The years from 1792 to 1967 were marked with change and progress. However, the one constant element throughout those years has been the Connecticut River. Without fail, year after year, it allowed these four companies to extract from it, the power to do useful work, as it passed on downstream on its way to the sea. A major industrial city came into being.

Change is continuous. The future will be different from today. However, the river will be the one constant tie between the present and the future. It will not change and wise men will continue to nurture it so that future generations, too, will receive its benefits.

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78. The Venturi Water Meter and the First Twenty YEARS Of Its Existence by Clemens Herschel. Reprinted by Builders Iron Foundry, Providence, RI, 1909 (V.W.M.), page 9, third paragraph. See Exhibit X
79. V.W.M., page 3, first paragraph
80. Design for a Stone Dam for Holyoke Water Power Company (T.A.S.C.E.), Volume XV 1886, page 576. Also see reference 82 (page 6) - Last paragraph of letter to Winston Herschel concerning ogee design
81. T.A.S.C.E. 1931 (Memoirs)
82. Builders Venturi News (B.V.N.) February-March 1944, page 6, BIF Industries, West Warwick, RI. See Exhibit V
83. Ibid, page 7
84. Ibid, page 7

85. The Water Supply of the City of Rome by Sextus Julius Frontinus and Clemens Herschel, Herschel to Frontinus, page 4, first paragraph, New England Water Works Association 1973
86. Ibid, page 21, second paragraph
87. V.W.M., page 3. See Exhibit X
88. Plan of Holyoke, 1853. See Exhibit Y
89. See Indenture dated March 6, 1856 between Hadley Falls Company (1848) and Leonard and J. B. Woods
90. Indenture Hadley Falls Company to Glasgow Company, January 1, 1849
91. Indenture Hadley Falls Company to Carew Manufacturing Company, February 9, 1849
92. See Exhibit Z
93. B.V.N., page 5
94. Information from Edward J. Bayon of Holyoke who attended Worcester Polytechnic Institute and was a student of Professor Charles Allen who invented the salt water velocity method of measuring the rate of water flow.
95. V.W.M., pages 5 and 6. See Exhibit X
96. Ibid, page 7
97. Ibid, page 7
- 97a. Transactions of American Society of Civil Engineers, Paper 371, Vol. XVII, November 1888. See Exhibit X(a)
- 97b. 1931 Transactions of American Society of Civil Engineers. See Exhibit X(b)

98. Ibid, page 13
99. Telephone conversation with Mr. Tony LaQuaglia of BIF Industries, Warwick, RI, January 21, 1986
100. H. M., page 34
101. See Exhibit A1 (Note this is a map of Parsons Paper Company and Chain of Title)
102. Real Estate Sales 1859-1985. See Exhibit A-2
103. Consumer Price Indexes. See Exhibit A-3
104. HWP Directors' Records, June 13, 1904 (D.R.)
105. See Exhibit A-4
106. H.M., page 9 (Map of Parsons Division)
107. World Book Encyclopedia, Field Enterprises, Copyright 1950, page 2263, Incandescent Light
108. See Exhibit O
- 108a. See Exhibit A-88 for eye witness accconts of major wash out, June 12, 1889
109. See Exhibit A-5, Naming of Holyoke
110. Webster's New Third International Dictionary 1966, page 327.
111. H.M., page 103
112. Ibid, page 122
113. H.T., August 13, 1884
114. Ibid, August 27, 1881
115. From Holyoke City Directories for the respective years
- 115a. H.M., page 56, Footnote #83
116. H.M., pages 120 and 121
117. D.R., September 30, 1873
118. See Exhibit A-6, "Electricity Comes to Holyoke"
119. H.T., October 15, 1884

120. Ibid, December 1, 1884
121. Ibid, March 7, 1885
122. Ibid, May 29, 1886
123. See Exhibit A-7 - Gifts of Land
124. H.T., August 27, 1881
125. Ibid, December 14, 1881
126. See Exhibit A-8, Dividends
127. See Reference 69 and Exhibit A-9
128. H.M., page 96
129. H.T., September 6, 1884
130. Ibid, May 25, 1888
131. Ibid, June 16, 1888
132. H.M., pages 158 and 159
133. Engineering News (E.N.), May 13, 1897 - Article by Sanford E. Thompson. See Exhibit A-10, page 49
134. Consulting Engineers Report regarding New Stone Dam, May 9, 1885. See Exhibit A-11
135. The Water Power at Holyoke (W.P.H.), by A. F. Sickman, September 14, 1904, page 9. See Exhibit A-12
136. Ibid, page 10
137. E.N., May 13, 1897, Exhibit A-10, page 51
138. Springfield Republican (R.E.P.), July 18, 1897
139. S.R., November 10, 1897
140. H.T., January 5, 1900
141. Annual Treasurers' Report to Stockholders - HWP Vault
142. E.N., May 13, 1897, Exhibit A-10, page 51

