

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Sharpe's Trout Hatchery Site

other names/site number Site 146-05

2. Location

street & number Valley Falls Road not for publication

city or town Vernon vicinity

state CT code CT county Tolland code 013 zip code 06066

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

Signature of certifying official/Title _____ Date _____

State of Federal agency and bureau _____

In my opinion, the property meets does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of certifying official/Title _____ Date _____

State or Federal agency and bureau _____

4. National Park Service Certification

I hereby certify that the property is:

- entered in the National Register.
 See continuation sheet.
- determined eligible for the National Register
 See continuation sheet.
- determined not eligible for the National Register.
- removed from the National Register.
- other, (explain): _____

Signature of the Keeper _____

Date of Action _____

5. Classification

Ownership of Property

(Check as many boxes as apply)

- private
- public-local
- public-State
- public-Federal

Category of Property

(Check only one box)

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

(Do not include previously listed resources in the count.)

Contributing

Noncontributing

_____ buildings

1 _____ sites

_____ structures

_____ objects

1 _____ Total

Name of related multiple property listing

(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions

(Enter categories from instructions)

AGRICULTURE/SUBSISTENCE/fishing facility
or site

Current Functions

(Enter categories from instructions)

VACANT/NOT IN USE
LANDSCAPE/park

7. Description

Architectural Classification

(Enter categories from instructions)

OTHER: fieldstone retaining walls, dam,
foundation

Materials

(Enter categories from instructions)

foundation STONE/fieldstone
walls _____
roof _____
other fieldstone retaining walls

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- A owned by a religious institution or used for religious purposes.
- B removed from its original location.
- C a birthplace or grave.
- D a cemetery.
- E a reconstructed building, object, or structure.
- F a commemorative property.
- G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

(Enter categories from instructions)

ARCHAEOLOGY/Historic - Non-Aboriginal

AGRICULTURE

Period of Significance

1871-1874

Significant Dates

1871-1874

Significant Person

(Complete if Criterion B is marked above)

N/A

Cultural Affiliation

Euro-American

Architect/Builder

not known

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other

Name of repository:

Vernon Historical Society

Sharpe's Trout Hatchery Site
Name of Property

Tolland County, CT
County and State

10. Geographical Data

Acreage of Property c. one acre

UTM References

(Place additional UTM references on a continuation sheet.)

1

1	8	7	1	2	2	0	0	4	6	3	2	4	8	0
Zone			Easting					Northing						

3

Zone			Easting					Northing						

2

Zone			Easting					Northing						

4

Zone			Easting					Northing						

See continuation sheet

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Mary G. Soulsby (reviewed by John Herzan, National Register coordinator)

organization PAST, Inc. date August 30, 1996

street & number P.O. Box 209 telephone (860) 486-4264

city or town Storrs state CT zip code 06268

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name Town of Vernon, CT

street & number Valley Falls Park telephone 872-8591

city or town Vernon state CT zip code 06066

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects (1024-0018), Washington, DC 20503.

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Item 7. Narrative Description.

The Sharpe's Trout Hatchery Site is the site of an ambitious, state-of-the-art trout hatchery which operated from 1871 to 1874. The trout hatchery was on the verge of becoming the country's largest trout producer when it abruptly closed down after the unexpected death of its owner.

Physical Description

The site includes the physical remains of the trout hatchery, located on both sides of Railroad Brook (formerly Box Brook) about one-half mile south of Valley Falls Road. The visible remains are confined to a roughly 300- x 150-foot parcel accessible by a walking trail through Valley Falls Park (Figures 1 and 2).

The visible remains are primarily comprised of a series of shallow depressions which represent the breeding and rearing pools for trout of various ages and sizes. The depressions are very difficult to discern because the site is wooded and covered with ferns and other wetland vegetation, and the depressions are filled with decaying leaves. The ponds are on the west side of the brook at a bend in the brook, from which water was diverted to feed the ponds (Figure 2). The remains of a rubble dam (Photograph 1) are at the southern end of the bend, from which a feeder flows north to a 40-foot-long fieldstone retaining wall/dam (Photograph 2) which forms the southern end of the largest pond. This pond is about 70 feet long and 45 feet wide and contains three different levels. At its northern end it constricts to a ten-foot-wide stone-lined opening into a second, connected pond. Remnants of fieldstone bank reinforcements are visible on the eastern side of the larger pond.

