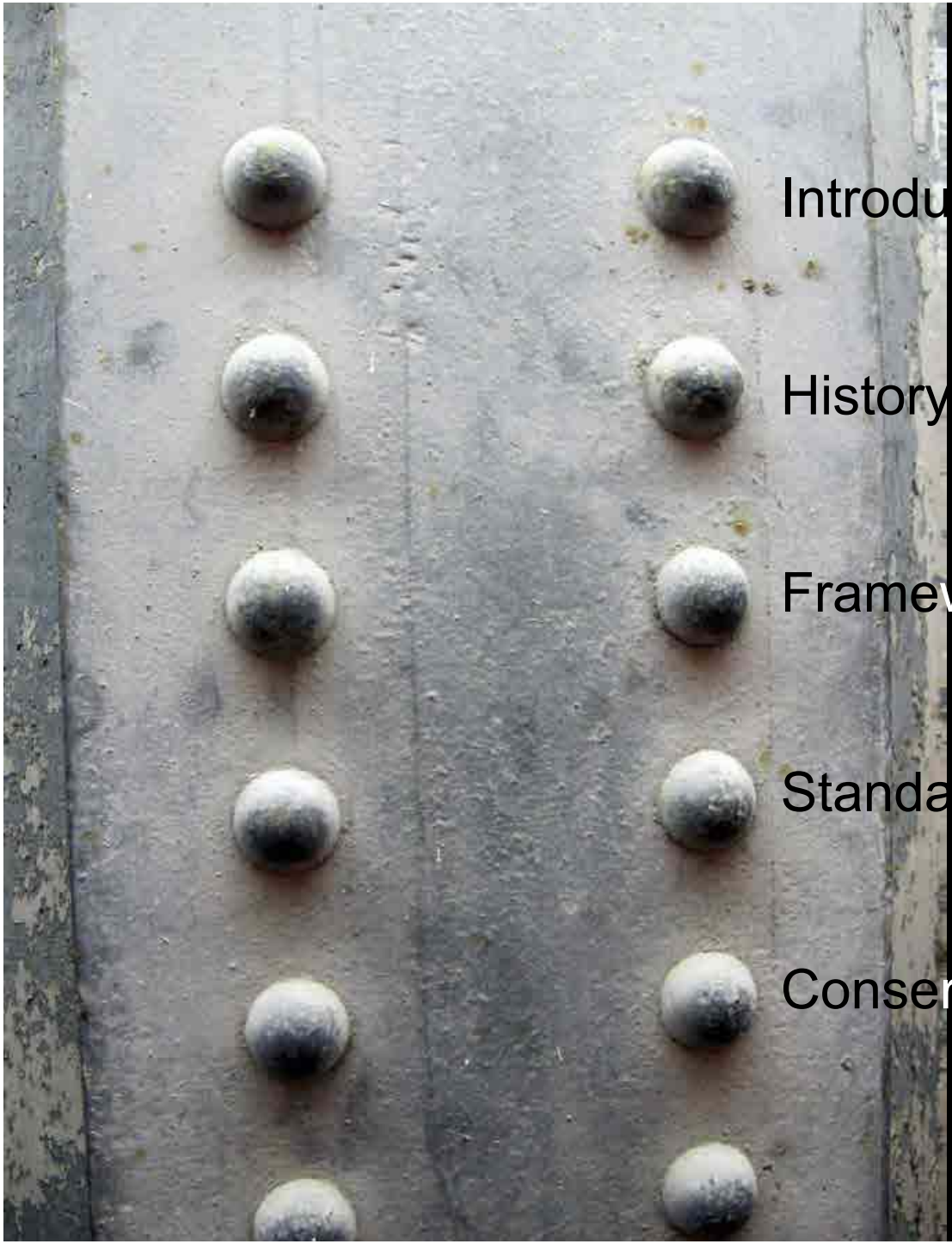
THE POWER OF HERITAGE

:

OUR INDUSTRIAL PAST

:

OUR FUTURE HERITAGE



Introduction to Industrial Heritage

History of Industrial Archaeology

Framework for Analysis

Standards and Guidelines

Conservation Planning

I N D U S T R Y

in·dus·try [ˈindəstrē]

1. Economic activity concerned with the processing of raw materials and manufacture of goods in factories.
2. Hard work.

origin:

1475–85; earlier *industrie* <Latin *industria*>

P O W E R

pow-er [pau(-ə)r]

noun

1. Ability to do or act; capability of doing or accomplishing something.
2. Political or national strength.
3. Great or marked ability to do or act; strength; might; force.

R E S O U R C E

re-source [rē-so-rs]

noun

1. An available supply that can be drawn on when needed.
2. The total means available for economic and political development, such as mineral wealth, labor force, and armaments.
3. The total means available to a company for increasing production or profit, including plant, labor, and raw material; assets.

S U R V E Y

sur-vey [/sərˈvā/]

verb

1. Examine and record the area and features of (an area of land) so as to construct a map, plan or description.

noun

1. An act of surveying an area of land.

origin:

Middle English, from Anglo-French *surveer*, to look over, from *sur-* + *veer* to see

"Surveying is old - its 5,000 year history originates in riverside communities in the Middle East and in Egypt who needed to mark the boundaries of areas to be irrigated by the annual flood of the Tigris and the Nile. Measurement is older still, and the process is so universal as to not merit a second thought."

Yet without it, the exchange of goods and services cannot take place. Measuring a length of cloth or a herd of animals or a day's labor gives it a value in terms of size, or number, or achievement, which enables others in the community to offer something else of equivalent value. Consequently it is almost as necessary to human society as language."

Andro Linklater, "Measuring America"

"Accurate measurement became important in 1538 because beginning in that year a gigantic swath of England - almost half a million acres - was suddenly put on sale for cash. It was against this background - an urgent, growing need for accurate measurement of land - that Edmund Gunter devised his chain."

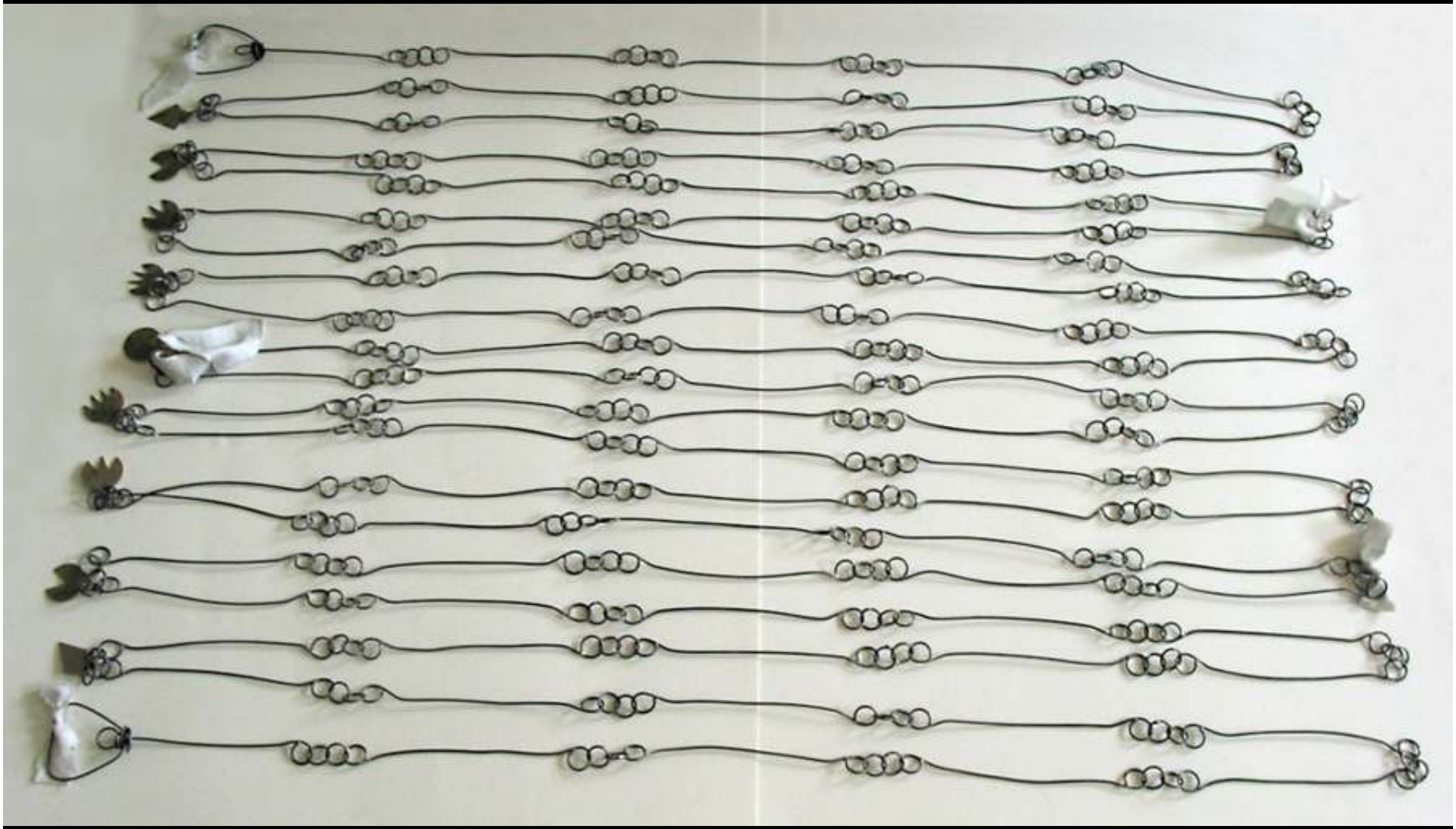
The chain was four "perches" in length. One perch was 16.5 feet. A plot of four square perches (33' by 33') was considered the amount of agricultural land that one person could work in one day - a "daywork." There were 40 square dayworks in an acre, the area that could be worked by a team of oxen in a day. Under Gunter's system a daywork was standardized as one square chain and an acre as ten square chains.

A chain was therefore 66 feet or 22 yards in length. The chain consisted of 100 metal links, marked off into groups of ten by brass rings.

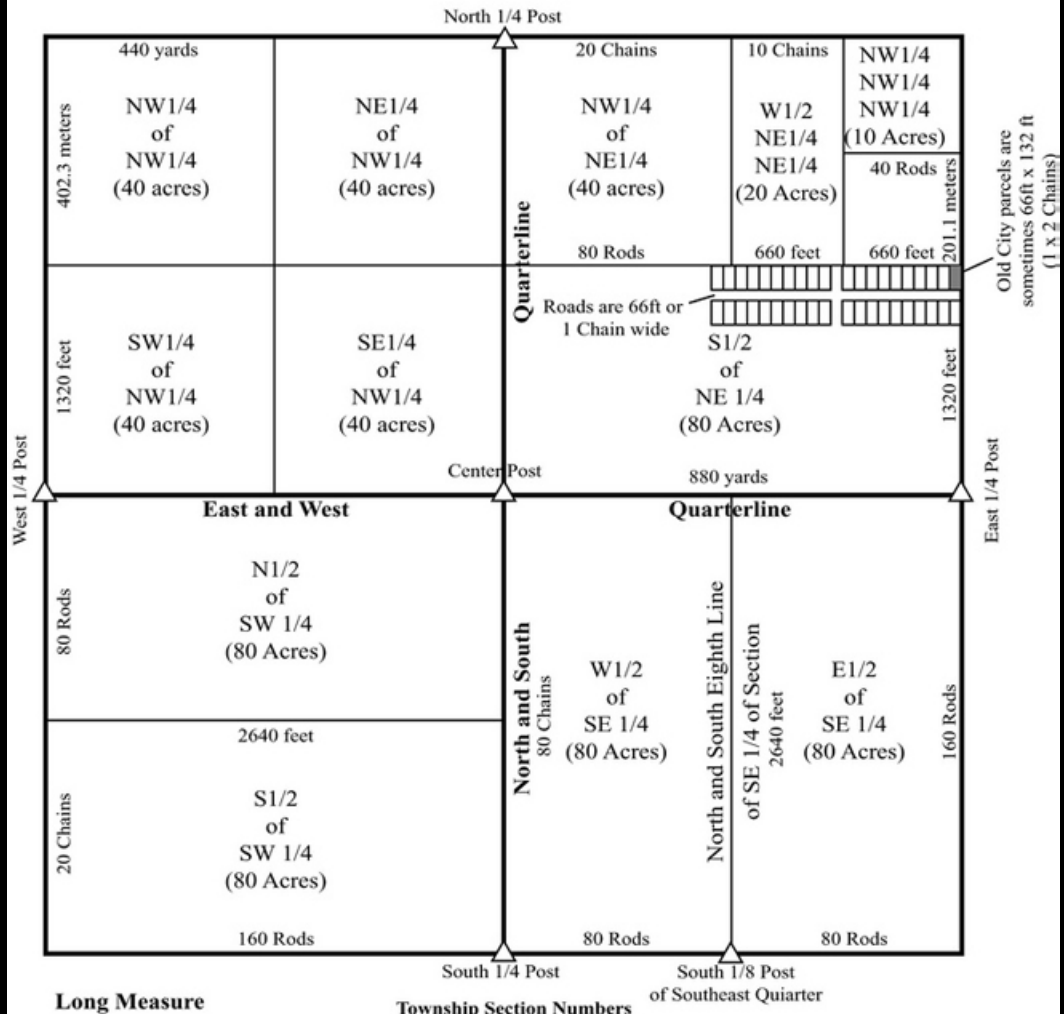
Andro Linklater, "Measuring America"

It was the surveyor's one indispensable tool, and 22 yards were to become integral to the town planning of almost every major city in the United States and Canada.