143. W.P.H., page 11
144. From Statement of Original Cost of Project 2004, page 110, submitted to Federal Power Commission dated December 31, 1949
145. The Miles Morgan Family of Springfield, Mass., by Frank F. Starr, April 1904, page 33
146. Ibid, pages 34-54
147. E.N., May 13, 1897, Exhibit A-10, page 54
148. See Exhibit A-13
149. Holyoke Water Power Company Petitioner vs. City of Holyoke, (H.V.H.), Vol. XVI, of twenty volumes, December 26, 1901, pages 399-403.
150. H.V.H., Volume XVI, page 403
151. H.T., January 5, 1891
152. Letter from HWP to Brattleboro Gas Light. See Exhibit A-14
153. H.V.H., Volume IV, page 4
154. Massachusetts Legislative Acts (M.A.) of 1891, Chapter 370, See Exhibit A-15.
155. M.A. 1894, Chapter 533. See Exhibit A-15
156. H.T., July 17, 1895
157. Ibid, July 19, 1895
158. Ibid, December 16, 1896
159. See Exhibit A-16
160. See William A. Chase, Exhibit A-17
161. H.T., December 7, 1897

162. Statements of Proponents and Opponents to Municipal Take Over, Exhibit A-18
163. See Municipal Lighting Case - First Hearing, Exhibit A-19
164. Springfield Republican (R.E.P.), May 3, 1899
165. Ibid
166. H.T., Circa May 5, 1899
167. Holyoke Telegram (T.E.L.), May 11, 1890
168. H.T., May 15, 1899. See Exhibit A-22
169. Ibid, January 31, 1900
170. T.E.L., March 14, 1900
171. T.E.L., March 28, 1900
172. R.E.P., April 5, 1900
173. T.E.L., May 25, 1900
174. H.T., June 21, 1900
175. Municipal Lighting Contract, Exhibit A-21
176. H.T., March 12, 1900
177. H.T., June 28, 1900
178. "Let There Be Light." See Exhibit A-20
179. Legal Notice Calling Special Election
180. H.M., page 274
181. H.T., December 15, 1902
182. Ibid, February 6, 1903
183. Ibid, February 27, 1903. See Exhibit A-23
184. Ibid, March 17, 1903. See Exhibit A-23
185. Ibid
186. Ibid, March 19, 1903, See Exhibit A-23

187. Ibid, March 24, 1903. See Exhibit A-23
188. Ibid, February 25, 1903
189. Ibid, February 26, 1903
190. Ibid, February 27, 1903
191. D.R., January 2, 1903
192. R.E.P., April 11, 1905. See Exhibit A-24
193. Ibid, June 1, 1905
194. T.E.L., June 15, 1905. See Exhibit A-25
195. H.T., January 16, 1909
196. T.E.L., January 18, 1909
197. H.T., January 16, 1909
198. T.E.L., January 26, 1909, See Exhibit A-26
199. Ibid, February 20, 1909
200. Ibid, February 29, 1909
201. H.T., February 22, 1909
202. T.E.L., February 23 and 24
203. Ibid, February 23, 1909
204. Ibid, February 1, 1909
205. Ibid, March 9, 1909. See Exhibit A-27
206. Ibid, February 1, 1909
207. Ibid, February 8, 1911 "Winchester Denies Charges"
208. The Paper Mill, August 20, 1904
209. H.T., February 7, 1911
210. T.E.L., February 8, 1911
211. H.T., March 28, 1912. The letters which have been summarized filled four columns in the paper and were published as a paid advertisement of HWP.

