NPS Form 10-900
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United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received JUL 5 1984
date entered AUG 30 1984

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic NA

and or common Pratt, Read & Co. Factory Complex

2. Location

street & number Main Street & 5 Bridge Street NA not for publication

city, town Deep River NA vicinity of

state Connecticut code 09 county Middlesex code 007

3. Classification

Category	Ownership	Status	Present Use	
___ district	___ public	X occupied	___ agriculture	___ museum
X building(s)	X private	X unoccupied	___ commercial	___ park
___ structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	___ yes: unrestricted	X industrial	___ transportation
	NA	X no	___ military	X other: vacant

4. Owner of Property

name See continuation sheet.

street & number

city, town NA vicinity of state

5. Location of Legal Description

courthouse, registry of deeds, etc. Deep River Land Records, Town Hall

street & number Main Street

city, town Deep River state CT

6. Representation in Existing Surveys

title State Register of Historic Places has this property been determined eligible? ___ yes X no

date 1982 ___ federal X state ___ county ___ local

depository for survey records Connecticut Historical Commission

city, town 59 South Prospect Street Hartford state CT

7. Description

Condition		Check one	Check one
X excellent	___ deteriorated	___ unaltered	X original site
___ good	___ ruins	X altered	___ moved date _____
X fair	___ unexposed		

Describe the present and original (if known) physical appearance

Overview

Pratt, Read & Co. manufactured piano keys and key boards from ivory and wood at their plant on Main Street in Deep River, Connecticut, from the time of the Civil War to World War II. The 5-story brick factory faces east toward Main Street, north of the center of town, with wings to the rear running back west toward the Deep River. (Photographs 1, 2, 3)

In 1914 the company built a second factory for the manufacture of player piano actions around the corner on Bridge Street, facing south, on the other side of the Deep River. This 4-story building was constructed of reinforced concrete. In the post-World War II era, it has been substantially enlarged by the present owner. (Photographs 4,5,6)

The two parcels on which the factory buildings are located together equal about 9.5 acres of land. (Sketch Map A) Both buildings are considered to contribute to the architectural and historical character of the complex.

Boundary Justification

The nominated factory complex contains the land that now goes with the two factories. At one time Pratt, Read & Co. owned more land than the nominated property. The chief contiguous parcel not included in the nominated area is land on which a war production plant was constructed at the time of World War II.

The 1881 Factory

Manufacturing facilities for the processing of ivory initially were constructed by George Read at this location on the east side of the Deep River, near the falls that supplied power, in 1809. When Pratt, Read & Co. was formed in 1863, it took over the existing buildings. In 1866, to meet the need for additional manufacturing capacity, the company constructed a new building of two stories and basement 38 x 128 feet in size, facing Main Street. An 1851 structure was turned around and attached to the rear, making a rear wing of 38 x 120 feet and thus establishing the basic plan that has continued to the present. (See Sketch Map B) This building was destroyed by fire on Sunday, July 31, 1881. The factory was re-built over the ensuing nine months. The building " constructed in 1881-82, with several additions and one principal loss (the tower roof), remains in place today.

The sequence of construction of the sections of the present building facing Main Street was as follows:

1881	4-story building, one floor below grade, with central tower	Photograph 7
?	Tower raised	
? and 1903	4-story end sections built	Photograph 8

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National Park Service

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Pratt, Read & Co. Factory Complex, Deep River, CT
Continuation sheet Owners Item number 2 Page 1

1881 Factory Main Street Deep River, CT	Millpond Assciates 1301 Dade Boulevard Miami, FL 33139	Contributing
1913 Factory 5 Bridge Street Deep River, CT	UARCO 5 Bridge Street Deep River, CT 06417	Contributing

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

Connecticut, An Inventory of Historic Engineering and Industrial Sites

1981 x State

Connecticut Historical Commission
59 South Prospect Street
Hartford CT

1903	office	Photograph 2
1910	fifth floor added, office extended	Photographs 1, 2
by 1911	tower roof removed	Photograph 9

The Main Street factory site slopes down from the level of Main Street to the rear toward the river. When the 4-story brick building was constructed in 1881 its first floor was and is below the Main Street grade, fronted by a light well. The building consisted of a central projecting tower with 8 bays extending to the north and 7 bays to the south of the tower. (See Sketch Map C.) Overall dimensions were 50 x 155 feet, an increase from the 1866 dimensions of 38 x 128 feet. Chief architectural interest was in the tower. It rose a full story above the wings and was capped by a tall, pyramidal roof. Each slope of the roof had a dormer with broken pediment. (Photograph 7) In plan the tower is stepped, with a recessed section between it and the wings on each side. Pecked granite steps lead from the side walk to double paneled doors in the main entrance to the factory. This level is at grade from the street but is the second story of the factory. Piers on either side of the entry have raised courses of brick in reverse rustication. There is a 12-over-12 window with segmental arch in the recessed section to the left and a paneled double door to the right. A Colonial Revival wooden porch with balustrade has been added. (Photograph 9)

At the next level, the third floor, above a pecked granite belt course that extends around the central section of the tower, the double paneled doors are repeated. The flanking piers have central vertical recesses and the windows in the flanking recessed sections are blind. A double string course of moldings separated by recessed squares divides the third and fourth floors. At the fourth floor the double paneled doors are repeated again while the flanking piers have paired narrow recesses. The blind flanking windows have corbel courses. Above the double doors at this level there is a round arch over a divided blind fanlight, creating the effect of a 3-story arched opening. At the fifth floor the tower originally had seven vertical recesses in each face under projecting cornice and steeply-pitched pyramidal roof with dormers. When the fifth story was added to the wings in 1910, a fifth story was also added to the recessed sections of the tower, obscuring the seven vertical panels in all but the front elevation. Also, the pyramidal roof was raised toward the end of the century and the section with three round arches inserted. (Photograph 8). Then, at an unknown date, the tower roof was lost.

The double doors at third and fourth floors presumably were goods doors with freight handled by a hoist suspended from above the arch. The south recessed section of the tower is the location of the main stairway. Function of the north recessed section at the time it was built is obscure. It now houses an elevator. (Sketch Map C).