The length of Gunter's chain was ultimately derived from human activity and the dimensions of the human body. The grid that the survey laid across America was to leave its mark on almost every acre of real estate, every farm and every city block west of the Appalachians.



A Section of Land, 640 Acres
(One Square Mile)



Long Measure

1 Mile = 80 Chains
320 Rods
5280 feet

1 Chain = 4 Rods
66 feet
100 Links
1/10 Furlong

1 Rod = 5 1/2 yards
16 1/2 feet
25 Links

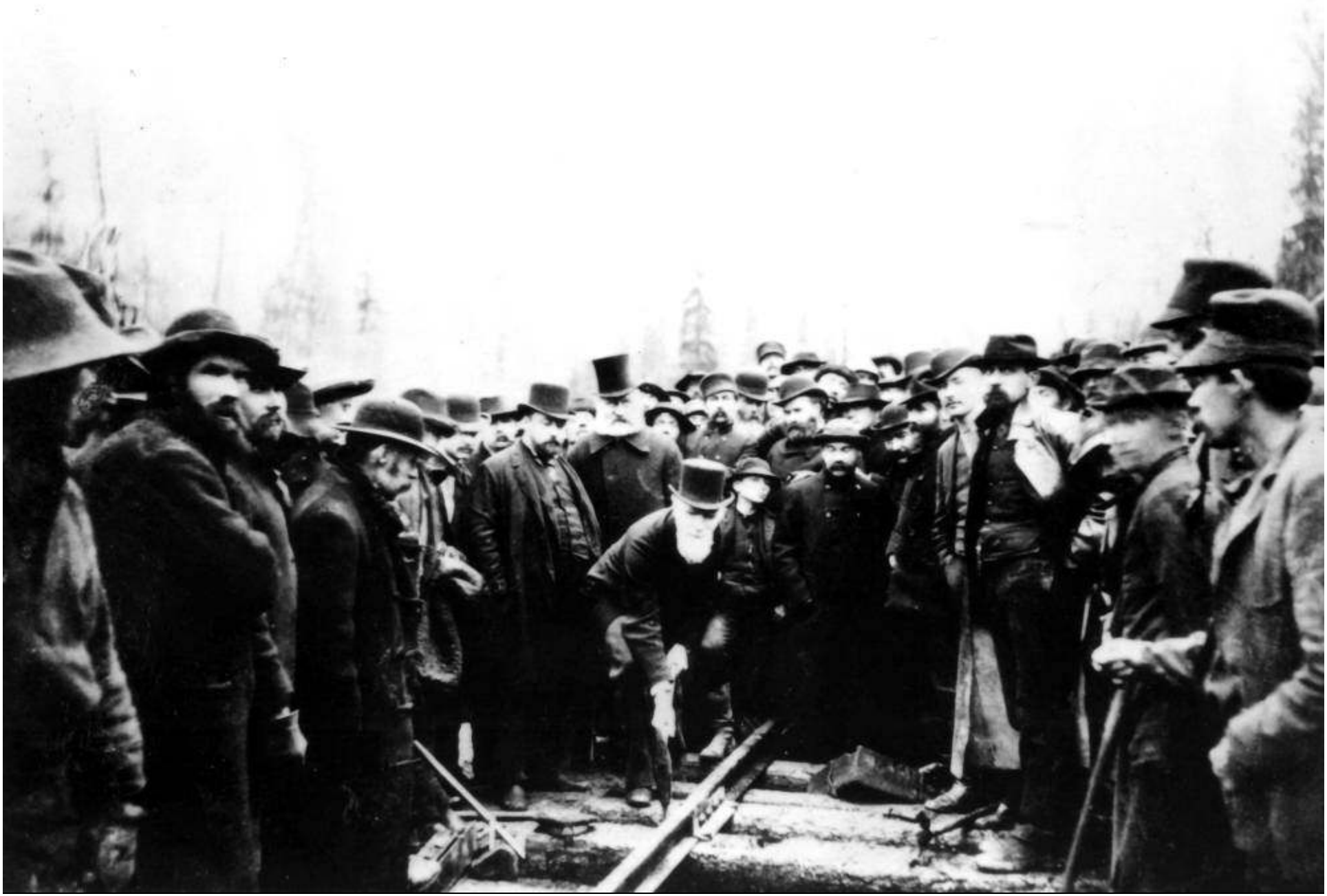
Township Section Numbers

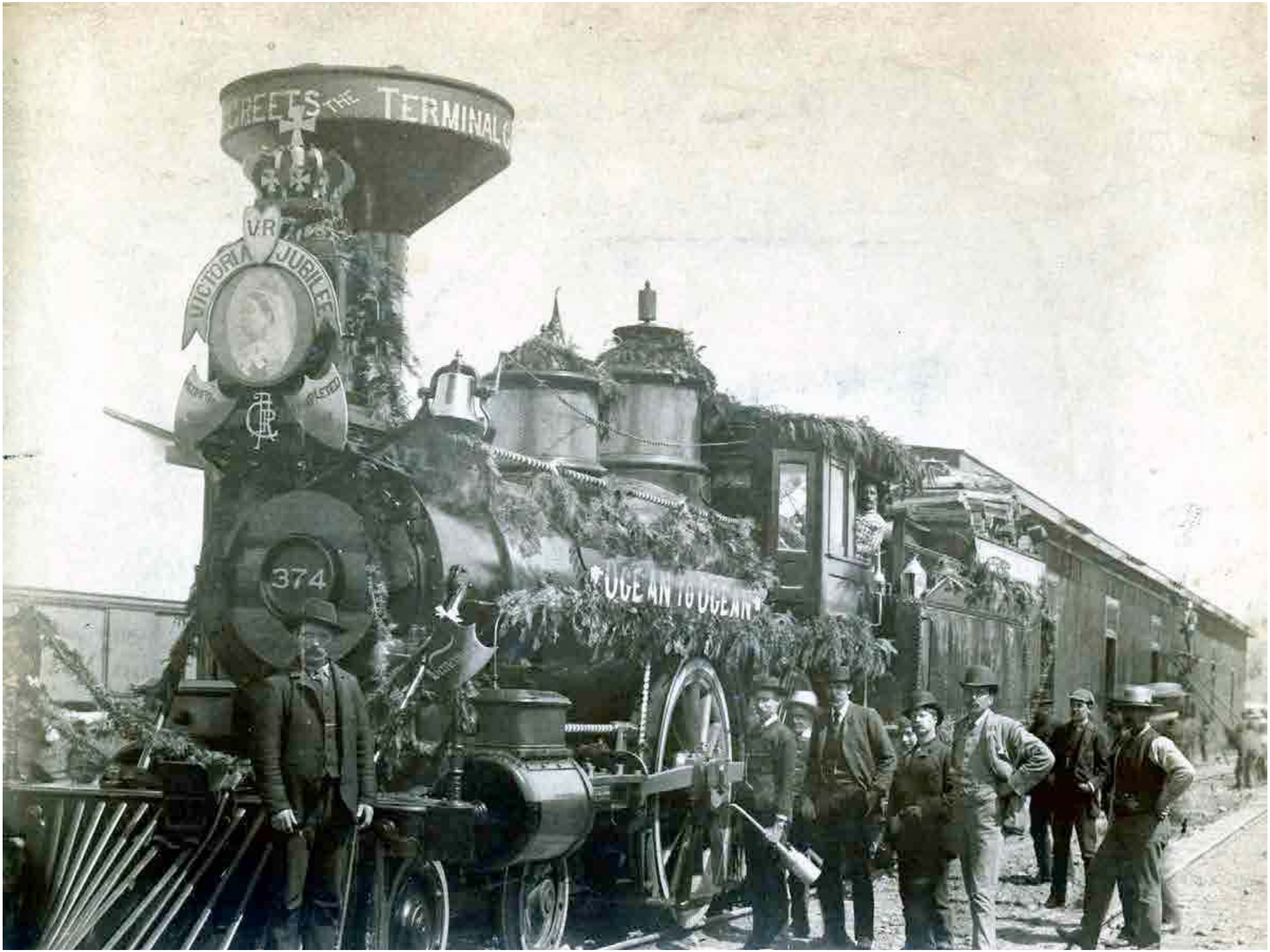
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	18	17	16	15	14	13	18
24	19	20	21	22	23	24	19
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6