212. H.T., March 28, 1912
213. T.E.L., March 28, 1912
214. H.T., October 15, 1912
215. H.T., April 2, 1913
216. H.T., December 18, 1912
217. T.E.L., October 7, 1912
218. H.T., December 28, 1915
219. H.T., October 15, 1912
220. H.T., October 7, 1914
221. R.E.P., March 11, 1915
222. H.T., March 11, 1915
223. R.E.P., March 11, 1915
224. H.T., April 22, 1919
225. R.E.P., March 19, 1919
226. R.E.P., March 26, 1919
227. T.E.L., April 2, 1919
228. R.E.P., May 30, 1919
229. T.E.L., June 6, 1919
- 229a. Ibid
230. R.E.P., June 12, 1919
231. H.T., June 4, 1919
232. UN, June 2, 1919
233. H.T., June 18, 1919
234. H.T., June 21, 1919
235. UN, June 28, 1919
236. H.T., July 2, 1919
237. Ibid, July 25, 1919

238. T.E.L., December 10, 1919
239. H.T., December 15, 1919
240. H.T., January 15, 1920 and R.E.P., January 15, 1920
241. 25th Anniversary Report of Harvard Class of 1905.
Exhibit A-28
- 241a. D.R. December 17, 1920, page 258
242. HWP DPU Report 1920. See Exhibit A-29
243. Report of the History and Present Condition of the
Hadley Falls Company - 1853. See Exhibit D of
Section III of The Roots of Holyoke Water Power
Company, 1985 by R.E.B.II
244. HWP DPU Report for 1924. See Exhibit A-30
- 244a. Information from L. D. Pellissier, Jr., President
of Holyoke Street Railway Company, July 13, 1987
245. History of Holyoke Water Power Company (HWP Vault)
by R.E.B. I, page 50 (HHWP) 1929
246. Treasurer's Report to the Directors on the Power
Situation, T.R., August 30, 1920, pages 4 & 5
247. H.H.W.P., pages 50 and 51
248. T.R., February 28, 1925, page T.F.1.
249. T.R., February 28, 1926, page E-4
250. T.R., February 28, 1926, page E-5
- 250a. H.H.W.P., page 51
- 250b. Ibid, page 51
- 250c. Ibid, page 50
- 250d. T.R., February 28, 1926, page E-6
251. Mass. DPU Reports for 1926, 1927 and 1928

252. HHWP page 51a.
253. See Exhibit A-31.
254. T.R., May 31, 1920, page 15
- 254a. Special Report to Directors by the President about the Value and Possibilities of HWP, January 15, 1929. See Exhibit A-39, page 4
255. Turners Falls Power and Electric Company (TUFCO) Memorandum of Advantages by Interconnecting HWP and TUFCO Systems. See Exhibit A-32
256. The Hartford Electric Light Company, 1969, page 134 by Associate Professor Glenn Weaver of Trinity College
257. T.R., May 31, 1920, page 15
258. T.R., August 30, 1920, page 6
259. T.R., May 31, 1921, page 9
260. T.R., August 31, 1923, page E2
261. T.E.L., September 20, 1922. See Exhibit A-33, Chamber of Commerce Speech of H.W.P. President Charles E. Gross
262. Reply to H.W.P. by the G&E Commissioners, H.T., October 25, 1922. See A-34
263. Second Statement by H.W.P., H.T., November 17, 1922. See Exhibit A-35.
264. New Broadside by G&E at H.W.P., H.T., December 16, 1922. See Exhibit A-36.

265. Report of Committee of Holyoke Chamber of Commerce Concerning Power Situation. H.T., January 29, 1923. See Exhibit A-37
266. Editorial Commenting Upon Chamber Committee Report. See Exhibit A-38.
267. H.T., January 30, 1923
268. T.R., May 31, 1923, page E-4.
269. T.R., May 31, 1923, pages E-5 and E-8
270. T.R., August 31, 1923, page E-2 and E-3
271. T.R., November 30, 1923, page E-2
272. T.R., February 29, 1924
- 272a. T.R., May 31, 1923, page E-8
- 272b. T.R., August 31, 1925
273. U.N., November 12, 1924
274. H.T., November 11, 1924
275. Remarks for Meeting with South Hadley Electric Light Commission, November 18, 1925. See Exhibit A-40
276. T.R., May 31, 1925, page RE-3
277. T.R., August 31, 1925, page RE-1
- 277a. T.R., February 28, 1937, page G-12. See Exhibit A-65
278. T.R., August 31, 1929, May 31, 1930
279. Charter of Holyoke Power and Electric Company issued by Secretary of State, December 5, 1926. See Exhibit A-41