The second pond measures about 40 x 25 feet and is stone-lined on its eastern side. An old-growth maple tree, which probably helped shade the pond, still stands on the western edge. At the pond's northern terminus it connects via a stone-lined opening with a third pond, 90 x 15 feet, which may in fact be a spawning channel, as suggested by its long, narrow configuration. This third pond connects back into Railroad Brook. Along the eastern edge of all three ponds is an earthen berm probably constructed to buttress the ponds and protect them from flooding.

On the west side of the three interconnected ponds are three discrete 15 x 25-foot depressions, each about 2 ½ feet deep, which probably represent holding pools.

At the southern end of the site, across the brook from the boulder dam remains, is a loose configuration of fieldstone rubble and a slight depression on a low rise adjacent to the brook. This feature (Photograph 3) is rectangular-shaped, measures approximately 60 x 75 feet, and may represent the remains of the hatchery house.

Fifty feet north of the presumed hatchery house foundation, on the same side of the brook, is a 50-foot-long low fieldstone wall. The wall may be associated with the only other building known to have been part of the site - a "nice one story cottage . . . for the use of the man in charge, nights" (Anonymous 1873).

Site Investigations and Integrity

The site has not been excavated or tested for below-ground remains. It appears to have exceptional integrity, showing no signs of "pot hunting" or any other subsurface disturbance. The site was included in a 130-acre parcel bought by the Town of Vernon in 1963 and has since been used only for passive recreation. Pedestrian traffic is diverted away from the site by a walking trail and the thick vegetation obscures the site from view.

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Site History

On May 30, 1871 Christian Sharpe purchased the 150-acre former Anson Lyman farm from Samuel and Jane Bradley for \$9,000.00, "with all the buildings and improvements thereon," Sharpe obtaining a \$4,000.00 mortgage from Samuel Bradley (Vernon Land Records 16: 529; 17: 213). Sharpe, from Philadelphia, Pennsylvania, was best known for his Civil War rifles. Sharpe selected the site with the intention of constructing a brook trout-breeding facility along Railroad Brook, which had long been locally known as a productive trout stream. American trout farming was in its infancy at the time, but natural fish supplies were so low that a successful hatchery operation could be tremendously lucrative. Sharpe set out to make his facility the biggest and the best. He hired experienced men and by July 1873, when a reporter from the *Tolland County Journal* visited his facility, he was well on the way to achieving his goal. The newspaper reported the only detailed information available about the site, which is described as containing a one-story cottage for the man in charge and a hatching house, "furnished with galvanized iron troughs, through which fresh water of course, is continually flowing." The facility also included "numerous little pens or flumes, all carefully guarded with screens made of fine wire cloth for keeping the young broods in their allotted quarters." Several different pools were described, including one of two or three rods square and two or three feet deep which housed 1000 three-year-old fish, and another with about 2000 one-year-old fish, four to six inches long (Anonymous 1873).

The newspaper went on to report that Sharpe had "facilities for hatching 300,000 trout now, and expects to enlarge from time to time, and next year will probably produce 500,000. If his expectations are realized, (and they seem quite reasonable) he will be the largest trout producer in the United States" (Anonymous 1873). Sharpe was not selling any of his fish at the time, but building up his stock and planning to fill orders the following year. Unfortunately, his dreams were never realized, for Sharpe died suddenly on March 13, 1874, less than a year later, and the hatchery was abandoned. The property went through many private owners before being acquired by the Town of Vernon and made into a town park. It is not known when the cottage and the hatchery house were removed.

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Item 8. Narrative Statement of Significance.

The Sharpe's Trout Hatchery Site is significant for three main reasons: it is associated with the development of fish and wildlife conservation and management awareness and methods, it represents an early example of a new industry, and it can provide important information on the historical development and operation of early fish hatcheries.