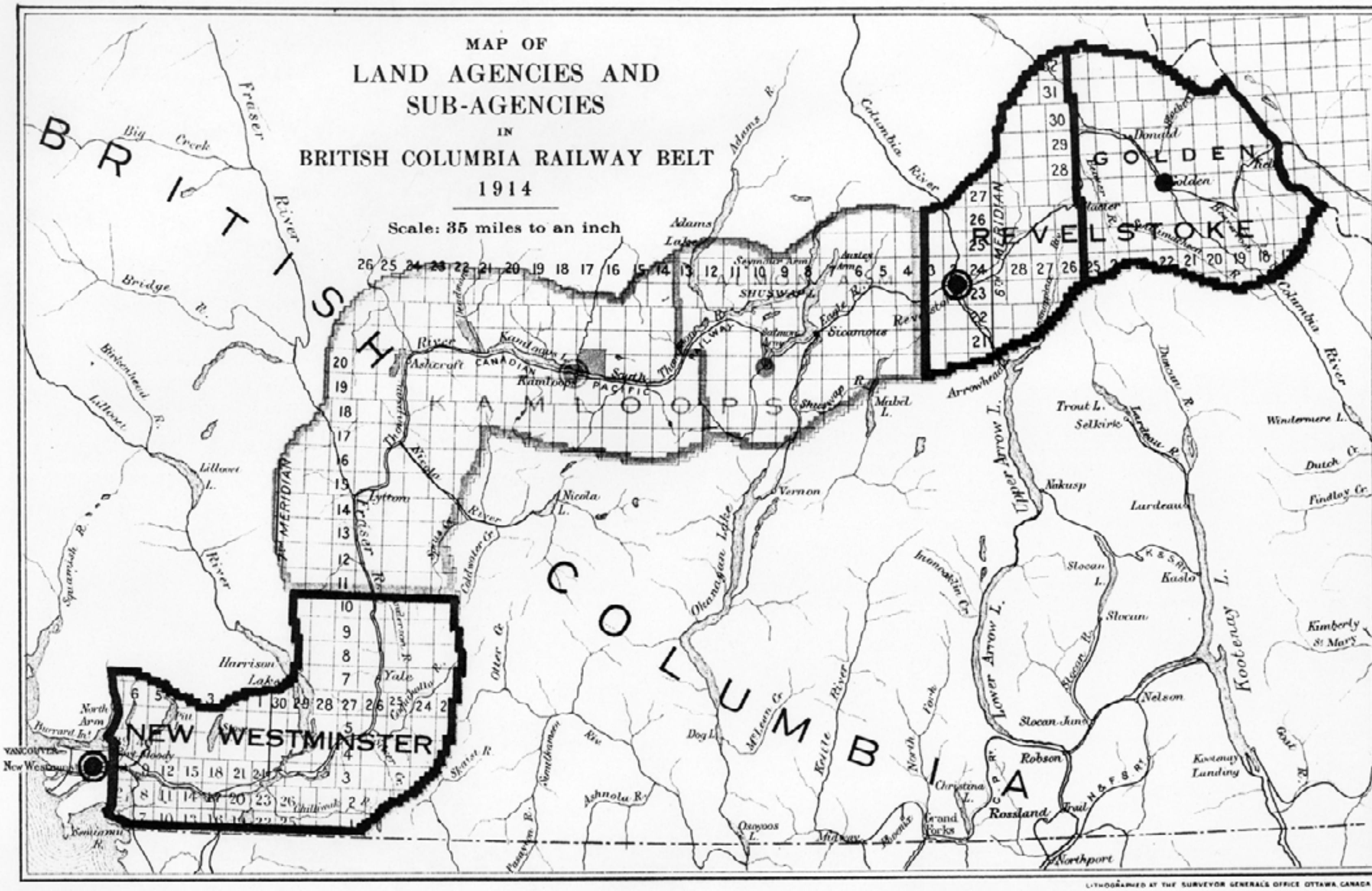
Square Measure

1 Square Mile = 640 Acres

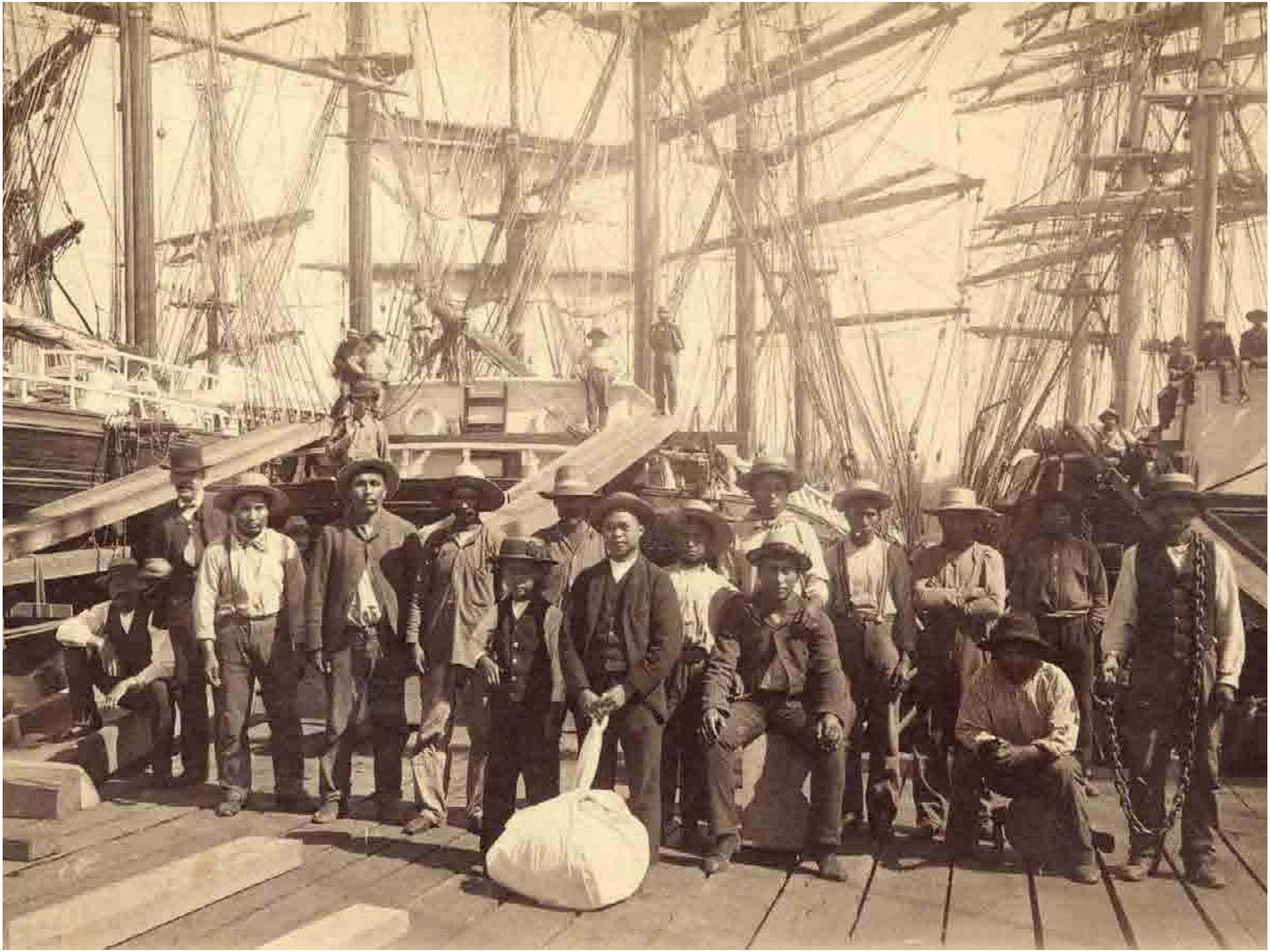
1 Acre = 10 Square Chains
160 Square Rods
43,560 Square Feet
about 208 3/4 feet square
about 8 Rods by 20 Rods

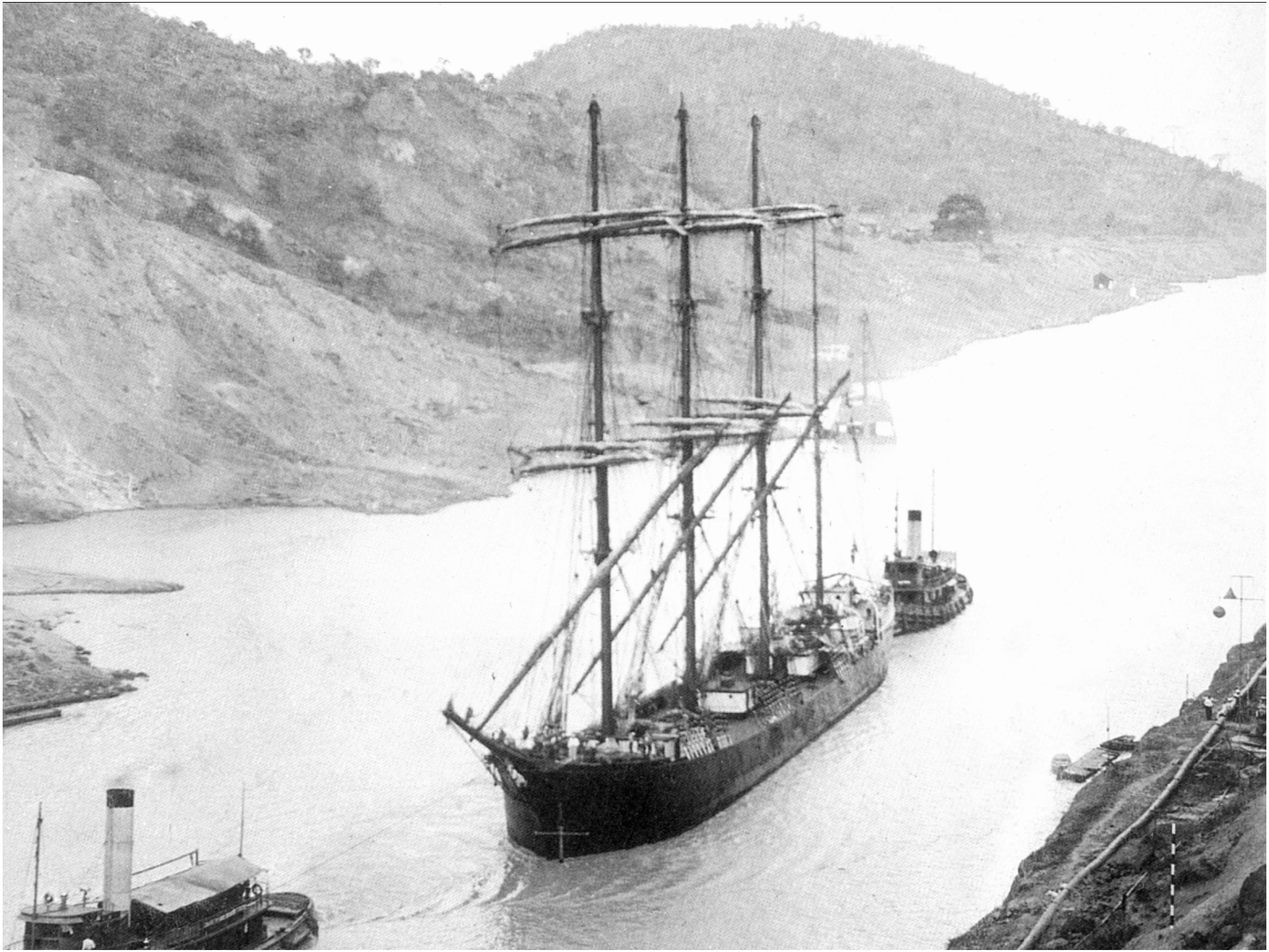


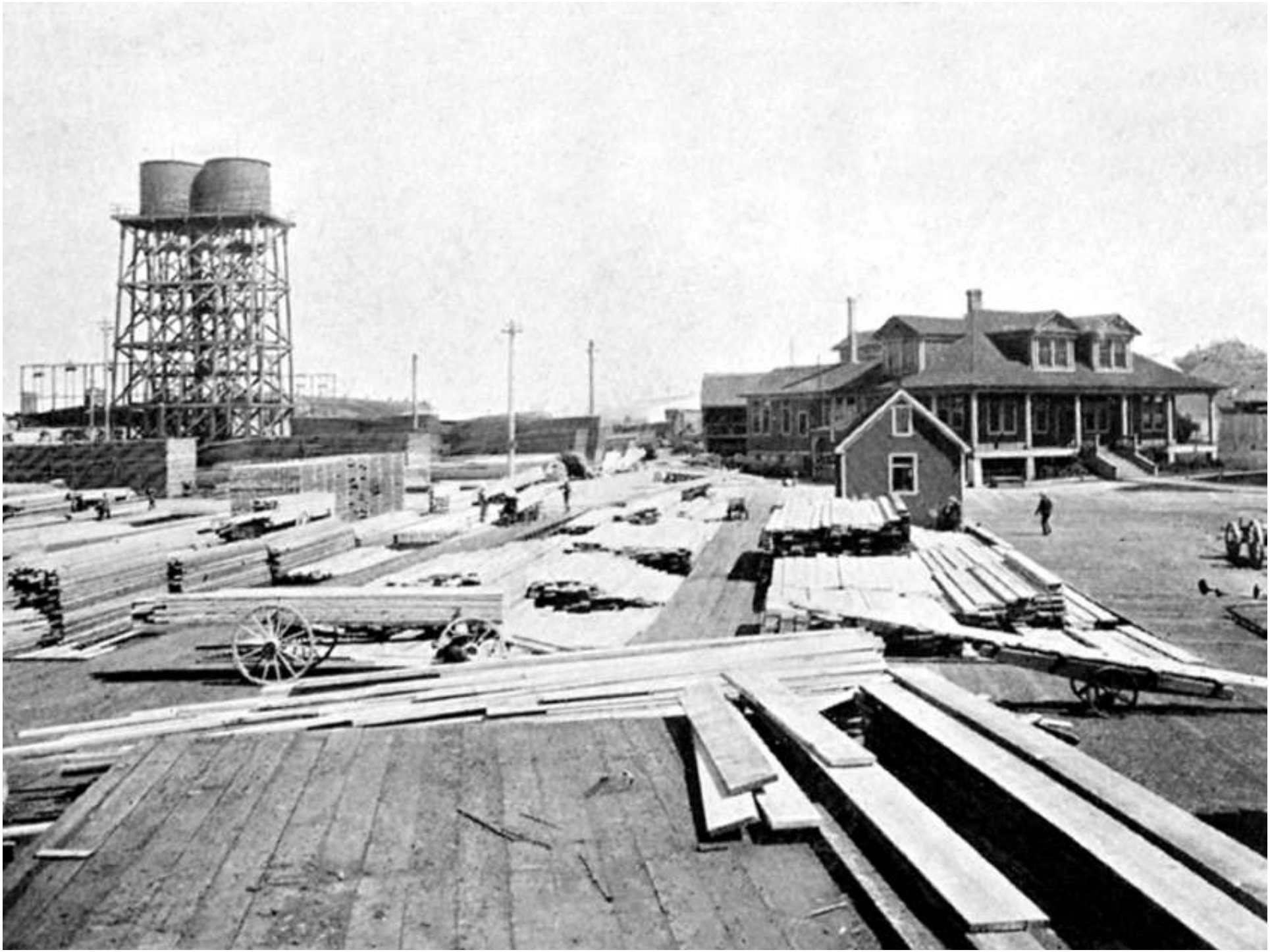

GREETS THE TERMINAL
V.R.
VICTORIA JUBILEE
374
OCEAN TO OCEAN


MAP OF
LAND AGENCIES AND
SUB-AGENCIES
IN
BRITISH COLUMBIA RAILWAY BELT
1914
Scale: 35 miles to an inch
BRITISH COLUMBIA
NEW WESTMINSTER
KAMLOOPS
REVELSTOKE
GOLDEN
Vancouver
New Westminster
Harrison Lake
Yale
Lytton
Ashcroft
Kamloops
Nicola L.
Vernon
Sicamous
Revelstoke
Arrowhead
Nakusp
Golden
Donald
Slocan
Kaslo
Nelson
Robson
Rossland
Trail
Northport
Grand Forks
Midway
Osoyoos L.
Okanagan Lake
Lillooet
Adams Lake
Shuswap L.
Upper Arrow L.
Lower Arrow L.
Kootenay L.
Columbia River
Fraser River
CANADIAN PACIFIC RAILWAY
LITHOGRAPHED AT THE SURVEYOR GENERAL'S OFFICE OTTAWA, CANADA