280. Chapter 147 Acts of 1926 Relative to the Powers of HWP and HP&E. See Exhibit A-42
281. T.R., March 25, 1927, Holyoke Power and Electric Company. See Exhibit A-43
282. T.R., November 30, 1927. Also see H.T., Microfilm for November 1927 in Holyoke Public Library
283. T.R., August 31, 1922, page 8
284. T.R., February 25, 1925, page L-2.
285. H.T., January 26, 1925. See Exhibit A-44
286. H.T., January 27, 1925
287. T.R., November 30, 1925, pages L-1, L-2
288. Letter by H.W.P. Management to Directors, March 20, 1929. See Exhibit A-45
289. See Exhibits A-46, A-47, A-48, and A-86. Regarding H.W.P. and Connecticut Lakes
290. Northfield Mountain Interpreter, page 133.
291. H.T., September 3, 1887. See Exhibit A-49
292. Ibid, October 17, 1887
- 292a. See Report of Removal of Logging Piers, 1925, Exhibit A-50
- 292b. D.R., May 28, 1924
293. H.T., December 8, 1925
294. Ibid, May 17, 1935
- 294a. Ibid, September 17, 1935
- 294b. Ibid, October 31, 1935
295. Springfield Sunday Republican, February 26, 1933. See Exhibit A-56

296. H.T., April 3, 1928
297. T.R., August 31, 1930, page E-2
298. Ibid, November 30, 1930, page E-3
299. Ibid, February 28, 1931, page E-2
300. Ibid, February 28, 1931, page E-3
301. Ibid, November 30, 1931, page E-4
302. Letter H.W.P. to City of Holyoke Offering Saw Mill Site as a Gift. See Exhibit A-51
Deed H.W.P. to City of Holyoke, September 17, 1945 Registry Book 1806, page 552. See Exhibit A-51a
303. For a "Proposal." See Exhibit A-52, for "Indenture." See Exhibit A-53
304. T.R., August 31, 1930, page H-3
305. Ibid, May 31, 1931. See Legal Matters Section
306. For decisions of C. J. Rugg, regarding Whiting and Company, see Exhibit A-54. Regarding Whiting Paper Company, see Exhibit A-55
307. T.R., August 31, 1932, page H-3
308. Silver Tabulations 1849-1930. See Exhibit A-57 and chart in the text
309. Silver Prices 1849-1987. See Exhibit A-58
310. See Decision of U. S. Circuit Court of Appeals 1933 (CCA), page 6, Exhibit A-59
311. Ibid, page 8
312. Memorandum by Judge McLellan. See Exhibit A-60a.

- 312a. "Commute" means to convert (as a payment into another form). Source: Webster's Seventh New Collegiate Dictionary, page 168
313. C.C.A., page 9
314. T.R., February 2, 1934, page L-2, regarding Silver Bullion decision
- 314a. See Memorandum Titled, "Gold Clauses in Holyoke Water Power Indentures", R.E.B.II to J.T.H. January 18, 1984 See Exhibit A-85
- 314b. T.R., February 28, 1937, page G-2, regarding Gold decision
315. Ibid, May 31, 1933, page G-7, Photo of filling at the Island
316. Ibid, May 31, 1930, page RE-4, Photo of filling at the Island
317. H.W.P. vs. A.W.P., United States Circuit Court of Appeals, June 1, 1937, R.E.P., June 5, 1937. See Exhibit A-60, Process Water
- 317a. T.R., May 31, 1936
318. District Court of U.S. - District of Massachusetts, H.W.P. vs. A.W.P., Equity No. 4015, Opinion (December 31, 1936), page 5, Electric Transmission
319. T.R., February 28, 1939, pages 16 through 20
320. See Exhibit A-61, Report on 1938 Hurricane by A. W. Ladd, T.R., November 30, 1938
321. See H.C. Dams and Fishways by R.E.B.II, pages 4 and 17

322. T.R., December 28, 1934, Supplemental Report
323. H.T., September 18, 1936
324. D.N., December 20, 1935. See Exhibit A-62
325. Street franchise restrictions urged by G&E for HWP Steam Line. See Exhibit A-63
326. Chronological record of steps taken to sell industrial steam in Holyoke. See Exhibit A-64, T.R., August 31, 1937
327. T.R., February 28, 1939, page 15
328. 1981 Report to Massachusetts Department of Public Utilities
329. T.R., November 30, 1936. Report to Executive and Finance Committee, page 1
330. Chronological record of the passage of House Bill 1756 through the 1938 Legislature. See Exhibit A-67
331. T.R., February 28, 1939, page 21 and T.R., May 31, 1939, page 24
332. HWP-IBEW Labor Contract, 1939, See Exhibit A-66
333. T.R., April 22, 1938 (Special Report)
334. Condensed from T.R., May 31, 1936 and August 31, 1936. In addition, as a further source, the newspapers of 1936 are recorded on microfilm in the Holyoke Public Library.