Criterion A. Property is associated with events that have made a significant contribution to the broad patterns of our history.

The Sharpe's Trout Hatchery Site is significant for its association with two important historical patterns: the development of fish and wildlife conservation and management methods and the establishment of a new industry by private entrepreneurs.

Although by the 1850s fish culture was established practice in most of western Europe, the Balkans, Scandinavia, and Asia, advances in the breeding of trout, a difficult species, were very slow. Fish culture in the United States was very slow to develop until the mid-19th century, when it became apparent that 200 years of unrestricted fishing, agricultural land modification, industrial dam construction, and water pollution had decimated native fish populations. An 1854 newspaper article quoted by Fry (1866: iv) clearly indicates the local severity of the problem:

We know parts of Connecticut famous for trout and game not many years ago, where neither a trout nor woodcock can now be found, and even the quail is a traditional bird; yet there are fine streams, and plenty of woodland. The unchecked lust for shillings has not left a fish or bird in whole counties. So, too, on the south side of Long Island, once esteemed among the best trouting localities in this State, where mischievous boys, and vulgar men, have been allowed to destroy them, until now a trout can scarcely be found.

Depletion and extinction of fish stocks were noted with alarm all over New England (Bowen 1970: 71). Good-sized food fish were so scarce they had become prohibitively expensive. In response, and using printed information obtained from Europe, private citizens on the East Coast began efforts to breed fish to sell as food fish and to restock depleted waters, and urged states to take official action to address what was in effect a crisis.

Artificial propagation of brook trout, the species native to the Northeast, was first accomplished in 1853 in Ohio by two men who captured a spawning pair, stripped eggs from the female and fertilized them with sperm from the male in a ceramic jar, and then incubated the eggs in running water (Bowen 1970: 72). Two years later two Simsbury, Connecticut, men hatched 75 brook trout eggs, increasing to 400 eggs in 1857. By 1860 one of the Simsbury men managed a facility set up by Samuel Colt, of revolver fame, and produced 4,000 fry (Bowen 1970: 72).

By the 1860s, though trout hatcheries were still in their infancy, methods were refined and successful enough to permit excellent profits. Seth Green's Caledonia, New York, hatchery reported profits of \$1,000 in 1865 from the sale of 180,000 eggs and \$10,000 in 1868 from the sale of 800,000 eggs. Green had intended to sell fish for market but the demand for eggs and small fish on the part of entrepreneurs wishing to start up their own hatcheries kept him from raising much table fish. The potential profits of trout fishing were

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considerable: table trout sold for \$1 per pound (when the going wage was \$1 per day); 1,000 eggs brought \$8-10; 1,000 fingerlings brought \$30-40; and 1,000 two-year-olds were valued at \$250.00 (Bowen 1970: 73). Stone (1892: 266) estimated annual profits of \$10,000 for a hatchery producing 20,000 four-year-old fish annually. Green's hatchery, and others in New Jersey, Massachusetts, and Connecticut, showed that fish culture was "practical and profitable" (State of Connecticut 1870: 21).

By 1870 fish culture was practiced in 19 states plus two territories, with an estimated 50 persons involved commercially (State of Connecticut 1870: 21). It was a serious industry, with controlled experimentation and continuous evolution of methods. Although many attempts were being made concomitantly to transfer natural fish species from one waterway to another, even cross-country by train, to replenish stocks, artificial fish breeding had clearly become the dominant force in fishery conservation.

By 1873, when Sharpe's Trout Hatchery had successfully produced brook trout of various sizes and in good quantity, the shortage of fish was obviously still acute. Sharpe's eggs were valued at \$8 per 1,000, and his young trout from \$20-30 per 1,000. A competing trout hatchery in Westport was sending 100 pounds of trout a week to a hotel in Washington, D.C., for a profit of \$175 (Anonymous 1873).

Like Sharpe, the founders of American fish culture were almost exclusively wealthy and educated men who could afford the time and expense of undertaking a risky, though potentially lucrative enterprise. These men, however, though motivated by profits, developed the science that was later adopted by the state and federal governments.