W. HORNE
ESTAT
ICE.
VANCOUVER
LOTS
Real Estate Office
In Big Tree
Copyright applied for



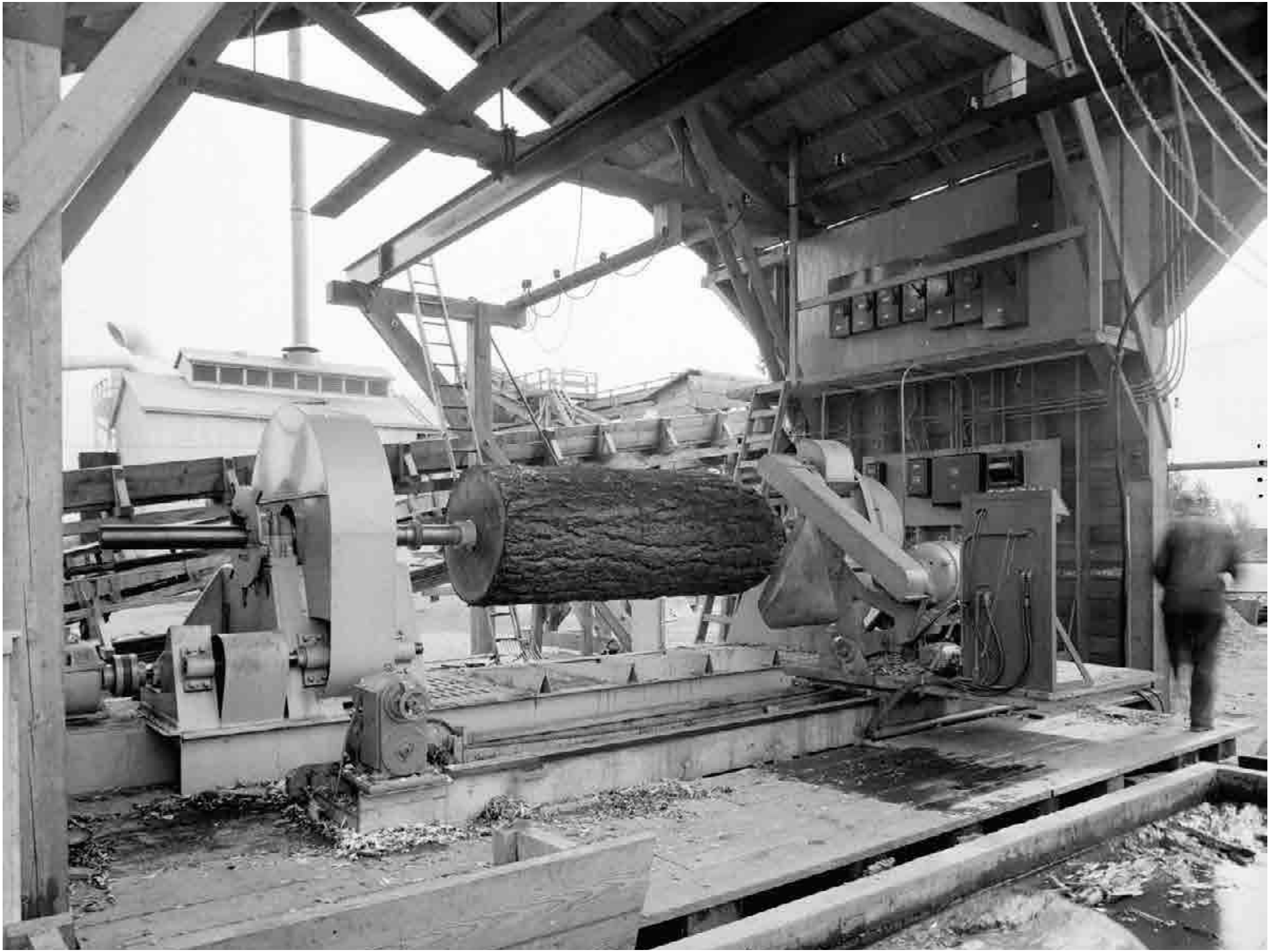


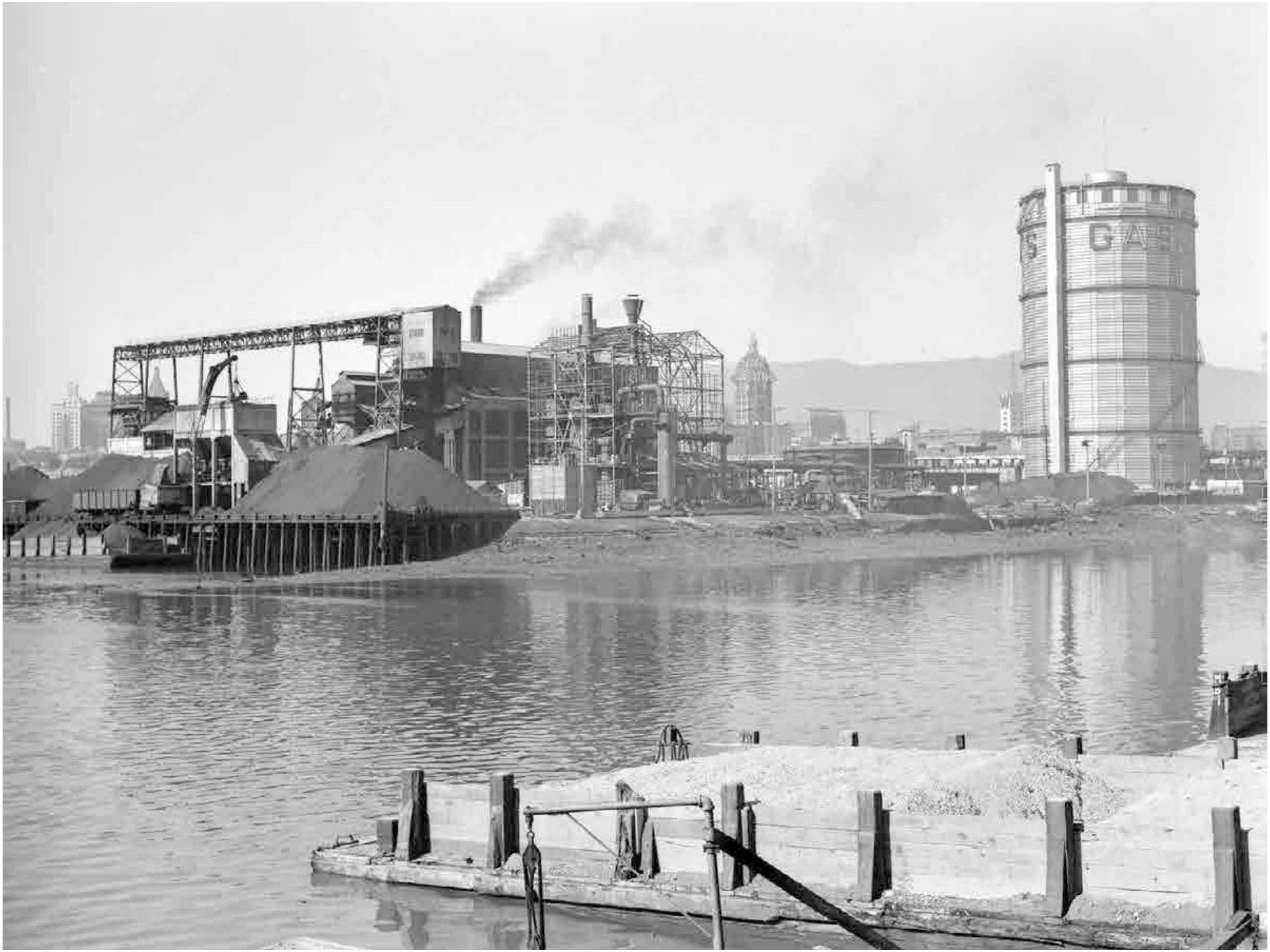


Rail Shipment of B.C. Fir Structural Timber.

Edwards Bros. Photo.


BRITANNIA BEACH




GAS


BULLEN PHOTO CO

L E G A C Y

leg-a-cy [ˈle-gə-sē]

noun

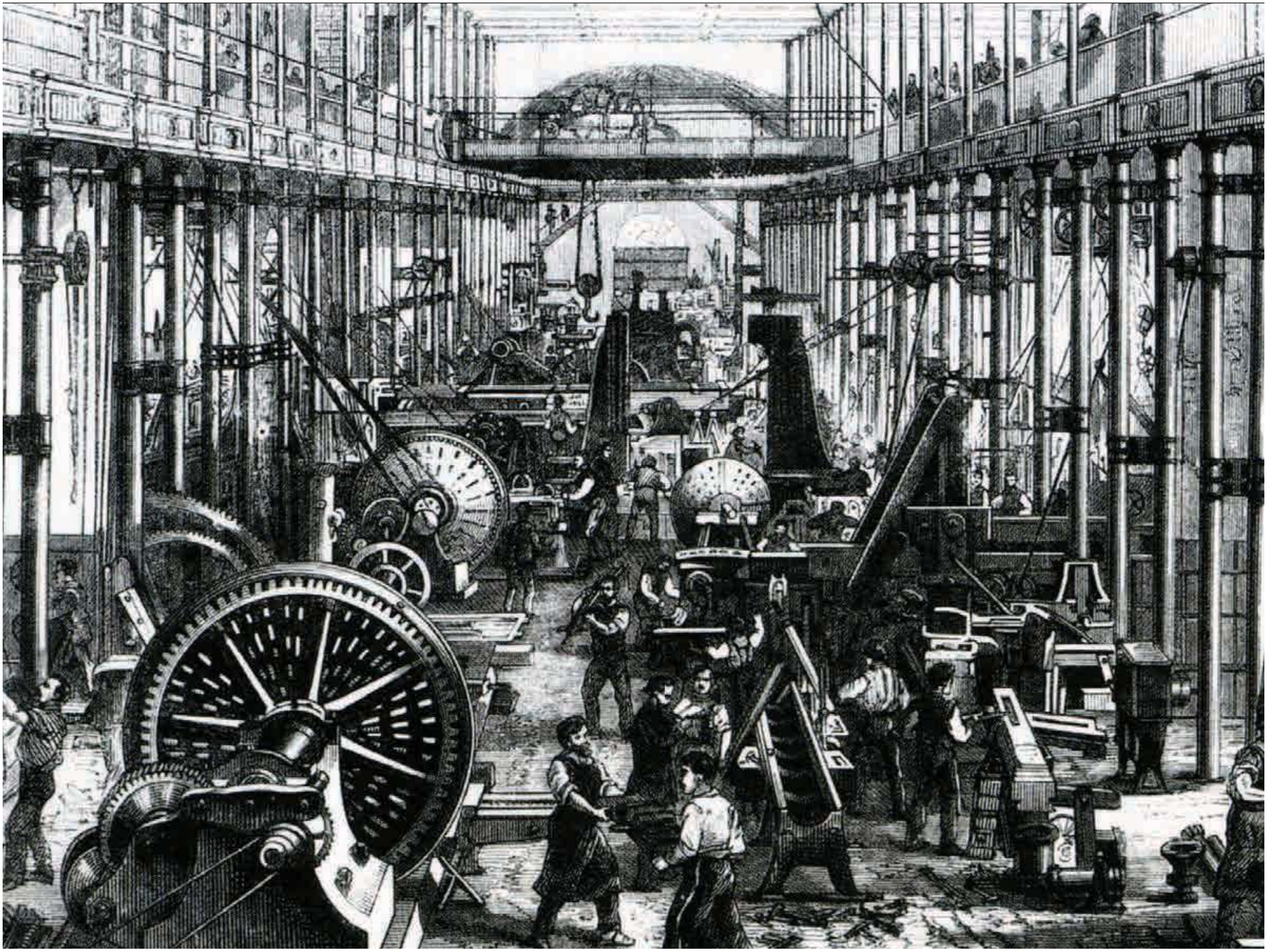
1. A gift.
2. Something transmitted by or received from an ancestor or predecessor or from the past.