335. T. R., May 31, 1941, page G-1
336. UN, December 9, 1941
337. H. T., October 13, 1945. See Exhibit A-68
338. See Massachusetts Department of Public Utilities reports of HWP for 1920 and 1945
339. T. R., February 28, 1941, page H-6
340. Ibid.
341. UN, May 27, 1942
342. T. R., May 31, 1942, page G-8
343. Ibid., page G-9
344. Ibid., page G-8
345. T. R., May 31, 1941, page 17
346. T. R., February 28, 1943, page 3
347. T. R., May 31, 1948, also see Special Report to Directors, June 1948 by REBII
348. H. T., October 25, 1945
349. H. T., January 19, 1948, also see Exhibit A-69
350. See Exhibit A-70
351. Economic Analysis of HWP FPC licence application by Jackson and Moreland. See Exhibit A-71
352. Statement made by HWP concerning new license application from H.T., August 6, 1948
353. U.N. and T.T., September 30, 1948
354. Vote G&E commissioners, October 14, 1948 giving board powers to its manager. See Exhibit A-72
- 354a. See Exhibit A-74 for the series of letters published in the T-T prior to the FPC hearings.

355. This comparison of the plans for hydro development of Holyoke came from the material set forth in the decision of the FPC examiner Maximillian Baron.
See Exhibit A-73
356. H.T., March 30, 1949
357. See Exhibit A-73
358. U.N., September 30, 1948
359. H.T., March 30, 1948
360. H.T., November 11, 1949
361. H.T., January 6, 1950
362. H.T., August 12, 1950
363. H.T., November 4, 1949
364. Letter by U.S. Fish and Wildlife Service to Mayor of Northampton, October 10, 1950. See Exhibit A-76
365. Memo to files by REB II, July 11, 1952. See "9. Transporting Shad" of Exhibit A-77
366. H.T., June 10, 1957
367. H.T., June 23, 1988
368. Vernon, VT., fish ladder dedication material, 1981, New England Power Co.
369. R.H.W.P. by REB II, 1985
- 369a. H.T., October 19, 1965
370. H.T., June 10, 1957
371. T.R., August 31, 1955, Page 4 and H.W.P. real estate records
372. H.T., April 28, 1956

373. H.T., April 28, 1956
374. H.T., May 5, 1956
375. H.T., May 4, 1956
376. H.T., July 27, 1953. See Exhibit A-78. Chap. 586
Mass. Acts of 1962
377. H.T., December 11, 1958
378. H.T., November 9, 1954
379. T.R., February 29, 1960, page G5
380. A paper titled "Wood Pulp in Holyoke" is among the
Exhibits accompanying this history labelled A-79
381. "Mt. Tom Project", June 15, 1956. See
Exhibit A-80
382. Memorandum of Understanding - Mt. Tom. See
Exhibit A-81
383. S.R. and D.R., April 16, 1957
384. H.T., August 27, 1956
385. T.R., February 29, 1960, G1
386. H.T., September 14, 1960, page 2A
387. Ibid., page 14A
388. T.R., May 31, 1964, and August 31, 1964
389. H.T., January 14, 1963
390. See Exhibit A82
391. D.N., March 4, 1965
392. H.T., March 4, 1965
393. Special Act of Massachusetts Legislature,
January 31, 1959

394. Decision of Supreme Judicial Court of Mass. (SJC),
January 15, 1969. See Exhibit A84, Section A,
Footnote 5
395. S.J.C. Decision. See Section E
396. H.T., February 22, 1967
397. S.J.C. Decision. See Exhibit A84, page 31
398. H.T., November 10, 11, 12, 13, and 15, 1965
399. Ibid., November 13, 1965
400. Ibid., November 15, 1965
401. Ibid., November 17, 1965
402. See December 1965 issue of "Hy-Power", page 5, for
article by Robert H. Walker. See Exhibit A83
403. H.T., October 14, 1966, and February 17, 1967
404. H.T., October 14, 1966
405. H.T., October 15, 1966
406. H.T., October 15, 1966
407. H.T., October 15, 1966
408. H.T., December 15, 1966
409. H.T., January 18, 1967
410. H.T., February 27, 1967, and March 11, 1967
411. H.T., March 11, 1967, and August 19, 1967

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EXHIBITS

EXHIBITS ARE IN THE OFFICE VAULT OF HWP IN HOLYOKE
WHERE THEY MAY BE USED FOR REFERENCE.