These early American fish culturists are also in part responsible for raising awareness of the need for action on the state and federal levels. They spurred the New England states, the earliest, to establish fish commissions to formally recognize and correct the depletion of fish stocks. They then worked alongside the state commissions to provide the states with trout for stocking; in the 1880s the State of Connecticut could not afford to build its own hatchery and relied upon private fish culturists to provide over 100,000 trout (State of Connecticut 1881: 16; 1883, 1886). The American Fisheries Society, established in 1870 by the private fish culturists, was one of the first private natural resource management groups in the country. The Society is directly responsible for the establishment one year later of the Federal Fish Commission, which evolved into the U.S. Fish and Wildlife Service (Smith, personal communication).

Today, of course, fish cultivation is an enormous industry, with hatcheries operated by private industries, the states, and the federal government, all working to meet an ever increasing demand for sport and food fish. Christian Sharpe and his hatchery were pioneers in recognizing and meeting a need for fish conservation and propagation.

Criterion D. Property has yielded, or is likely to yield, information important in prehistory or history.

The Sharpe's Trout Hatchery Site has the potential to yield important information on the historical development of American fish hatcheries, about which very little is known. Attempts to gather information on 19th-century fish practices indicated that this aspect of fish conservation has been all but forgotten. The fishery division of the Connecticut Department of Environmental Protection has no historical information except for the Commissioners' reports, and historical fish breeding practices are not part of the curriculum of fishery biology. The U.S. Fish and Wildlife Service has recently recognized that the history of fish culture has been overlooked and is attempting to correct this deficiency with the establishment of the D.C. Booth National Historic Fish Hatchery in Spearfish, South Dakota, which contains an 1899 hatchery now operated

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as a museum. The Fish and Wildlife Service is in the ground stages of building the Booth Hatchery, which is listed in the National Register of Historic Places, into a national center for information on historical fish culture (Smith 1996).

One of the reasons there is so little information available on 19th-century fish culture is that successful fish breeders were secretive about their methods, apparently reluctant to share the information with potential competitors. Only two 19th-century sources are available - one of European origin (Fry 1866) and one extremely valuable manual by a New Englander (Stone 1893). Both sources, however, concentrate on general descriptions of manual egg and sperm stripping, dietary needs, temperature and oxygen requirements, and some of the apparatus (such as spawning boxes and filters) and do not describe the structural components or layout of a typical hatchery. Archaeological investigation of the Sharpe hatchery could help identify the latter, significantly enhancing the documentary record of this site and others, particularly since the Sharpe site is nearly 30 years older than the few other known 19th-century hatcheries in the United States.

Careful mapping of the hatchery site has already provided an idea of the operation. The layout of the trout-rearing ponds and the mechanisms by which they were fed water from the brook are obvious. The small dams at each pond entrance not only separated the pools but aerated the water to provide a healthier environment for the fish. The berms protected the ponds from catastrophic flooding of the brook. The site took advantage of the natural setting to provide an optimal environment: the steep wooded slope provided the shade necessary to keep the water at the cool temperature and dark environment trout prefer. The railroad, on the ridge passing by the site, would have provided an easy method of shipping trout products.

Fieldstone rubble remains suggest the locations of the hatchery house and the caretaker's cottage. Archaeological investigation of these areas could firmly establish each location and the dimensions of each. It is also possible that archaeological evidence may suggest the internal configuration of the hatchery house; i.e., what kind of equipment and how it was arranged in the building. It is known that the hatchery house was furnished with galvanized iron troughs (Anonymous 1873), but what form did they take? (See Figure 3 for one possible set-up.) The mere fact that Sharpe used iron troughs indicates he spared no expense, for carbonized wooden troughs were used elsewhere (Stone 1893: 274, 307).

Buried remnants of the equipment and tools of the trade may exist: a fish food grinder, for example (see Figure 4), spawning boxes and filtering devices (Figure 5), pond screens, shipping containers (Figure 4). Organic remains may indicate what food the trout were fed. Clearing of leaves from the site to expose the pond beds may reveal more stonework and/or gravel bottoms (to imitate the natural gravel-bed spawning grounds preferred by trout), and indicate true depths.