As originally built, the overall style of the tower with its round arch, reverse rustication, corbelling and pyramidal roof is Romanesque Revival, although the fanlight and dormers with broken scrolled pediments add Colonial Revival details unexpected as early as 1881. The architect for the 1881 building of which the tower is a part is unknown.

Windows in the principal part of the factory have granite sills and segmental arches. Sash are 12-over-12 on the first three floors and 12-over-8 on the fourth as its ceiling is a foot lower. A low hipped roof originally rose above the fourth floor. When the fifth floor was added in 1910, a portion of the original cornice was left in place as a string course. The new fifth floor repeated the 12-over-8 fenestration of the original top floor, with a nearly flat gable roof.

The turn of the century also saw the construction of 5-bay, 50 x 50-foot end sections which are set forward of the main building, projecting when viewed from the front, recessed when viewed from the rear. Their gable ends are terminated by parapets. (Photograph 8) The south end section was built first, at an unknown date; the north end section later, in 1903. The north end section is the only part of the building to have a full basement. It was constructed as part of the 1903 building program that included the 2-story office building at the north end of the building. The office building is a 7-bay, hipped-roof structure with one level at Main Street and one level below Main Street, opening to grade at the rear. The large rectangular windows have a single large pane under a transom. Interior is plain. There is a 2-bay extension to the north, dating from 1910. Steps from the sidewalk to the office door are cast iron.(Photograph 2)

The street elevation of the factory is reasonably straightforward and symmetrical but the rear elevation is not. (Photograph 3) Some components of the rear portion of the building probably pre-date the 1881 building. Other rear sections have been added and removed from time to time in a sequence that is not easy to reconstruct. Possibly two 2-story gable-roofed wings date from before the formation of Pratt, Read & Co. in 1863. The north member of this pair remains identifiable. The south member, originally 38 x 50 feet with six bays, has been obscured by addition of a third floor and 4-bay, 33-foot extension to the west, but the scar of its western gable is still visible in the wall dividing the original section from the 4-bay addition. (Photograph 10) The added floor and western extension have the same shallow gable roof structure and the same window characteristics as the 50 x 50 foot end sections of the factory facing Main Street, and therefore probably date from the turn of the century.

The area between the wings and extending to the north was infilled until the roof became continuous. (Photograph 11) In addition, there were smaller buildings for storage, drying, bleaching and miscellaneous shop purposes extending over the site to the river and to the western side of the river. The disposition of these outbuildings as early as 1874 is shown by Sketch Map D. Proper facilities for storage, bleaching, and matching of ivory and lumber were essential to the operation along with machine shop, blacksmith shop and kilns. None of these outbuildings survive. Some concrete slabs, the floors of later outbuildings, are in place and some railroad tracks. The tracks were for cars that transported materials from the outbuildings to the main factory. This flat area is protected by a stone retaining wall that runs north from the factory to the property line at Spring Street.

While the availability of water power from the falls undoubtedly influenced the selection of the factory site in the first place, present evidence of the early power system is sketchy. When the 1881 factory was built, it was powered by a 75 horsepower steam engine and 25 horsepower of water power. The intake for the penstock is still visible near the dam, which is built of stone and located between the factories. (Photograph 6) Presumably the penstock ran as a tunnel to the factory. There is a black hole under the floor of the south wing where it meets the main building that may indicate the location of a turbine. (Photograph 12) There is no indication of the location of the tail race, no sign of where it emptied into the river below the dam. The mill pond has been reduced in size from time to time over the years, and the dam has been repaired from time to time. Most recent repairs to the dam took the form of a concrete crescent introduced after the 1982 flood.

The chimney in Photograph 7 shows that the boiler room was located at the rear of the main building near the south wing, perhaps serving as a link between the two. Masonry scars indicate the removal of a structure in this location. (Photograph 13) No signs of the early boiler or steam engine remain. The coal bin, demolished, was located south of the factory near the street. Some of its foundations remain in place. Coal was transported from a Connecticut River dock by a continuous shuttle of horse-drawn transport.[2]

The 1881 building had a central rear toilet tower, still in place. There is a projecting elevator shaft on the north elevation of the north 50 x 50 -foot extension and a modern, concrete-block elevator shaft just north of the original toilet tower. Steel fire escapes have been added to the north and south elevations and western end of the south rear wing.

Doors at each level were made by lowering window sills.

The interior construction of the factory is mostly heavy, wooden, slow-burning mill construction with posts, beams and flooring thick and heavy so that they would char rather than flame during a fire. One section north of the north wing uses late-19th-century iron beams and brick vaulting. (Photograph 14) The 1881 building has two rows of 18 $7\frac{1}{2}$ x $9\frac{1}{2}$" posts, chamfered. (Photograph 15) In the 50 x 50-foot wings there are two rows of five posts. These posts are larger, 9 x 12", chamfered in the north wing but not in the south wing. The south rear wing has a single row of eight posts off center to the north, except on the top floor where, in the absence of the former end wall at this level, there are nine posts. (Photograph 16, Sketch Map C)

When the factory was powered by water and steam, there must have been an extensive power distribution chain of belt driven shafts. There must have been a forest of leather belting, wooden pulleys, shafting, hangers and bearings, with belts from the line shafts to individual machines. None of the power chain and none of the machinery remain. The interior contains no millwork of consequence. The best millwork is the double doors of the entrance tower and the newels of the stairway. (Photograph 17)

The 1914 Factory

The 4-story, 1914 factory of reinforced concrete was built to the plans of Ford, Buck & Sheldon, architects and engineers, of Hartford. The 60 x 160-foot rectangle runs parallel with Bridge Street on the west side of Deep River, with a central projecting tower that contains the main entrance. (Photograps 4,5) Architecturally, the overall effect is one of clean lines and maximum glazing.