Exhibits

- A. Act of Incorporation of Holyoke Water Power Company (HWP)
- B. Chester William Chapin - biographical information
- C. Hadley Falls - Schedule and Valuation
- D. Method of Acquisition by Alfred Smith of the property of the former Hadley Falls Company from the Receivers
- E. Statement of Alfred Smith to the Trustees outlining his confidence in the new company
- F. Deed of the former Hadley Falls Company property from the Receivers to Alfred Smith
- G. Transfer of the former Hadley Falls Company property from Alfred Smith to the Trustees
- H. List of Stockholders of HWP, March 17, 1859
- I. Deed of former Hadley Falls Company from Trustees to Holyoke Water Power Company
- J. Annual Report to Stockholders - June 15, 1859
- K. A Biography of Alfred Smith - January 7, 1985
- L. Letter of H. Soule - 1853
- M. Article about Shad Fishing at Holyoke - Picturesque Hampden (P.H.) West II West, pages 10 and 11

- N. Agreement between Holyoke Shad Company and HWP,
January 1, 1866.
- O. Maps and text concerning industry on the canal
system. Maps from Atlas of Holyoke 1884,
George H. Walker & Co., 160 Tremont Street,
Boston, Mass. Text and tabulation from Holyoke
Directory 1882
- P. Great Test of Water Wheels, H.T., May 21, 1879
- Q. Water on the Rampage, HT, August 3, 1872
- R. Obituary of Bartholomew, HT, February 17, 1899
- S. Death of S. Stewart Chase an obituary,
Springfield Republican, May 29, 1873
- T. Biographical Sketches of Trustees - David
Watkinson's Library, Hartford, CT
- U. Springfield Republican, May 29, 1973
- V. Builders Venturi News - Builders Iron Foundry,
Providence, RI, February-March 1944
- W. The Water Supply of the City of Rome by Sextus
Julius Frontinus and Clemens Herschel,
published by New England Water Works
Association, 1973
- Xa. Venturi Water Meter and the First Twenty Years
of Its Existence by Clemens Herschel (VWM)
reprinted by Builders Iron Foundry, Providence,
RI 1909

- Xb. Memoirs of Deceased Members, by Clemens Herschel, from the 1931 Transactions of the Society of Civil Engineers
- Y. Plan of Holyoke, 1853
- Z. HWP Requirements for Testing of Hydraulic Turbines
- A-1. Chain of Title - Parsons Division
- A-2. Real Estate Sales 1859-1985
- A-3. Consumer Price Indexes 1801-1985
- A-4. Excerpts from Holyoke Hydrodynamics Experiments by HWP - 1879-80
- A-5. The name of Holyoke
- A-6. Electricity Comes to Holyoke - A Chronology
- A-7. Gifts of Land
- A-8. Dividends
- A-9. Dam Preservation - Gravel Filling
- A-10. Engineering News, May 13, 1897, The New Holyoke Water Power Dam, by Sanford E. Thompson
- A-11. Consulting Engineers Report, May 9, 1855 (New Stone Dam)
- A-12. The Water Power at Holyoke, A. F. Sickman, September 14, 1904
- A-13. Specifications for Stone Dam
- A-14. Letter from R. C. Winchester to Brattleboro Gas Light Company Regarding Electric Power Rates
- A-15. Acts and Resolves of Massachusetts 1891 and 1894