Archaeological investigation may also indicate what precautions Sharpe took against predators. Traps may have been laid for land mammals such as muskrat and mink, and netting may have protected the ponds from herons and other birds.

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Major Bibliographic References

Anonymous

1873 Trout Breeding in Vernon. *Tolland County Journal*, July 25, 1873.

Bowen, J.T.

1970 A History of Fish Culture As Related to the Development of Fishery Programs. In *A Century of Fisheries in North America*, Norman G. Benson, editor, pp. 71-93. Special Publication No. 7, American Fisheries Society, Washington, D.C.

Erickson, J. David

1981 "American Trout Farming Marks 100 Years Plus - Still Growing." *Aquaculture Magazine* 7(3): 14-17.

Fry, W.H., editor and translator

1866 *A Complete Treatise on Artificial Fish-Breeding*. New York: D. Appleton and Company. First published 1854.

Leitritz, Earl and Robert C. Lewis

1976 *Trout and Salmon Culture (Hatchery Methods)*. Fish Bulletin 164. State of California Department of Fish and Game.

Raw, John E.

1991 Spearfish Fisheries Center (Spearfish Hatchery). National Register of Historic Places Nomination Form.

Sedgwick, Stephen D.

1995 *Trout Farming Handbook*. Oxford, England: Fishing News Books.

Smith, Randi

1996 Personal communication between Mary G. Soulsby and Randi Smith of the U.S. Fish and Wildlife Service.

State of Connecticut

1870 Fourth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

1871 Fifth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

1880 Fourteenth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

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1881 Fifteenth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

1883 Seventeenth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

1886 Twentieth Report of the Commissioners of Fisheries of the State of Connecticut. Hartford: Case, Lockwood and Brainard.

Stevenson, John P.

1987 *Trout Farming Manual*. Farnham, Surrey, England: Fishing News Books Limited. 2nd edition.

Stickney, Robert R., editor

1991 *Culture of Salmonid Fishes*. Boca Raton: CRC Press.

Stone, Livingston

1893 *Domesticated Trout: How to Breed and Grow Them*. Charlestown, NH. Fourth edition.

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Verbal Boundary Description

The site boundary is shown on the accompanying map (Figure 2). The nominated property is part of a 130-acre parcel shown as Lot 10C, Block 135, Vernon Assessor Map 34, and recorded in Volume 141, page 507, of the Vernon Land Records.

Boundary Justification

The boundary includes the visible remains of the trout hatchery site, extended slightly to natural features (steep slope) to include probable associated below-ground archaeological remains. The site, including fieldstone foundation ruins, retaining walls, dam remains, and trout pond depressions, is confined to an approximate 300 x 150-foot parcel.