All units of glazing, in steel sash, are five panes high. In the 3-bay front elevation of the tower, the central glazing is seven panes wide, arranged in a pattern of 2-3-2. Flanking sections are six panes wide. The four piers of the tower's front elevation, two at the corners and two separating the bays, run without interruption from grade to roof line. The windows, including their sills and lintels, are recessed. A double horizontal band projects above each window but not to the plane of the piers. Window sills form a similar but heavier horizontal line above, with the recessed wall surface or spandrel between the two projecting horizontals forming a horizontal panel. At the roof line a plain fascia projects beyond the plane of the piers while at the top the flat roof overhangs the fascia. This basic scheme and configuration are used throughout all elevations of the building.

On the side elevations of the tower the single glazing units are much larger, 15 wide arranged 5-5-5. In the main front elevation of the building there are three of the 15-pane units on either side of the tower. There are three such units in the east and west end elevations. Sections of the glazing units are operable as awnings.

As originally built, there were 1-story sections projecting from the north elevation for boiler house at the east, shipping and receiving function in the center and a kiln at the west. In 1919, the northwest corner was increased to four stories in height, using three 6-over-6 windows in each of the two added bays but otherwise respecting the original design details. (Photograph 18)

The interior has been little changed since 1914. Mushroom columns of the type typical of early reinforced-concrete construction divide the space into 20-foot bays, eight in length and three in depth. Steel bars seven to eight feet in length radiate from the mushroom caps of the columns into the surrounding floors. (Photograph 19) Roof drains are carried down through the centers of the columns. On the top floor that has been converted for office use the columns have been boxed in and the ceiling dropped. (Photograph 20) Elsewhere, original details remain, for example in the concrete stairway of the tower, with original pipe railing and doors. (Photograph 21)

Two substantial, 1-story additions have been made to the original factory. The first, constructed in 1951, is 22,5000 feet at the west end of the original factory, fronting on Bridge Street. The second, 60,900 feet in 1966, wraps around the rear of the first addition and extends to the east and north. (See Sketch Map A) As built, the factory had 43,550 square feet. In 1947 when Pratt, Read & Co. sold the premises there were 58,700 square feet. Now there are 142,000 square feet. Since 1947 the factory has been used as a printing plant and continues in use for that purpose.

1. History of Middlesex County, Connecticut, New York: J.B. Beers & Co., 1884, p. 549. In the account of the fire published in the Deep River newspaper, the New Era, mention is made that the fire started in the wing nearest the water wheel and mention is made of an engine room, indicating that the use of a combination of water and steam power pre-dated 1881.

2. An older resident fondly recalls the convenience provided by this reliable transportation to and from the Connecticut River to youths interested in going for a swim. They could ride back and forth by catching on the rear of the coal wagons.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	X architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	___ engineering	___ music	___ theater
X 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ transportation
X 1900–	___ communications	X industry	___ politics/government	___ other (specify)
		___ invention		

Specific dates 1881, 1914 **Builder/Architect** Additions to 1881 factory - Charles M. Williams
1914 factory - Ford, Buck & Sheldon

Statement of Significance (in one paragraph)

Criteria C (Architecture) and A (History)

The Pratt, Read & Co. factories in Deep River are excellent examples of factory construction, one from the 4th quarter of the 19th century and one from the 1st quarter of the 20th century. In addition to having functional utility, both were designed with architectural merit as well. (Criterion C) The history of the ivory fabrication industry as portrayed by the operations of Pratt, Read & Co. in Deep River for three-quarters of a century is an important chapter in the industrial history of Connecticut. (Criterion A)

Criterion - Architecture

Late 19th - century mill architecture in Connecticut often combined an entrance and stair tower of some artistic pretension with a building otherwise constructed wholly for utility. The 1881 Pratt, Read & Co. factory on Main Street in Deep River followed this general practice, and remains today largely unaltered as an excellent example of its type. The exterior walls are brick, the windows are as large as possible in bearing walls, and the interior is heavy wooden, slow-burning construction, the same as in many, many other mills and factories of the era. The building is given individual identity by its tower used here and elsewhere as a prestigious symbol.

The Pratt, Read & Co. tower is an intricate design. The plan is different from the usual rectangular or square plan of most factory towers because of the stepped-back sections that are between the front elevation of the tower and the front elevation of the main building. These recessed sections add variation in the volumetric perception and interplay of shadows that is unusual and adds to the architectural significance of the building.

The style of the tower is an eclectic mixture. On the one hand, the round arch, corbeling and former high roof are features often used in the Romanesque Revival, a popular style at the time of the tower's construction. On the other hand, the fanlight and the broken pediments of the dormers are either throwbacks to the Colonial styles or early harbingers of the Colonial Revival, unexpected in either event. Moreover, the elaborate treatment of the dormers suggests knowledge of the French Renaissance on the part of the designer, introducing yet another variation in the stylistic concept.

An early picture shows that the first structural change to the factory was to raise the tower and add the story with the round-arched windows, for reasons unknown. The task of elevating the pyramidal roof and inserting the

9. Major Bibliographical References

See continuation sheet.

10. Geographical Data

Acreage of nominated property 9.5 acres prox.

Quadrangle name Deep River **Quadrangle scale** 1:24000

UTM References

	Zone	Easting	Northing
A	18	714140	4585200
B	18	714180	4585000
C	18	714150	4585000
D	18	714160	4584910
E	18	714060	4584880
F	18	714020	4584950
G	18	714030	4584960
H	18	714020	4585060
I	18	714020	4585190

Verbal boundary description and justification

The boundary of the factory complex is shown by the dotted line on Sketch Map A. For boundary justification, see Item 7.

List all states and counties for properties overlapping state or county boundaries

state	NA	code NA	county NA	code	NA
state	NA	code NA	county NA	code	NA

11. Form Prepared By

name/title David F. Ransom edited by John Herzan, National Register Coordinator

organization Architectural Historian **date** February 13, 1984

street & number 33 Sunrise Hill Drive **telephone** 203 521-2518

city or town West Hartford **state** Connecticut

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national ___X___ state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature John W. Shannon

title Director, Connecticut Historical Commission **date** 6/26/84

For NPS use only

I hereby certify that this property is included in the National Register

Entered in the National Register **date** 8/30/84

for **Keeper of the National Register**

Attest: **date**

Chief of Registration

GPO 894-785

added story was a nice bit of construction work. The round-headed windows with their radial muntins strengthened the Colonial Revival influence in the tower's design. The roof fails to appear in a picture dated 1911, so was removed in that year or earlier. Without the high pyramidal roof the upwward termination of the tower is awkward.