- A-16. Report of Aldermanic Municipal Lighting
Commission
- A-17. William A. Chase
- A-18. Statements of Opponents (Citizens Committee)
and Proponents (Treasurer of HWP E. S. Waters)
of Municipal Lighting Takeover.
- A-19. First Hearing Before Supreme Judicial Court
Including HWP Petition of March 5, 1898
- A-20. Let There Be Light - Municipal Lighting League
- A-21. Municipal Lighting Contract
- A-22. Proposition of HWP, May 15, 1899
- A-23. Copies of the Several Bills Considered
Regarding 1903 Act
- A-24. Description of Power Plant on Second Level
Canal, R.E.P., April 11, 1905
- A-25. Agreement Between HWP and City of Holyoke
Regarding Street Franchises
- A-26. Holyoke Citizens Advocate Bigger Busier City,
H.T. January 26, 1909
- A-27. Power Bill Passed, City Begins its Boom,
T.E.L., March 9, 1909
- A-28. Biographical Account of Robert E. Barrett, 25th
Anniversary Report - Harvard Class 1905
- A-29. Generation Statistics, DPU Annual Report 1920
- A-30. General Statistics, DPU Annual Report 1924
- A-31. HWP Annual Losses Because of TUFCO, HSR and HWP
Agreement

- A-32. TUFECO Memorandum of Advantages of Interconnecting HWP and TUFECO Systems, T.R., May 24, 1924
- A-33. Speech of President Charles E. Gross to Holyoke Chamber of Commerce, September 20, 1922
- A-34. Reply to HWP by G&E Commissioners, October 25, 1922
- A-35. Second Statement by HWP, November 17, 1922
- A-36. New Broadside at HWP from G&E, H.T., December 16, 1932
- A-37. Report of Chamber Committee on Power Situation, H.T., January 29, 1923
- A-38. Editorial on Chamber Report on Power Situation, H.T., January 30, 1923
- A-39. Special Report of President to Directors on the Value and Possibilities of HWP, January 15, 1929
- A-40. Remarks for Meeting with South Hadley Electric Light Commission, November 18, 1985
- A-41. Charter of HP&E Issued December 5, 1926 by Secretary of State
- A-42. Chapter 147 Acts of 1926 Relative to Powers of HWP and HP&E
- A-43. Treasurers Report to HWP Directors Regarding HP&E
- A-44. Bill of Equity Suit, H.T., January 26, 1925
- A-45. Letter to Directors by Management Regarding Equity Suit, March 20, 1929

- A-46. Chain of Title of Connecticut Lakes
- A-47. Deed HWP to CVLC, Connecticut Lakes, April 12, 1910
- A-48. Deed HWP to CVLC, Connecticut Lakes, April 12, 1910
(second parcel)
- A-49. Fire Destroys Saw Mill, H.T.
- A-50. Removal of Logging Piers in Connecticut River,
August 1925, A. W. Ladd of HWP
- A-51. Letter from HWP to City of Holyoke Offering Saw
Mill Site as a Gift
- A-51a. Deed Giving Saw Mill Site to City of Holyoke,
September 17, 1945
- A-52. HWP "Proposal" Giving Regulations Concerning Mill
Powers
- A-53. First Page of HWP Indenture with Merrick Thread
Company
- A-54. Decision, C. J. Rugg - HWP vs. Whiting and Company,
September 11, 1931
- A-55. Decision, C. J. Rugg - Whiting Paper Company vs.
HWP
- A-56. Article About the Island, Springfield Sunday
Republican, February 26, 1933
- A-57. Silver Tabulation 1849 - 1930
- A-58. Silver Prices 1849 - 1987
- A-59. Decision of U.S. Circuit Court of Appeals, HWP vs.
AWP, Silver
- A-60. Process Water Case, R.E.P., June 5, 1937

- A-61. Report on 1938 Flood and Hurricane by
A. W. Ladd, See T.R., November 30, 1938
- A-62. Chicopee Decides to Buy Electricity from HWP
- A-63. Restrictions Urged by G&E for Proposed Steam
Line of HWP
- A-64. Chronological Record of Efforts to Sell
Industrial Steam in Holyoke
- A-65. Riparian Rights, South Hadley with Map., T.R.,
February 28, 1937, page G-12.
- A-66. HWP-IBEW Labor Contract 1939
- A-67. Chronological Record of Passage of House Bill 1756
through Massachusetts 1938 Legislature
- A-68. H.T. October 13, 1945, Article about Death of
R.E. Barrett I
- A-69. Special Report to Board of Directors about FPC
License Applications of HWP and G&E June 1948
- A-70. H.T. Article about G&E License Application
January 19, 1948
- A-71. Jackson and Moreland Report on Economics of
Canal System Control and Additional Hydro
Capacity, June 1948
- A-72. Vote of G&E Commisioners Giving Broad Power to
its Manager
- A-73. Decision of Presiding Examiner Maximillian
Baron in Favor of HWP in the FPC Licensing
Hearing