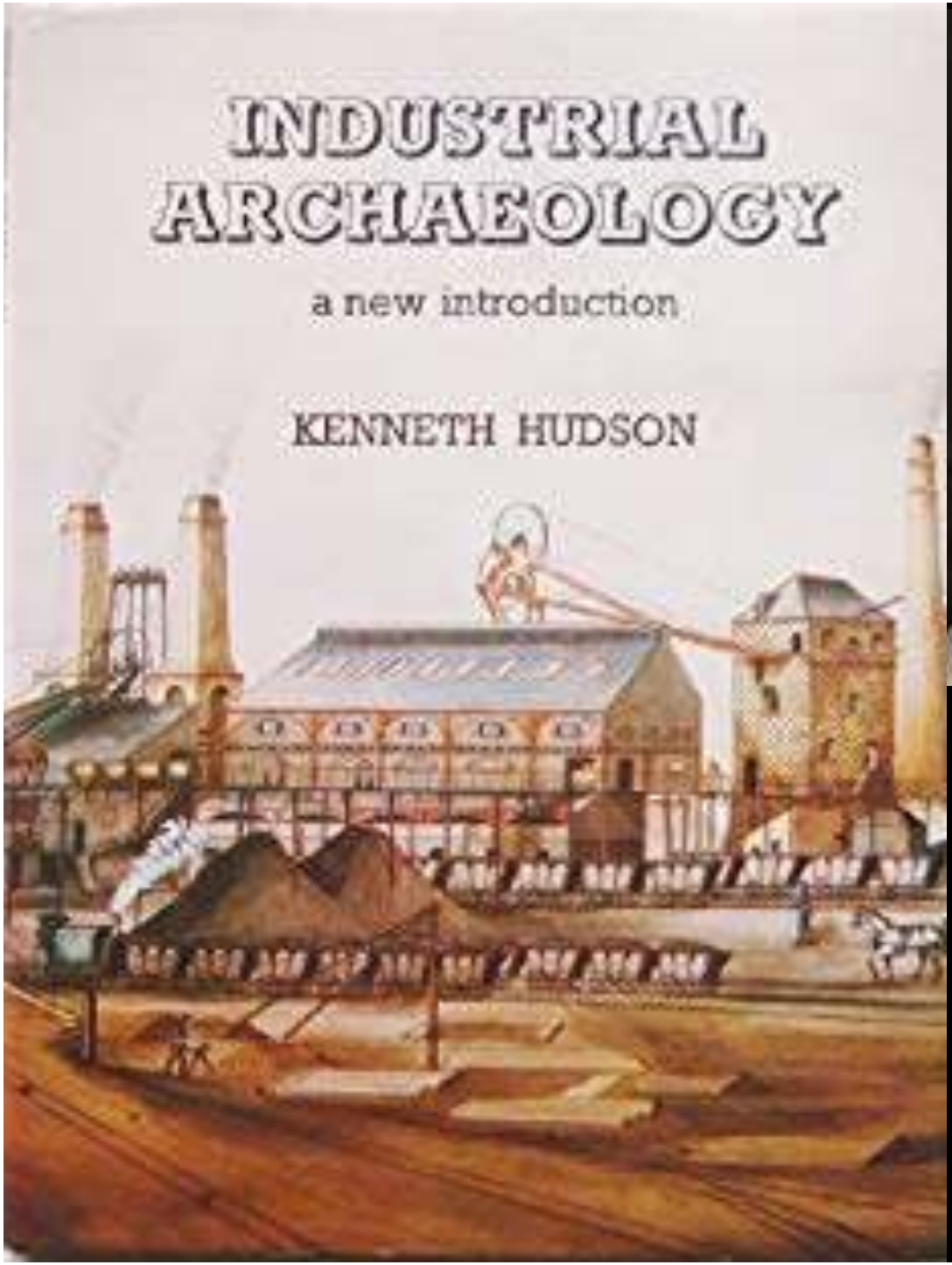
INDUSTRIAL HERITAGE

Refers to the physical remains of the history of technology and industry, such as manufacturing and mining sites, as well as power and transportation infrastructure.

Another definition expands this scope so that the term also covers places used for social activities related to industry such as housing, museums, education or religious worship, among other structures with values from a variety of fields in order to highlight the interdisciplinary character of industrial heritage.

The scientific study of industrial remains is called industrial archaeology.





The term “Industrial Archaeology” was invented by Kenneth Hudson in 1963.

SOCIETY FOR INDUSTRIAL ARCHEOLOGY

The roots of the Society for Industrial Archeology can be traced back to a seminar held at the Smithsonian Institution in Washington, D.C, on April 11, 1967. Kenneth Hudson, the prominent British archaeologist, was the featured speaker and main attraction.

The SIA was officially born at a conference held at the Smithsonian Institution on October 16, 1971, and is still active today.

FOLLOW US!

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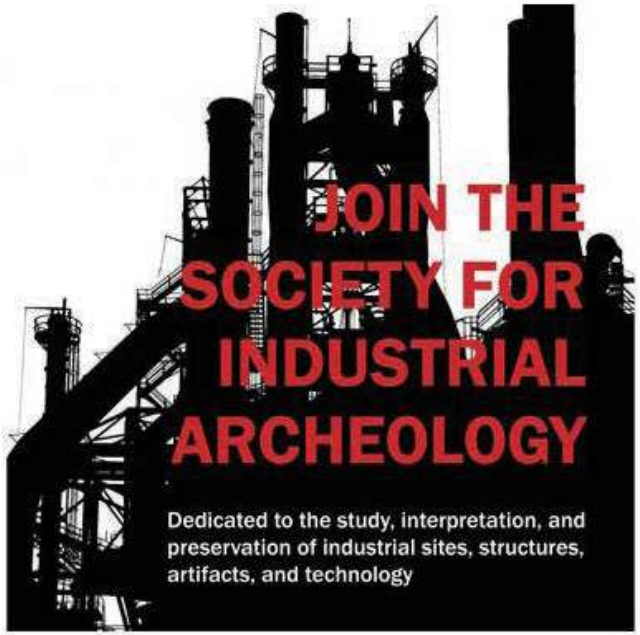


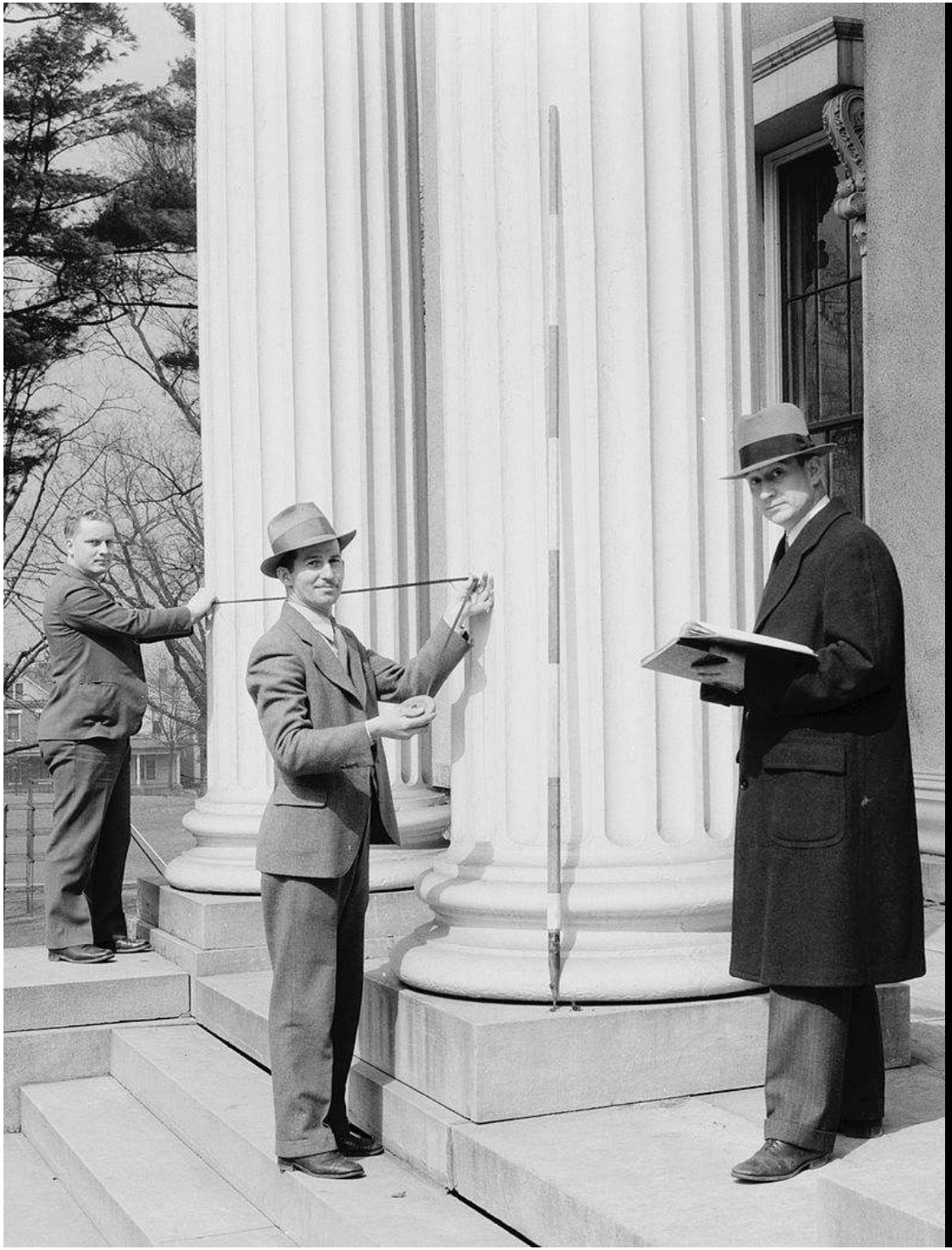
JOIN THE SIA

RENEW YOUR MEMBERSHIP FOR 2019!