Who the original architect was for the original tower and/or alterations is unknown. The only name of a professional associated with the factory's construction emerges from the company minute book for May 28, 1910. Mr. Williams of Norwich is recorded as building the north 50 x 50-foot end section, the office and the top floor.[1]

The interest in architectural design manifested in the tower early in the factory's history was later paralleled in the placement of the end wings, when they were built. The 50 x 50-foot end sections were positioned forward of the main building. Surely, it would have been more cost efficient both in construction and subsequent factory operations simply to have extended the existing walls, without the jog forward. But instead, the classical plan was followed, as seen for example in the works of Palladio, of having the end pavilions project. When coupled with the central projecting pavilion, a Palladian plan had been introduced in Deep River.

The rear sections of the building are fascinating as an exercise in detective work, trying to figure out what was there first and what was the sequence of changes. The fact that the site has been occupied by factory buildings since the early 1800s is itself a matter of some importance. In addition to the interest offered by the fabric that pre-dated the 1881 building, it should not be overlooked that later 19th-century practices are represented as well, notably the use of shallow brick arches carried on iron beams.

Across the river, the 1914 plant is of significance for different reasons. The clean lines of its design are to be noted. It depends for architectural merit exclusively and successfully on the manipulation of volumes and masses, solids and voids, without architectural embellishment of any sort. This building was very avant-garde work for 1914. In addition to being in a leadership position from a design point of view, the building was also

pioneering work from a construction point of view. Perhaps the two go together, or did in this case. The methods of reinforced concrete construction were still in the development stage in 1914. The use of glazed curtain walls, not possible in the brick bearing walls of the 1881 factory, was to become commonplace in factory buildings as the 20th century wore on, but it wasn't in 1914. The 1914 factory is a prime example of good modern design coupled with good modern construction technique. The present owner reports that the building continues to give satisfaction without structural or other problems.

In the 1914 building, as compared with the 1881 building, it was possible to have more glazed area in the walls, running approximately from pier to pier and from floor to ceiling, thereby admitting more natural light. Another improvement made possible by the new building technique was the increase in the span between columns or posts and corresponding increase in the size of the internal bays. In the 1881 building each bay occupied approximately 133 square feet, while in the 1914 building each bay occupied approximately 240 square feet, a significant difference that made possible more efficient machine layout.

The pioneer in reinforced-concrete factory construction was Ernest J. Ransome, who patented a floor-construction technique in 1902. Ada Louise Huxtable has commented that examples of Ransome's work and similar structures such as the Pratt, Read & Co. 1914 factory, precursors of the better known Detroit automotive buildings. They are "of undeniable interest for their impressive and pleasing proportions, direct expression of structure, and comparative freedom from conventional decorative details that were to 'enhance' even the best of later industrial architecture including the famous Kahn factories," she believes.[2]

Ford, Buck & Sheldon of Hartford were in step with these developments as Civil, Structural and Electrical Engineers. They advertised their proficiency in mill buildings, sewage and sewage disposal, reinforced concrete, electrical engineering, bridges, power plants and structural engineering. Frederick L. Ford (1871-1940) graduated from the Sheffield Scientific School at Yale in 1893. He served as City Engineer of Hartford from 1902-1911 and held the same position with the city of New Haven 1912-1920. How he managed simultaneously to be a partner in Ford, Buck & Sheldon is not clear. Paul Sheldon also came to the firm from the Hartford city engineer's office. Henry Robinson Buck (1876-1934) graduated from Yale in 1896. He was the partner in charge of sewer systems and industrial plants, presumably including the Pratt, Read & Co. 1914 factory. The firm, now Buck & Buck, continues in business in Hartford working primarily as sanitary engineers. Other buildings that the firm designed include the J. M. Ney Co. (Bond Press) plant (1916) on Elm Street and the Harvey & Lewis Building (1927) at the corner of Main and State streets, both in Hartford.

Criterion A - History

Many of the trends characteristic of the development of American industry emerge from a study of the history of Pratt, Read & Co. As was often the case, the trade owed its start to development of a means of competing with European imports. Over time, competition arose between various companies, often involving intra-family disputes. Involvement of suppliers and sales agencies with the manufacturing enterprise and efforts to resolve price divergencies led to monopoly conditions, all of which would prove to be of no avail in the face of a declining market. Pratt, Read & Co. rose and fell in Deep River from 1863 to 1939 with these trends.

The story starts with one of the earliest 17th-Century settlers of the lower Connecticut River valley, Lieutenant William Pratt, whose house remains standing in Essex. His descendant, Deacon Phineas Pratt, is credited with the invention that gave commercial impetus to ivory fabrication trade in the region. The essential element in working with ivory is to be able to cut it.[3] Deacon Pratt invented a machine, the details of which are not recorded, that made it possible to compete with the English in the manufacture of sawn ivory objects. Deacon Phineas Pratt in 1798 began the manufacture of ivory combs in the Ivory town section of Essex, south of Deep River. An early associate in the business was George Read (1787 - 1859) whose sister, Mary, married Phineas Pratt II (1784 - 1875). George Read and the sons of Phineas Pratt II, Alexis and Ulysses Pratt, struck out on their own. Several firms flourished in the greater Deep River area, with changes in name from to time as the partners changed. Combs were a principal product[4] along with ivory turnings and trinkets and piano keys. Julius Pratt, a brother of Phineas Pratt II, for reasons unknown, broke away from his father and brother, removed to Meriden, Connecticut, and started an ivory fabricating plant in that city. One-half of the ownership in the Meriden operation rested in George Read & Co., an arrangement typical of the interrelationships that persisted for more than a century in the ivory fabricating trade in the lower Connecticut River valley. Julius Pratt in Meriden took the important forward step of manufacturing piano keyboards rather than just the ivory veneer for the keys.[5]

Another typical relationship established early on was the involvement of ivory importers as principals in the firms fabricating ivory objects. Thomas Howard of Providence, an ivory importer, was an early participant in the Deep River area fabrication of ivory objects, and was a partner of Julius Pratt in Meriden.