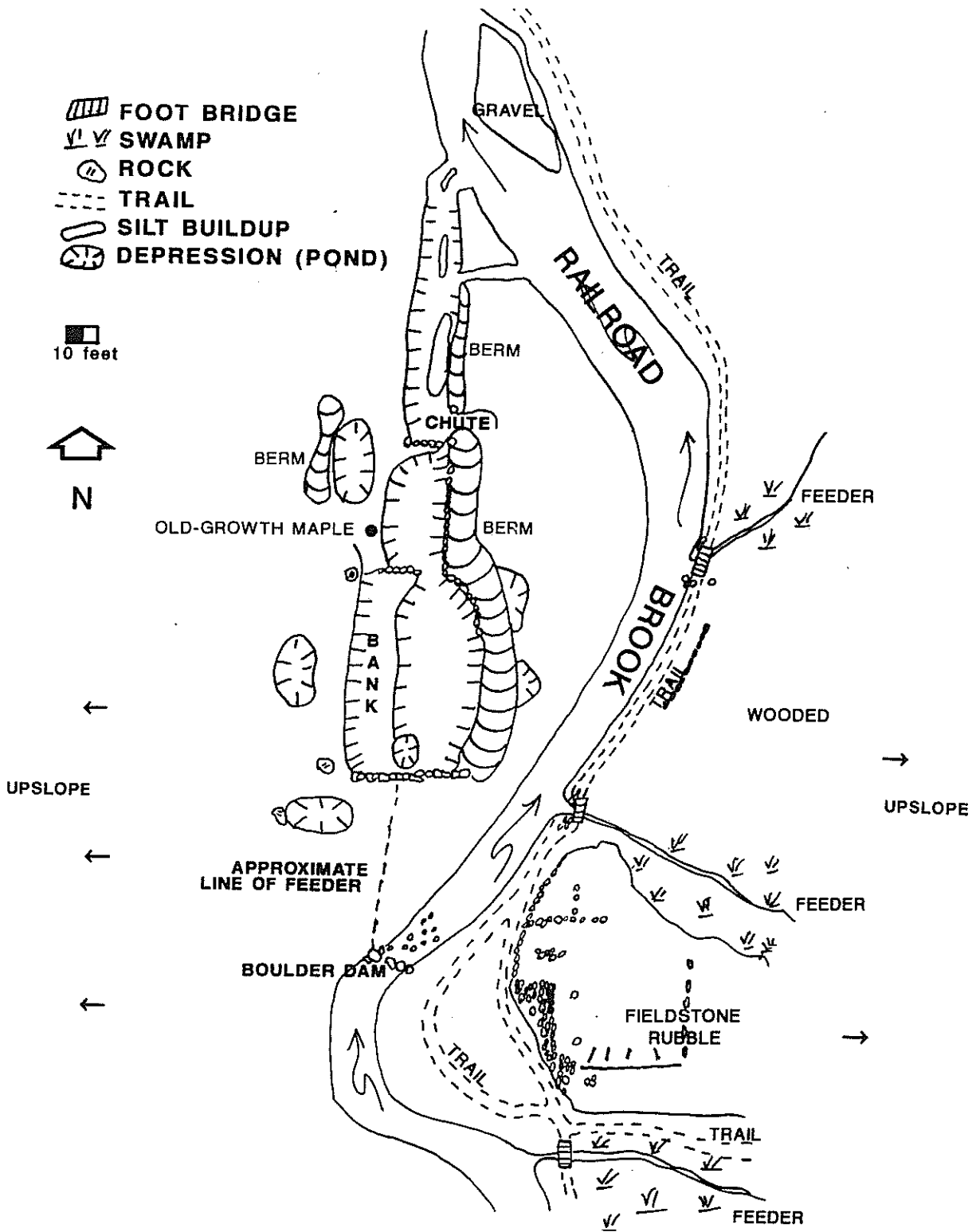
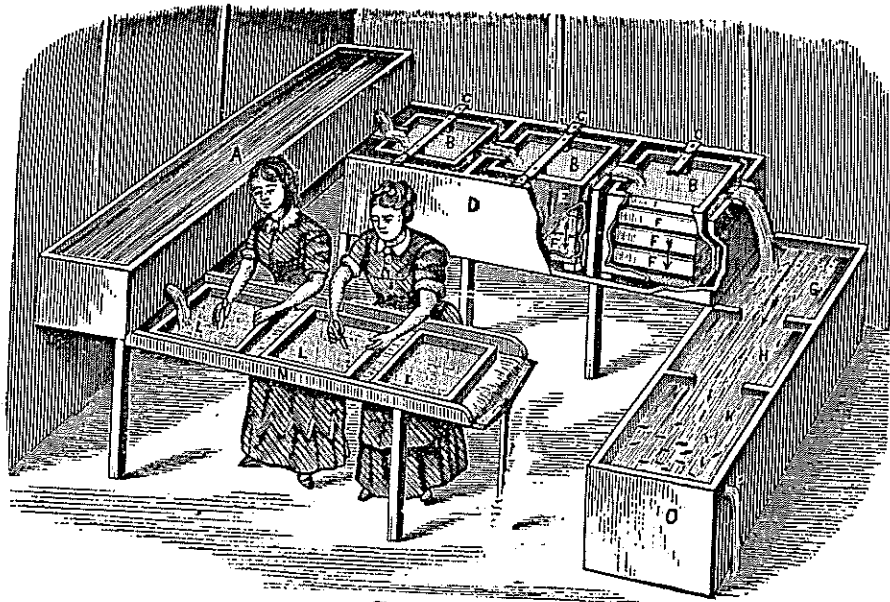


FIGURE 2

Sharpe's Trout Hatchery Site
 Vernon, CT



Clark's Method.