SIA NEWS

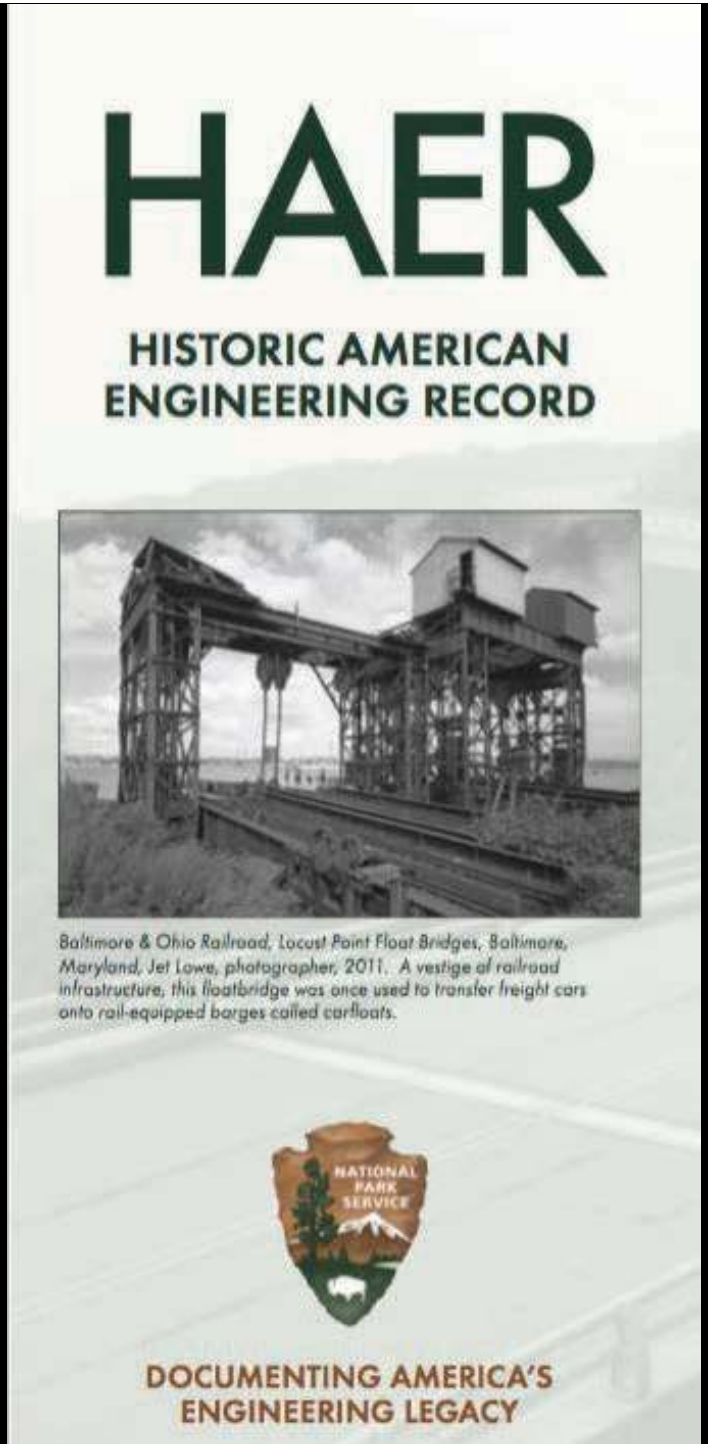
- SIA Chicago 2019 T-Shirts
- SIA Chicago 2019 – Registration
- SIA CHICAGO 2019 – TOURS & EVENTS
- USS Monitor Conservation Efforts Highlighted in Newspaper Article
- Coking site in MKE to be redeveloped (with commuter rail station)

Society for Industrial Archeology
Department of Social Sciences, Michigan Technological University
1400 Townsend Drive, Houghton, MI 49931-1295
906-487-1889
sia@siahq.org



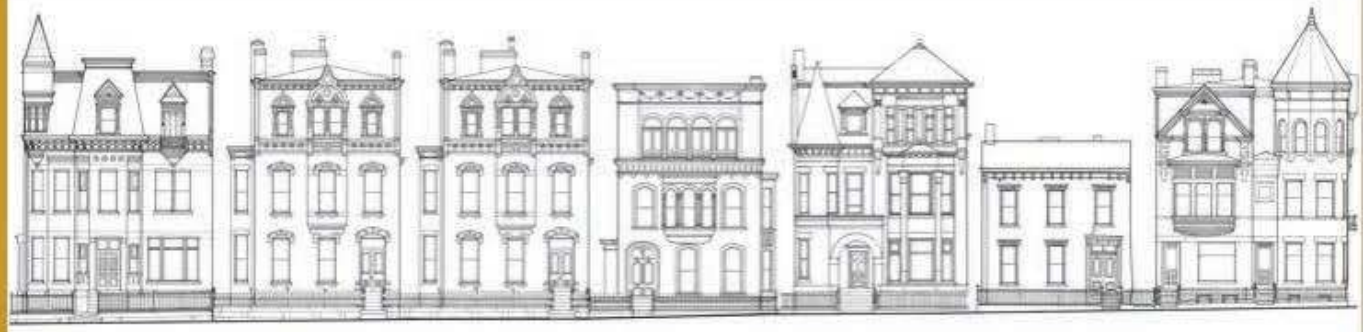
HABS / HAER

The Historic American Buildings Survey [HABS] was founded in 1933 through cooperative agreements with the National Park Service, the Library of Congress, and the private sector.



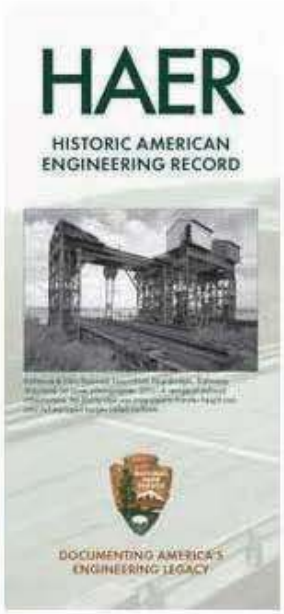
HABS / HAER

The Historic American Engineering Record [HAER] program was founded on January 10, 1969, by NPS and the American Society of Civil Engineers. HAER documents historic mechanical and engineering artifacts.



Historic American Engineering Record (HAER)

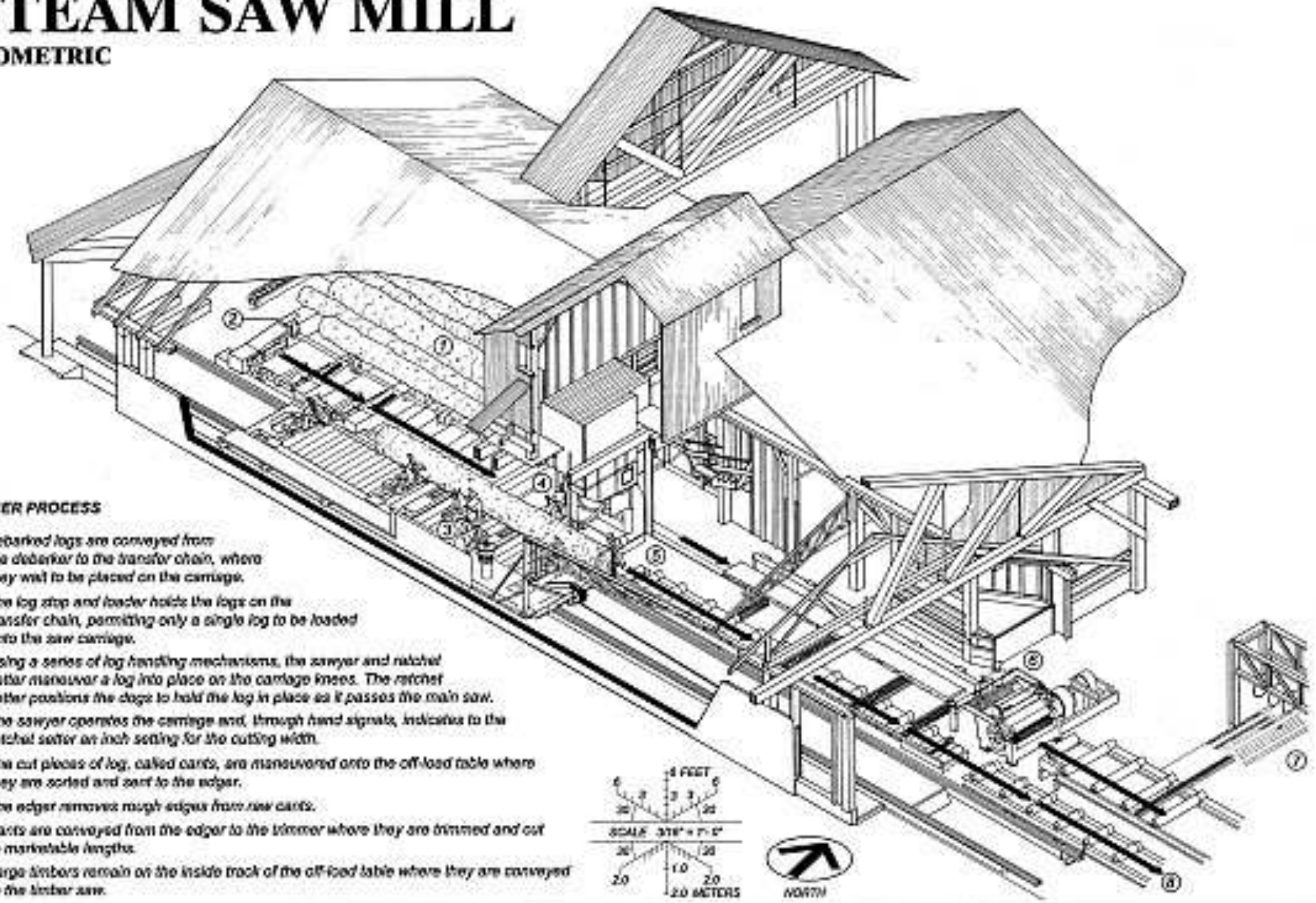
The Historic American Engineering Record (HAER) was established in 1969 by the National Park Service, the American Society of Civil Engineers and the Library of Congress to document historic sites and structures related to engineering and industry. This agreement was later ratified by four other engineering societies: the American Society of Mechanical Engineers, the Institute of Electrical and Electronic Engineers, the American Institute of Chemical Engineers, and the American Institute of Mining, Metallurgical and Petroleum Engineers. Appropriate subjects for documentation are individual sites or objects, such as a bridge, ship, or steel works; or larger systems, like railroads, canals, electronic generation and transmission networks, parkways and roads.



HAER developed out of a close working alliance between the Historic American Buildings Survey (HABS) and the Smithsonian Institution's (SI) Museum of History and Technology (now the Museum of American History). From its inception, HAER focused less on the building fabric and more on the machinery and processes within, although structures of distinctly industrial character continue to be recorded. As the most ubiquitous historic engineering structure on the landscape, bridges have been a mainstay of HAER recording; HABS also documented more than 100 covered bridges prior to 1969. In recent years, maritime documentation has become an important program focus.