In 1863, three of the principal firms, Julius Pratt & Co., of Meriden and Pratt Brothers & Co., (Alexis and Ulysses Pratt) and George Read & Co. of Deep River merged into a single company. The minute book[6] records Articles

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of Association, October 15, 1863, of a joint stock corporation with capital stock of $175,000 for the purpose of "manufacturing and dealing in combs, piano and melodeon articles of various materials including ivory." 7000 shares of stock were issued to 43 subscribers. Pratts and Reads held the following numbers of shares:

George A. Read (son of George Read)	416
Sarah Read	728
Ulysses Pratt	800
Alexis Pratt	500
Julius Pratt	580

The 7-man Board of Directors, including Julius, Ulysses and Alexis Pratt but not George A. Read, held its first meeting in Meriden, October 12, 1863, and elected Julius Pratt president.

The inference arises from reading the early minutes that the motivation for the merger was mutual survival. Business was not good. There was anxiety and stress over the question of which of the component factories should do what work. On November 6, 1863, it was decided that all combs would be manufactured in Deep River and all piano ivory and keyboards in Meriden. On November 19, 1863, it was decided that all combs would be manufactured in Meriden and all piano ivory and keyboards in Deep River, and on September 27, 1864, that both classes of work would be evenly split between the two cities. This decision prompted Julius Pratt to resign as president and Ulysses Pratt to offer to buy back the Deep River factory. The resignation and purchase offer soon were withdrawn.

On December 6, 1864, occurred the first meeting to be held at Deep River. At this meeting Julius H. Pratt, son of Julius Pratt, was elected to the board and appointed as New York sales agent. Julius Howard Pratt (1821-1909) in his reminiscences[7] recorded his personal interpretation of these early developments. According to his analysis, the manufacture of ivory combs and other goods was carried out by five companies, of which Julius Pratt & Co. was the largest, but competition was severe and business was limited. Therefore, he proposed a plan for consolidation: the three largest firms would combine with sales henceforth to be in proportion to their previous business, and the two smaller firms would be bought out. Sales would be handled by a single agency in New York. The plan was put into effect and worked out advantageously, i.e., the monopoly was successfully established, and profits were large for many years, according to Julius H. Pratt. All ivory goods of the type in question consumed in the western world including Canada, Central and South America passed through his hands as New York sales agent for Pratt, Read & Co., he said.

The picture of operations during the early years that emerges from the minute book differs from Julius H. Pratt's account in important respects. Julius H. Pratt did indeed represent the company as sales agent in New York with offices at 86 Chambers Street. The directors held a meeting there on April 28, 1865, at which they discussed the purchase of 100,000 pounds of ivory, one year's supply, at a cost of $2.00/$2.50 per pound[8], and declared the first dividend to stockholders. At a Deep River meeting January 24, 1866, it was voted to expand the works in Deep River. This was the decision responsible for construction of the 1866 factory parallel to Main Street that burned in 1881. But all was not well. It was reported

to the October 1, 1868 meeting that business in ivory goods was constantly decreasing and that on annual sales of $304,419 the loss on piano keys was $15,700 and the loss on piano keyboards $6,391. It was considered that a large part of the difficulty rested with the sales agent and on November 14, 1868 the services of Julius H. Pratt in this capacity were terminated.[9]

In examining their problems, the directors, in addition to making a change in sales arrangements, began to talk about economies that could be realized if all manufacturing were done in one place. Also, they considered their employment scheme, which was "labor by contract," but on this point they had no doubts and concluded on October 1, 1868, that "no better system can be adopted." Apparently, the system was that labor was provided by contract, perhaps different contractors for different departments.[10] Workers were employees of the contractors, not of the company. How long this scheme continued in effect is not clear. On July 15, 1873, the directors voted that the "time book and payroll be made and reckoned by hours and minutes instead of the day." Concern with such detail suggests that payments were, by that time, being made directly to employees.

The question of who was in charge, or who was the dominant personality, during the early years is not clear. George A. Read became a vice president in 1867 and then served until 1880 as secretary or secretary-treasurer. As this was the only office to carry a salary, increased to $2500 by 1880, it is likely that day-to-day operations were in the hands of George A. Read. For example, he was made responsible for sales, in addition to his other duties, after the departure of Julius H. Pratt, thereby saving the company the expense of commission paid to the former sales agent.

One important step in the manufacture of ivory for which no architectural artifacts have remained in Deep River was the bleaching process. After the ivory was worked into thin wafers it was dipped in peroxide and placed on racks in bleach houses so that the creamy or ivory color would turn white. Bleach houses were akin to glasshouses or greenhouses.[11] Due to the fact that the ivory sometimes was left in the bleach houses for months, considerable footage of this facility was required, as can be seen in Sketch Map D. Another coloring operation arose in connection with production of full piano keyboards requiring black as well as white keys. Ebony for the black keys contained reddish streaks as purchased, so was dyed black. In terms of volume, the chief component of a piano keyboard was wood. Accordingly, bass and pine wood was purchased in large quantitities, stored, dried and processed Kilns were a necessity. Storage and processing of wood actually occupied more space and facilities in the factory than were devoted to ivory.

Simultaneously with the development of Pratt, Read & Co., another firm, nearby was taking shape. Comstock & Griswold were processing ivory as early as 1834 while S.M. Comstock & Co. was manufacturing combs in Centerbrook in 1847. George A. Cheney was in business in 1860. These interests combined to form Comstock, Cheney & Co. in the Ivoryton section of Essex. Julius H. Pratt says that competitive enterprise was encouraged by customers interested in seeing Pratt, Read & Co.'s monopoly broken[12] but, if so, such supporters were due to be disappointed because the two neighboring firms soon came to an understanding. On March 19, 1869, the Pratt, Read & Co. board voted to approve an agreement made by the secretary with Comstock, Cheney & Co. to raise prices.