FIGURE 3

VIEW OF INTERIOR OF A HATCHING HOUSE

FROM STONE 1892, p. 71.

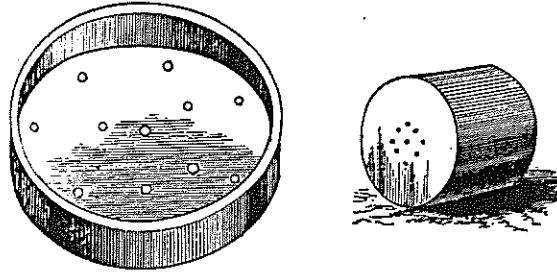
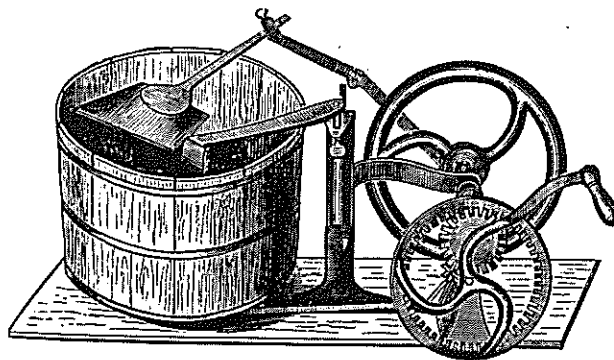


FIGURE 4a

TROUT EGG CONTAINERS.

FROM STONE 1892, p. 147.



Starret's American Chopping Machine.

FIGURE 4b

TROUT-FOOD CHOPPING MACHINE.

FROM STONE 1892, p. 233.

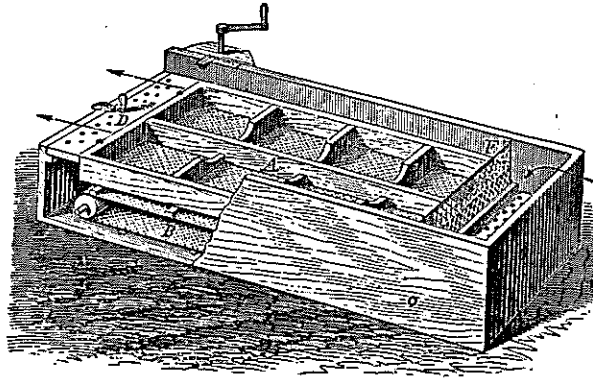


FIG. 1.

A is a double row of coarse wire screens; *B* apron of fine wire cloth; *D* a screen; *F* a screen.

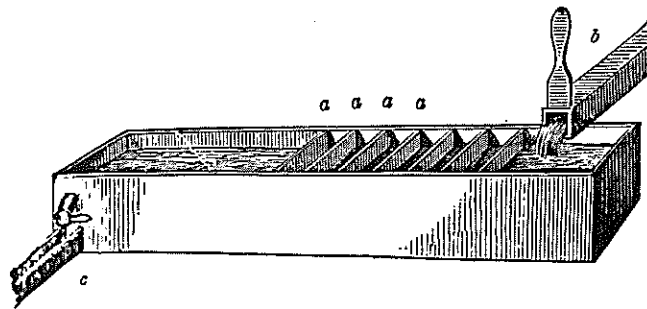
ROLLER SPAWNING BOX.

For taking the naturally impregnated eggs of Brook Trout, Salmon, etc. (Patent of A. S. Collins.)

FIGURE 5a

TROUT SPAWNING BOX.

FROM STONE 1892, p. 32.



a Flannel filters.
b Hatching-room aqueduct or inlet.
c Outlet.

FIGURE 5b

WATER FILTERING BOX.