STEAM SAW MILL

ISOMETRIC



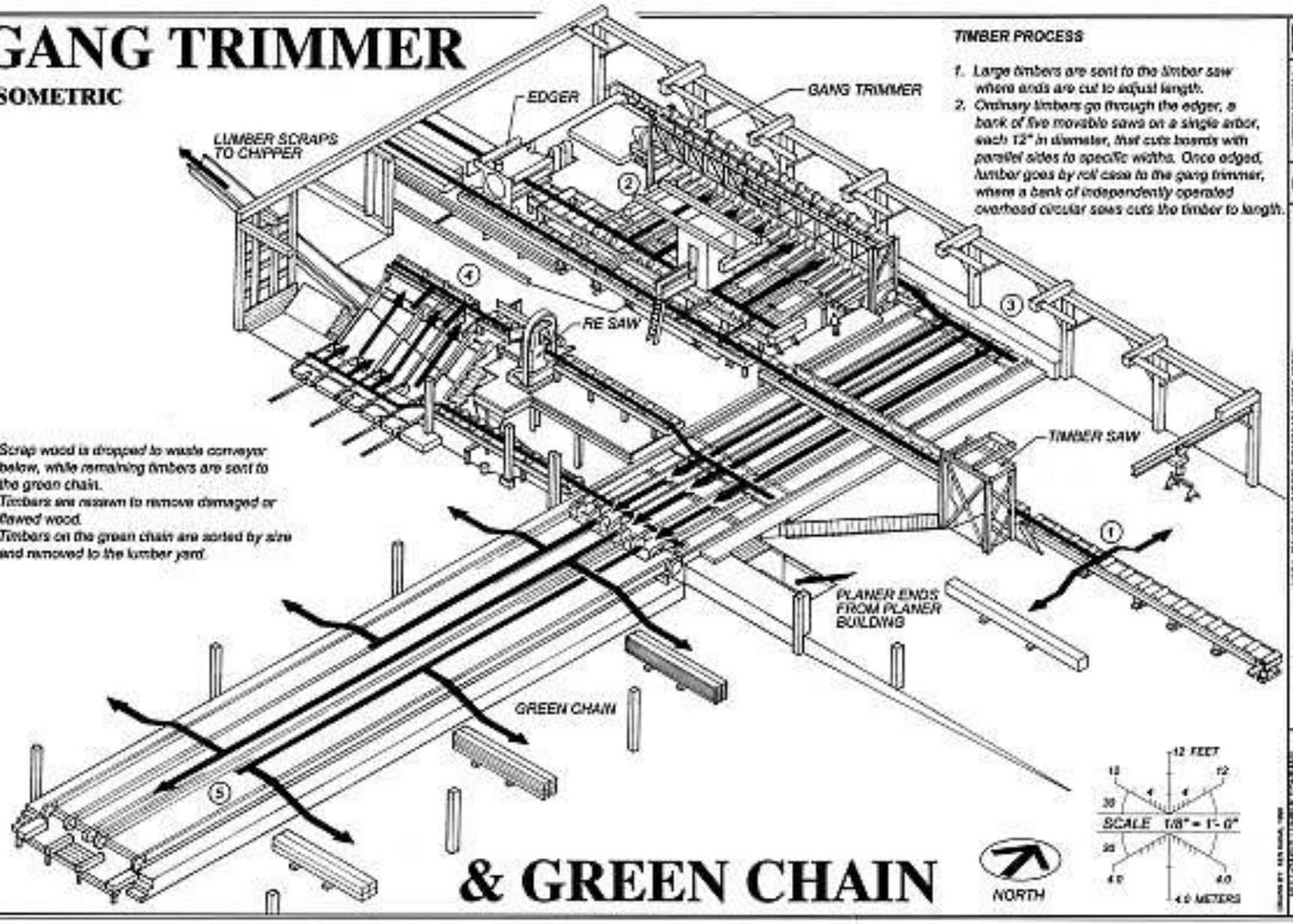
TIMBER PROCESS

1. *Debarked logs are conveyed from the debarker to the transfer chain, where they wait to be placed on the carriage.*
2. *The log stop and loader holds the logs on the transfer chain, permitting only a single log to be loaded onto the saw carriage.*
3. *Using a series of log handling mechanisms, the sawyer and ratchet setter manoeuver a log into place on the carriage knees. The ratchet setter positions the dogs to hold the log in place as it passes the main saw.*
4. *The sawyer operates the carriage and, through hand signals, indicates to the ratchet setter an inch setting for the cutting width.*
5. *The cut pieces of log, called cants, are manoeuvered onto the off-load table where they are sorted and sent to the edger.*
6. *The edger removes rough edges from raw cants.*
7. *Cants are conveyed from the edger to the trimmer where they are trimmed and cut to marketable lengths.*
8. *Large timbers remain on the inside track of the off-load table where they are conveyed to the timber saw.*

HULL-DAVIES LUMBER COMPANY (1908-1936)

GANG TRIMMER

ISOMETRIC



TIMBER PROCESS

1. Large timbers are sent to the timber saw where ends are cut to adjust length.
2. Ordinary timbers go through the edger, a bank of five movable saws on a single arbor, each 12" in diameter, that cuts boards with parallel sides to specific widths. Once edged, lumber goes by roll case to the gang trimmer, where a bank of independently operated overhead circular saws cuts the timber to length.
3. Scrap wood is dropped to waste conveyor below, while remaining timbers are sent to the green chain.
4. Timbers are resawn to remove damaged or flawed wood.
5. Timbers on the green chain are sorted by size and removed to the lumber yard.

& GREEN CHAIN

HULL-DAVIES LUMBER COMPANY (1906-1928)

THE SALMON CANNING PROCESS

① A FLEET OF TENDERS WITH WOODEN FISH SCOWS IN TOW TRANSPORTED THE SALMON CATCH FROM FLOATING TRAPS AND PURSE SEINES TO THE KAKE CANNERY FOR PROCESSING.

②③ RECEIVING ELEVATORS MOVED THE FISH FROM THE SCOWS TO A SYSTEM OF CONVEYOR BELTS THAT OPERATED BETWEEN THE DOCK AND THE FISH HOUSE.

④⑤ WORKERS SORTED THE SALMON BY SPECIES AND SIZE INTO LARGE WOODEN BINS. THE BINS WERE CAULKED WATER TIGHT AND PAINTED WHITE FOR EASIER CLEANING. SLOPING FLOORS ALLOWED THE FISH TO PASS BY GRAVITY INTO A CURVED WOODEN CHUTE.

⑥ A SECOND CONVEYOR BELT TRANSFERRED THE SALMON TO METAL HOPPERS LOCATED ABOVE THE TWO IRON CHINKS.

⑦ TWO SPHERICAL WOOD SLAT TANKS WITH CONCRETE FLOORS CONTAINED BRINE FOR TEMPORARY SALMON STORAGE. THESE FISH WERE BUTCHERED IMMEDIATELY.

⑧ THE IRON CHINK REMOVED HEAD, TAIL, FINS, AND VISCERA. ROTATING BRUSHES CLEANED THE FISH.

⑨ WORKERS CLEANED AND INSPECTED THE SALMON BEFORE THE CUTTING PROCESS.

⑩-⑱ ONE IRON CHINK COMMONLY FED ONE OR TWO LINES. EACH LINE CONSISTED OF A ROTARY CUTTING MACHINE, FILLING MACHINE, WEIGHING STATION, INSPECTION TABLE, CLINCHER, CLOSING MACHINE, AND WASHING MACHINE. FILLING MACHINES PACKED EACH CAN AND AN AUTOMATIC DISPENSER ADDED 1/4 OZ. OF PURE SALT. THE WEIGHING MACHINE CHECKED EACH CAN AND WORKERS CORRECTED ERRORS DURING INSPECTION. THE CLINCHER ATTACHED METAL TOPS AND THEN A VACUUM CLOSING MACHINE HERMETICALLY SEALED EACH CAN.

NOTE: DOTTED LINES INDICATE MACHINERY TYPICAL TO A CANNING LINE AND SIMILAR TO THAT FOUND AT KAKE.

CANS: SALMON WAS SOLD IN THE FAMILIAR 1-LB. TALL, 1-LB. FLAT, AND TO A LESSER EXTENT 1-LB. FLAT CANS. WORKERS OFTEN HAND-FELIZED THE PLATE AND HELVES WITH THE HIGHEST GRADES OF PINEY KINGS AND REDS. BEFORE 1910 MANY CANNERIES USED OLD-STYLE CANS THAT REQUIRED SOLDERING, DOUBLE COOKING, VENTING, AND TIPPING. NEW MACHINERY INTRODUCED A SANITARY SYSTEM OF CLINCHING AND SEALING. BY THE 1930s CANS WERE SHIPPED FLAT AND ASSEMBLED AT THE CANNERY. AT KAKE, CANS WERE FORMED IN THE CAN MAKING BUILDING. FROM THERE THEY TRAVELED ALONG A NARROW 250 FT. METAL CONVEYOR TO A LOFT ABOVE THE CANNING ROOM. A SPIRAL METAL CHUTE DROPPED THE CANS DOWN TO THE LINE.

MACHINE SHOP

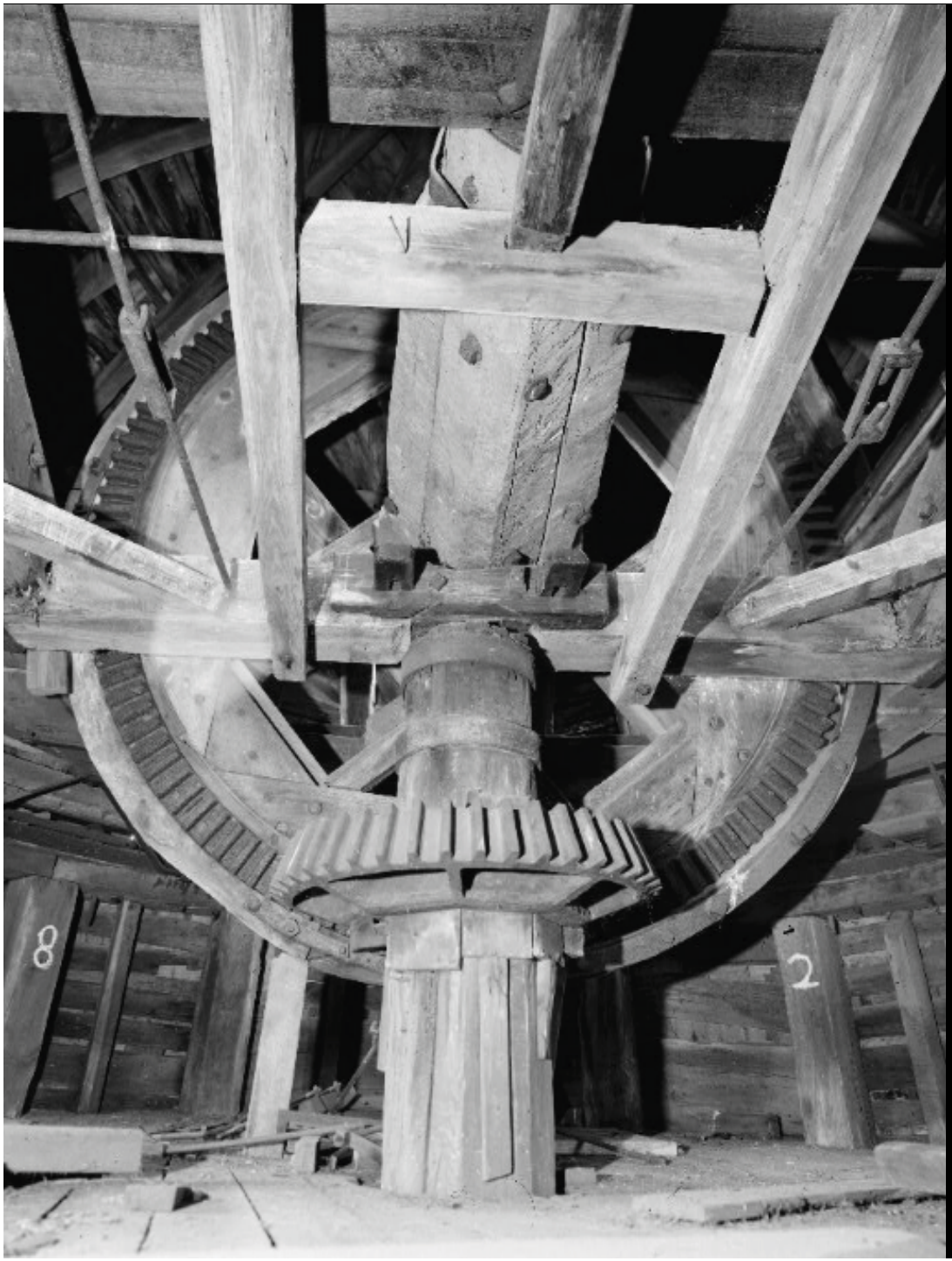
CANNING ROOM

FISH HOUSE

EGG ROOM

(SEE SHEET 4)

KAKE SALMON CANNERY



The HABS and HAER collections are among the largest and most heavily used in the Prints and Photographs Division of the Library of Congress.

Since 2000, documentation from the Historic American Landscapes Survey [HALS] has been added to the holdings.

COLLECTION

Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey

Featured Content

Frederick Douglass House, Washington, District of Columbia. ...

Liberty Fire House, Gold Hill, Nevada. Robert W. Kerrigan, 1937.

Chapline Street Row Historic District. Mark L. Hall and Ed ...

Beebe Windmill, Bridgehampton, New York. Jet Lowe, 1978.

San Xavier del Bac Mission, Tucson, Arizona. John P. O'Neill, ...

Listen to this page

About this Collection

TICCIH

The International Committee for the Conservation of the Industrial Heritage, known as TICCIH (pronounced “ticky”), is the world organization for industrial heritage. Its goals are to promote international cooperation in preserving, conserving, investigating, documenting, researching, interpreting, and advancing education of the industrial heritage.

TICCIH

TICCIH is recognized by the International Council on Monuments and Sites (ICOMOS) as a designated consultant in all matters related to the study and preservation of industrial heritage. ICOMOS is the global non-governmental organization dedicated to conservation of the world's historic monuments and sites.

ICOMOS' network of experts counsels UNESCO on properties to be added to the World Heritage List. TICCIH advises on historically-significant industrial sites for the World Heritage List.