On February 20, 1872, the momentous decision was made to cease operations in Meriden. That factory, the largest of the three at the time of merger, had declined in influence. After the 1868 departure of Julius H. Pratt as New York sales agent, his father, Julius Pratt, had resigned from the presidency in 1869. Julius Pratt bought back the Meriden real estate in 1873, but did not again become a factor in the ivory business. Deep River was in control.

Further physical consolidation was effected in Deep River. At the time of the 1863 merger, George Read & Co, and Pratt Brothers & Co. had plants

side by side near the falls at the Main Street location. Pratt Brothers & Co. also had a "west factory" for the manufacture of combs that is still standing east of the north-bound on-ramp of Route 9 in Deep River.

In addition to factory buildings, Pratt, Read & Co. came to build and own a number of residential structures. The first record in the minute book of this activity came on August 13, 1874, when the directors voted "to build a dwelling house on our land at a cost not to exceed $2000." In the latter part of the century and on into the 1920's , during a period of good business expansion, there are repeated references to building houses needed for additional workers, probably immigrants, who in the small community otherwise would have no place to live. Most of the houses surrounded the factory or were on streets leading to the factory, but were not standard units arranged in rows as was customary in textile mill villages built earlier in eastern Connecticut at the turn of the 19th century.

An important decision was taken at a special meeting on August 8, 1876, when it was decided to increase the capital stock by issuing an additional 3000 shares. Subscribers to the new shares included S. L. Comstock, William A. Comstock and George A. Cheney of Comstock, Cheney & Co. and John and Joseph Bertram, ivory importers of Salem, Massachusetts. Sale of shares to these two groups further strengthened the system of interrelationships between suppliers and competitors. An example of how these ties were put to practical use occurred in 1880 when it was considered desirable to purchase Comstock & Dickenson Ivory Co. to keep the firm from falling into unfriendly hands. When the stockholders at the July 20, 1880, annual meeting voted against the plan, William H. Arnold, a director of Pratt, Read & Co. and an ivory importer, bought half the stock and Comstock, Cheney & Co. the other half, as noted by the directors on October 15, 1880. A further example of cooperation was the later formation of Arnold, Cheney & Co., ivory importers.

Nonetheless, stormy conditions prevailed in the board room of Pratt, Read & Co. After the issuance of the new stock in 1876, the president, vice president and treasurer resigned, as recorded in the minutes of August 23. On July 17, 1877, the directors voted to approve the action of the president in discharging the vice president (although he continued to serve as a director). George A. Read also finally was out of office in this year, to return in 1879. The tide was running out, however, for at the annual meeting of July 20, 1880, the slate of directors elected by the stockholders included no member of the Pratt family and no member of the Read family. An era had ended.

An indication of the financial well being of the enterprise during these years is given in the minutes of the adjourned annual meeting on September 26, 1880, when it is noted that the net earnings for the past year amounted to $29, 699.86.

The fact that the minute book for the years 1881-1902 is missing is unfortunate because these decades probably were a period of prosperity and growth for Pratt, Read & Co. During these years the 1881 fire occurred at which time employees numbered 160. The factory was replaced with a new and larger building and that building was extended. Undoubtedly the missing minute book would have reference to these events, and perhaps would include the name of the architect of the tower.

Picking up the record again with the October 15, 1902, directors meeting William H. Arnold, ivory importer of Providence, was elected president and George L. Cheney, third son of George A. Cheney, president of Comstock, Cheney & Co. was elected treasurer. The treasurer was in active charge of the business. Assets were $558,503. January 13, 1903, the directors voted to spend $25,000 for an addition to the factory and a new office. What is meant by the new office is clear enough and later entries indicate that the addition was the north 50 x 50-foot projecting section, next to the office.

In 1904 the treasurer made a trip to Europe. The business had always had international associations starting from the initial effort of Deacon Phineas Pratt to design a device useful in competing with imports. Then, in 1845, Julius H. Pratt and George Read had traveled abroad, and the firm's raw material was of foreign origin. In reporting on his trip August 30, 1904, George L. Cheney said that he had visited piano key customers generally, attended ivory sales in London and Antwerp, visited piano key factories in London and Berlin and visited the ivory-cutting factories of Schlick in Berlin, Mayer in Hamburg and Gobin in Paris. He found the methods used in Europe more primitive than those used in Deep River, but workmanship superior.

A sign of the times is recorded July 12, 1905, when the directors voted to erect an electric generating plant, powered by water, at a cost of $8,000. On January 27, 1908, George L. Cheney was elected president as well as treasurer. On January 11, 1910, assets had grown to $791,979.

The January 11, 1910, meeting was also historic for being the occasion of first mention of the player piano business. Wasle & Co. of the

Bronx, New York, offered to sell half of their business, the Wasle Unique Player Action Co., for $75,000. The offer was accepted and a new company formed, Pratt, Read Player Action Co., to manufacture the actions in Deep River. For this purpose the fifth floor was added to the factory, the work being let on May 28, 1910 to Mr. Williams of Norwich, who had erected the north wing and office building, for $14,990. The fifth floor was rented by Pratt, Read & Co. to the Pratt, Read Player Action Co. The inventor of the player action, George P. Brand, moved to Deep River. He lived in a house bought for him by decision of the directors May 20, 1911, at a cost of $2,000.

By 1913 the top floor was insufficient for the player action operations, and in any event the space was needed for other purposes. Accordingly, the directors voted February 25, 1913 to proceed with construction of the reinforced-concrete factory at a cost of $114,000, and the Player Action Co. moved in, still as a tenant. Several years later the balance of the Wasle & Co. Bronx business was purchased and liquidated, causing space in the new building to become tight. A $25,000 building program was carried out in 1919 at the rear of the building, quite probably including the 4-story section with 6-over-6 windows at the northwest corner.

Overall the business prospered. Assets of $2,029,092 were reported on July 1, 1920. Employees numbered almost 1000. This was the high point in the history of Pratt, Read & Co. in Deep River.