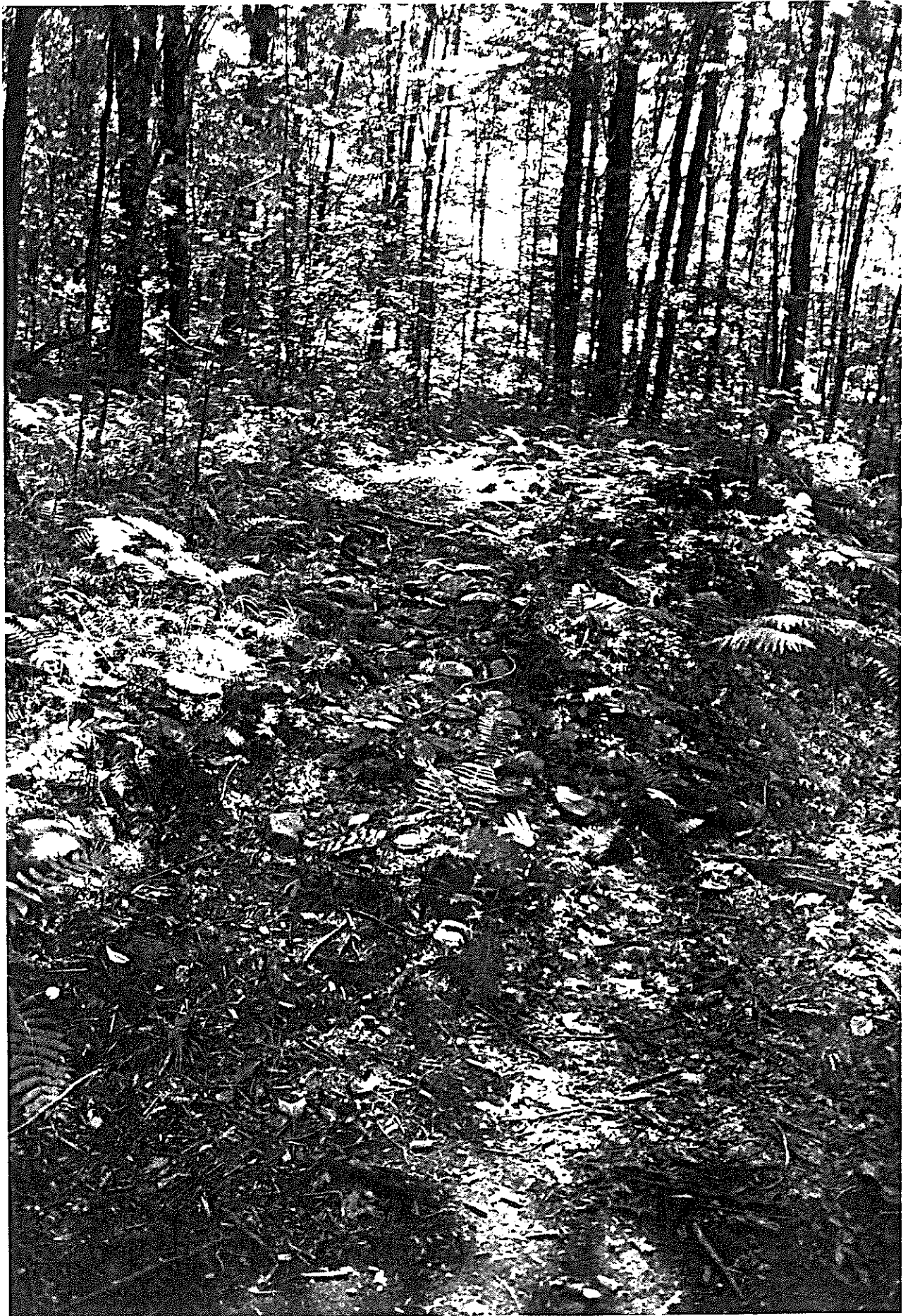
FROM STONE 1892, p. 51.



PHOTOGRAPH 1. REMAINS OF BOULDER DAM. VIEW: WEST.



PHOTOGRAPH 2. MAIN DAM/RETAINING WALL. VIEW: WEST.



PHOTOGRAPH 3. REMAINS OF HATCHERY HOUSE. VIEW: SOUTHEAST.