- A-74. A Series of Letters from HWP to the People of Holyoke from January 29 through February 12, 1949, published in the H.T.
- A-75. Hadley Falls Station. A brochure published November 1951
- A-76. Letter U.S. Fish and Wildlife Service to Mayor of Northampton, October 10, 1950. Also, see Exhibit A-2 "Dams and Fishways at Holyoke and South Hadley" by REB I
- A-77. Memorandum to files by REB II, July 11, 1952, titled "Fishway Comments", Item 9
- A-78. Massachusetts Chap. 586 Acts of 1962 re:
Holyoke Regional Business Development Corporation
- A-79. "Wood Pulp in Holyoke" by REB II, October 1956
- A-80. Mt. Tom project report, June 13, 1956
- A-81. Memorandum of Understanding between H.W.P., W.M.E.Co., and N.E.P.Co., November 21, 1956
- A-82. "The Lease Proposal in a Nutshell"
- A-83. "Hy-Power", December 1965 regarding Northeast Blackout
- A-84. Decision of S.J.C. in "Board of Assessors of Holyoke vs. State Tax Commission and another", January 15, 1969

- A-85. Memorandum "Gold Clauses in Holyoke Water Power Indentures", R.E.B. II to J.T.H.,
January 18, 1984
- A-86. "Connecticut Lake, Connecticut Valley Lumber Co. and HWP", a paper by R.E.B. II, April 1989
- A-87. "Sketch of Holyoke", 1871 Holyoke City Directory
- A-88. Newspaper account of First Level Canal washout,
June 12, 1889

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ABBREVIATIONS

Abbreviations

- A.W.P. American Writing Paper Company
- B.A. Holyoke Board of Aldermen
- B.S. Biographical Sketches of Trustees
- B.V.M. Builders Venturi News
- C.C. Copies of Contracts in HWP Real Estate Vault
- C.C.A. Circuit Court of Appeals
- C.E.L.D. Chicopee Electric Light Department
- C.V.L.C. Connecticut Valley Lumber Company
- D.N. Springfield Daily News
- D.R. Directors Records
- E.N. Engineering News
- F.P.C. Federal Power Commission
- G.&E. Holyoke Gas and Electric Department
- H.C. Historical Collection in HWP Vault
- H.C.C. Holyoke Chamber of Commerce
- H.G.&E. Holyoke Gas and Electric Department
- H.H.W.P. History of Holyoke Water Power Company, written
in 1929 by REB I, Revised 1932 and 1941 (H.C.)
- H.F.T. Hadley Falls Trust Company
- H.M. Holyoke Massachusetts, by C. M. Green
- H.P.&E. Holyoke Power and Electric Company
- H.R.B.D.C. Holyoke Regional Business Development
Corporation
- H.S.R. Holyoke Street Railway
- H.T. Holyoke Transcript

H.V.H. Holyoke Water Power Company vs. City of
Holyoke, December 26, 1901

HWP & Holyoke Water Power Company
H.W.P. Jackson and Moreland
J&M

J.T.H. John T. Hickey, Manager of H.W.P.

M.A. Massachusetts Legislative Acts

N.E.P.Co. New England Power Company

P.H. Picturesque Hampden, Picturesque Publishing
Company, Northampton

R.A.S. History of the Water Power and Hydro-Electric
Power Developments of the Holyoke Water Power
Company, by Ralph A. Smith, H.C.

R.D. Registry of Deeds

R.E.B.I Robert E. Barrett, H.W.P. President 1920-1945

R.E.B.II Robert E. Barrett, H.W.P. President 1945-1974

R.E.P. Springfield Republican

R.H.W.P. Roots of Holyoke Water Power Company, dated
1985 by R.E.B.II

S.R. Stockholders Records

S.J.C. Supreme Judicial Court of Massachusetts

T.A.S.C.E. Transactions American Society of Civil
Engineers

T.E.L. Holyoke Telegram

T.R. Treasurers' Report to Directors

T.U.F.Co. Turners Falls Power and Electric Company

U.N. Springfield Union

U.S.C.C.A. United States Circuit Court of Appeals

V.W.M. The Venturi Water Meter and the First Twenty
Years of its Existence, by Clemens Herschel, See
Exhibit X

W.M.E.Co Western Massachusetts Electric Company
W.M.E.C.

W.P.H. The Water Power at Holyoke, by A. F. Sickman,
September 14, 1904, Exhibit A12