During the first part of the 20th century, various signs of the times are reflected in the minute book. The electrical generating plant has already been mentioned. The company participated in other developments. In 1910, the Shore Line Electric Railway Co. offered to extend their trolley line to Deep River on condition that local investors subscribe to $50,000 in stock. Pratt, Read & Co. took 10% of the amount. In 1911 the company purchased a light motor truck for $1,000 to replace the express team. World War I had its impact. The source of ivory was thought to be endangered. In order to insure supplies Arnold, Cheney & Co., the ivory importers, requested a loan of $15,000 to assist in purchase of the barkantine "Minnie Swan," "now en route to Africa." The loan was voted May 16, 1916, but on October 18, 1916 it was reported that Congo ivory still was coming in freely through England and it had not been necessary to dispatch the "Minnie Swan." A further wartime-induced action was the purchase October 17, 1917 of $50,000 in Liberty bonds. On July 1, 1920 the company subscribed $10,000 toward the expansion of Middlesex Hospital in Middletown. The era of corporate community responsibility had arrived.

The trend toward participation in business by women was marked by the election February 5, 1920, to the Board of Directors of Miss Harriet

Crawford Cheney, daughter of the president. A Smith College graduate, she became actively engaged in the affairs of the company as Assistant Treasurer in 1923.

The business began to decline early in the 1920s. Assets were reported July 1, 1923, at $1,729,807, off $300,000 from the 1920 figure. The radio and victrola were growing rapidly in popularity. Demand for pianos was falling and demand for player pianos was falling rapidly. The Great Depression of the 1930s brought generally bad business conditions. Toward the end of the 1930s the position of Pratt, Read & Co. in Deep River became intolerable. Comstock, Cheney & Co. in Ivorytown also was not prospering. Arrangements were made for the two to merge. Motivation, the mutual desire for survival, was the same as it had been at the time of the 1863 merger that created Pratt, Read & Co. Whereas in 1863 there had been operations in Meriden and Deep River that eventually were concentrated in Deep River, this time, in 1939, there were operations in Deep River and Ivoryton that were concentrated in Ivoryton. The Pratt, Read & Co. name was continued, and continues today, because the Pratt, Read name carried a better connotation for quality of product than did Comstock, Cheney, but Comstock, Cheney & Co. had a better financial condition and a better order book. The Ivoryton plant was chosen because it had a better power plant and a better environment with respect to local taxes. Pratt, Read & Co., the third oldest manufacturing company in continuous operation in Connecticut,[13] ceased its ivory manufacturing in Deep River in 1939.

The history of ivory manufacturing and of Pratt, Read & Co. is illustrative of major developments in American industrial history. The origin of the trade depended on an invention to permit American competition with European sources. The same can be said of many industries in Connecticut, for example, the metal-working industry of the Naugatuck River valley. The network of family relationships is also not at all unusual. Many a busines enterprise was formed by a family member who bec me disenchanted with nis siblings and struck off on his own. The integration of interests from raw materials through manufacturing to sales was also followed in other industries. The strength of New York commission agents in the cotton textile field was a contributing factor to loss of control of New England mills by New England interests, and growth of the industry in the south where cotton was grown. The effort to band together to induce less competition and higher profits was repeated to sufficient degree to lead to Federal anti-trust legislation. In addition to these trends, other difficulties and developments, often on a more human scale, run through the history of Pratt, Read & Co. The shift from water power to steam to electricity, the difficulty of the men serving as directors to get along with one another, the replacement of horse-drawn by motor transport, the involvment of the company in community activities, the reaction to conditions imposed by wartime and the beginning of the partici-

pation in business by women are, among others, conditions and trends reflected in the history of Pratt, Read & Co. and typical of those found in American history.

The presence of the two Pratt, Read & Co. factories in Deep River in substantially "as built" condition is in itself a most fortunate circumstance making possible the useful study of factory architecture from the 1880s and 1914/1919. The parallel existence of records, chiefly the corporate minute books, at the Ivoryton Pratt, Read & Co. Museum makes an unusual opportunity to compare and integrate the documentary record with the artifacts. As the architectural interest of the buildings is above average, and as the history of the company is deeply revealing of the times, the two together constitute a Connecticut cultural resource of major importance.

1. Steadman's Norwich Directory, 1904, p. 453 shows Charles Morgan Williams as a principal in Carpenter & Williams, general contractors and builders.

2. See Ardis Abbott,nomination to the National Register of Historic Places of the Minterburn Mill, Vernon, CT, citing Ernest L. Ransome and Alexis Soubrey, Reinforced Concrete Buildings, New York, McGraw Hill 1912, p. 13 and Ada Louise Huxtable, "Reinforced Concrete Construction, The Work of Ernest L. Ransome, Engineer, 1884-1911," 11 Progressive Architecture 38 (1957), pp. 39-42, 121-2.

3. Interview December 13, 1983 with Peter H. Comstock, Chairman, Pratt, Read & Co. and Edith M. de Forest, curator, Pratt, Read & Co. Museum, Ivoryton.

4. Other ivory objects included billiard balls, beads, letter openers, bracelets, collar studs, toothpicks, cribbage board pegs and handles for cutlery.

5. This account of the early years of the local ivory fabricating business is taken from the History of Middlesex County, pp. 548, 549, and from the interview with Mr. Comstock and Miss de Forest.

6. Pratt, Read & Co. minute books containing minutes of stockholders' annual meetings and periodic directors' meetings are at the Pratt, Read & Co. Museum. One book runs from October 6, 1863 to May 20, 1881. Another runs from October 15, 1902 to October 24, 1923. The minute book for the intervening period is missing. Subsequent minute books are on hand.

7. Julius Howard Pratt, Reminiscences Personal and Otherwise, privately printed, 1910. Copy at Pratt, Read & Co. Museum. Julius H. Pratt was an 1842 graduate of Yale and taught school for one year in Alabama before joining his father's firm. In 1845 he made a business trip to England in the company of "an old gentleman" (George Read). After an 1847 fire temporarily brought Meriden operations to a halt, he organized and led a 20-man expedition to the California gold rush of 1848.

8. Ivory now trades in world markets at about $50 per pound. Trading in the United States has been prohibited since 1958 under the Endangered Species Act. Plastic (celluloid) first began to be used for keys in 1892 and over a period of decades plastic displaced ivory. Hard rubber displaced ivory in the manufacture of combs about the end of the 19th Century.

9. By this time Julious H. Pratt had become a resident of West Bloomfield (Montclair), New Jersey where he continued to live for the rest of his life. He engaged in various business enterprises after 1868. One was the construction of a portion of the New York City subway system. Another was the export of general merchandise to Brzail, which he visited. His varied, vigorous and colorful career was symptomatic of the Victorian era in which he lived, in a sense paralleling the vigor and color of High Victorian architecture.

10. Labor by contract may have been a fairly standard arrangement at the time. It was used, for example, at the Colt's Armory in Hartford, but little general information on the subject is available. The subject deserves more study.

11. A bleach house survives at the Pratt, Read & Co. factory in Ivoryton.

12. Julius Howard Pratt, p. 103.

13. The two older companies are C.H. Dexter & Co. of Windsor Locks, 1767, and Smith, Worthington Saddlery Co. of Hartford, 1794.

Abbott, Ardis, nomination to the National Register of Historic Places for the Minterburn Mill, Vernan, CT 1983.

Comstock, Peter H., Chairman of Pratt, Read & Co. and Edith M. de Forest, Curator, Pratt, Read & Co. Museum, interview, December 13, 1983.

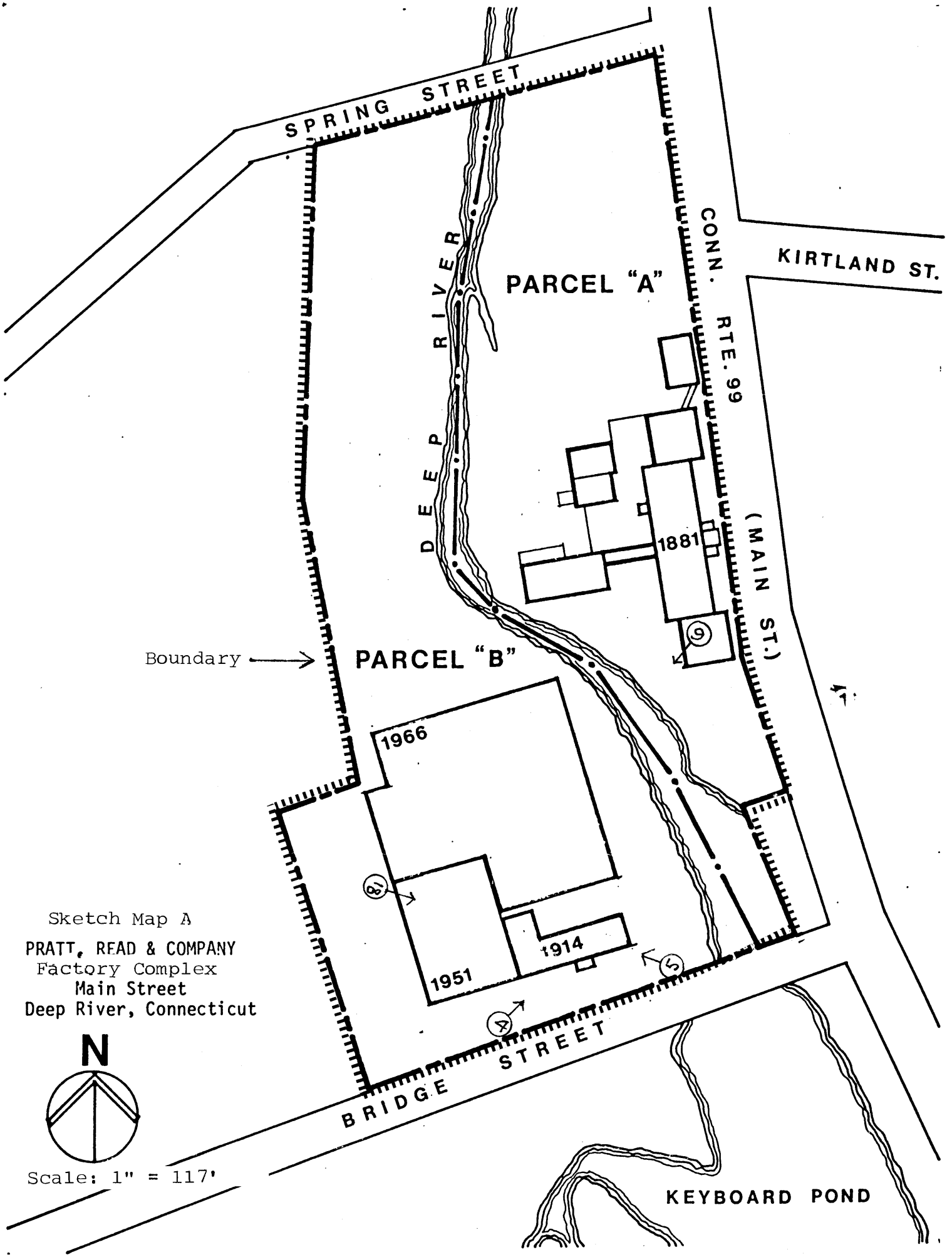
History of Middlesex County, Connecticut, New York: J.B. Beers & Co., 1884.

A History of Pratt, Read & Co., Deep River Historical Society, 1973. Contains a thorough bibliography.

Johnson, Curtis J., From Ivory Combs to Carnegie Hall and Today, 1973. Typescript at Pratt, Read & Co. Museum.

Pratt Julius Howard, Reminiscences Personal and Otherwise, privately printed, 1910.

Pratt, Read & Co. Minute Books. At Pratt, Read & Co. Museum.



Sketch Map A

PRATT, READ & COMPANY
Factory Complex
Main Street
Deep River, Connecticut

Scale: 1" = 117'