TICCIH

Nizhny Tagil Charter for the Industrial Heritage, 2003:

- Defines the key concepts and fundamental methods of industrial heritage and industrial archaeology
- Definition of industrial heritage
- Values of industrial heritage
- Importance of identification, recording and research
- Legal protection
- Maintenance and conservation
- Education and training
- Presentation and interpretation

Nizhny Tagil, Sverdlovsk Obast, Russia

TICCIH

The International Committee for the Conservation of the Industrial Heritage

Select Language

PORTUGUESE translation of Dublin Principles added to TICCIH web site.
read more...

VENEZUELA ADDED as TICCIH member country.
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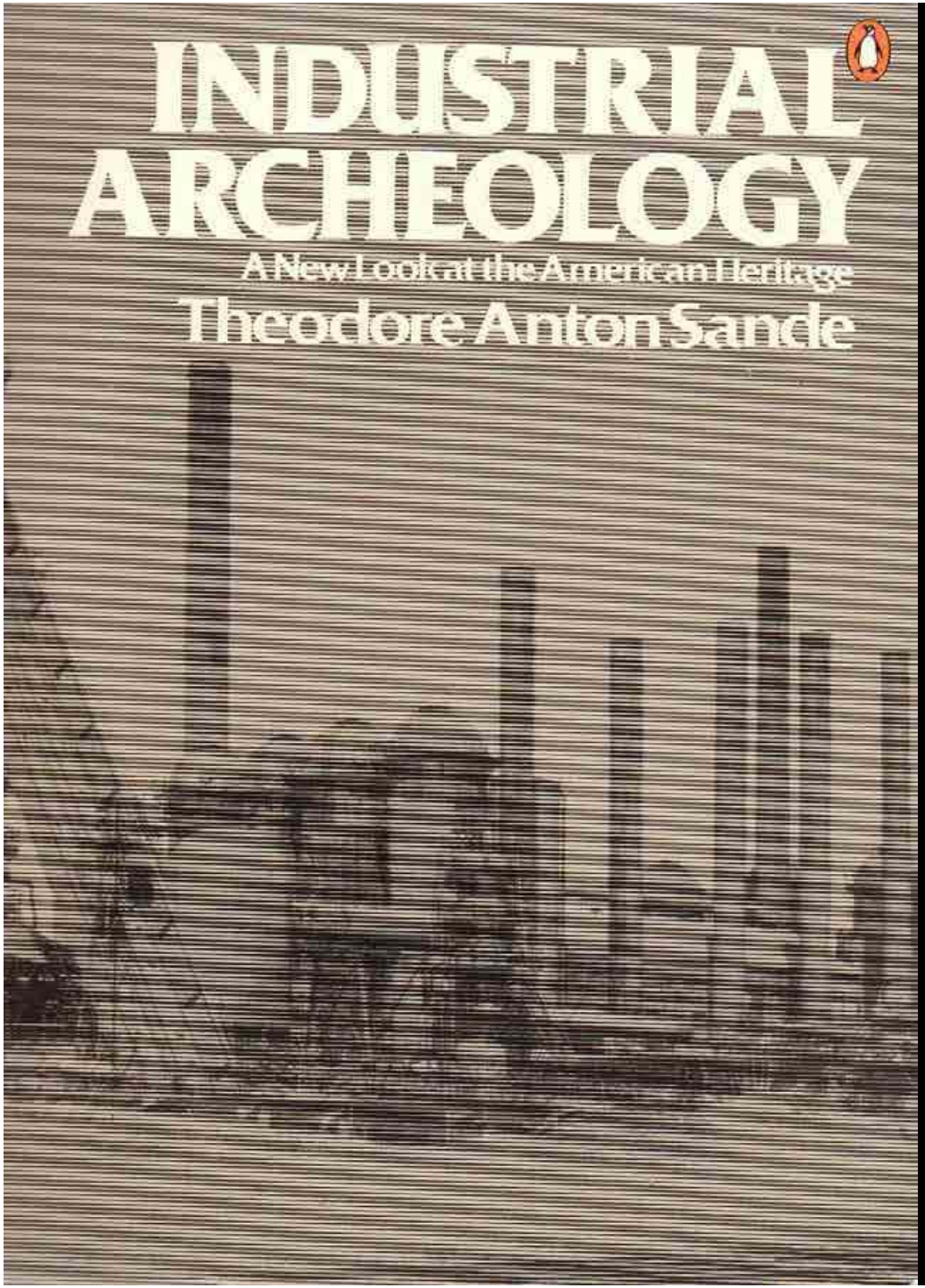
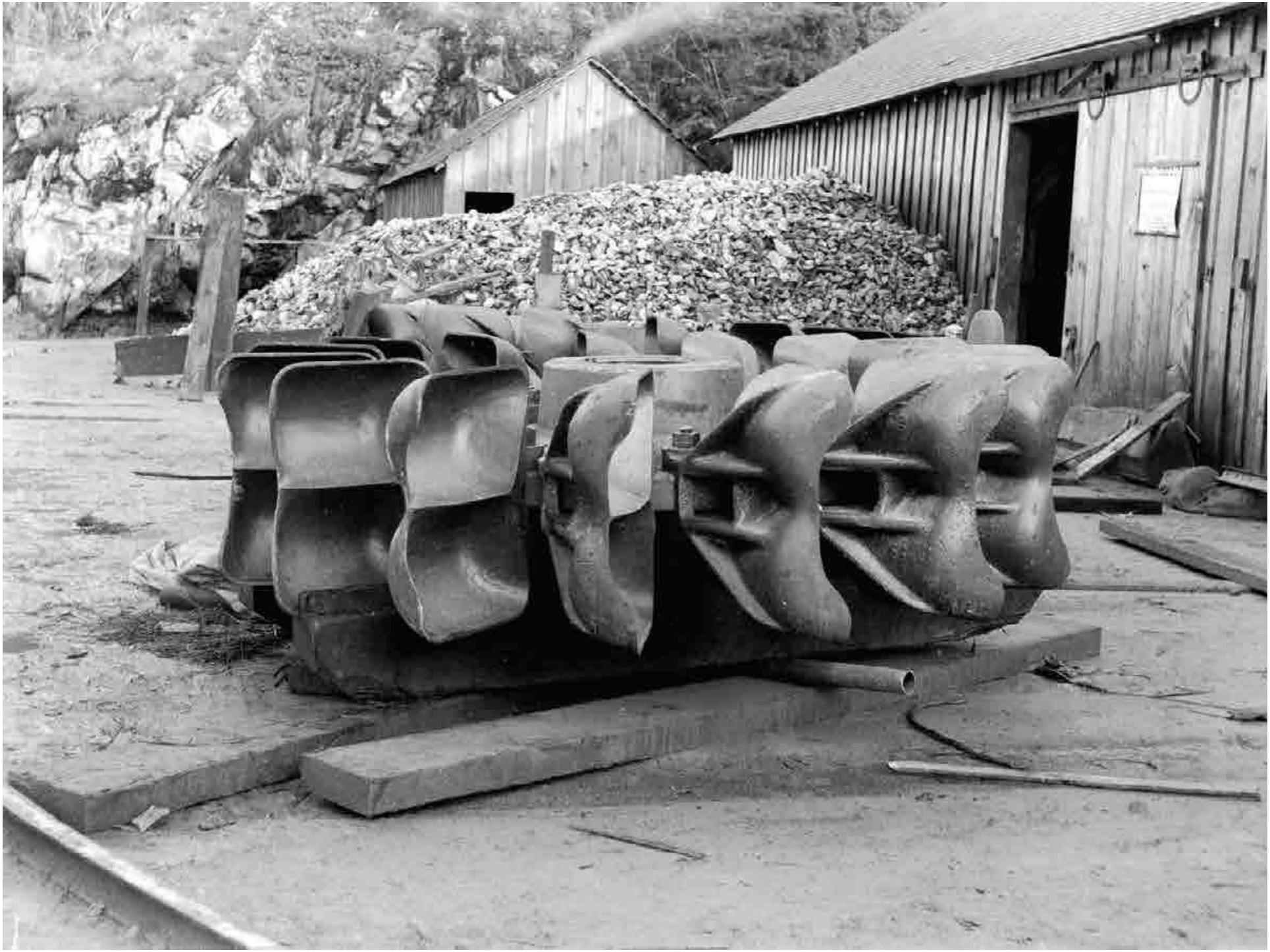


Theodore Anton Sande promoted the idea of industrial heritage in his 1976 publication.

INDUSTRIAL HERITAGE

- Out of the Earth
- From Plants & Animals
- Power & Services
- Manufacturing
- Transportation & Communication

OUT OF THE EARTH

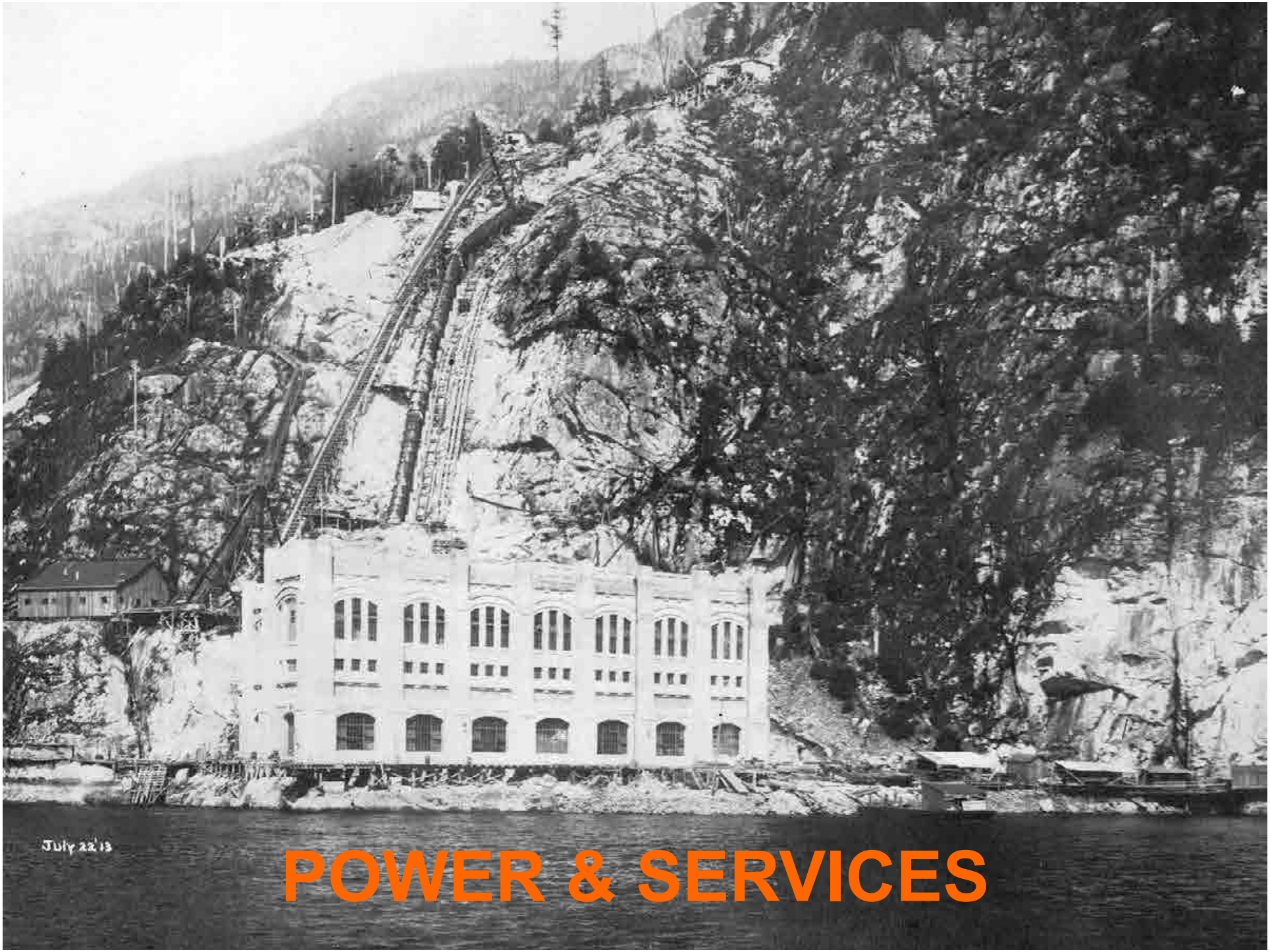



B.C. Bureau of

FROM PLANTS & ANIMALS

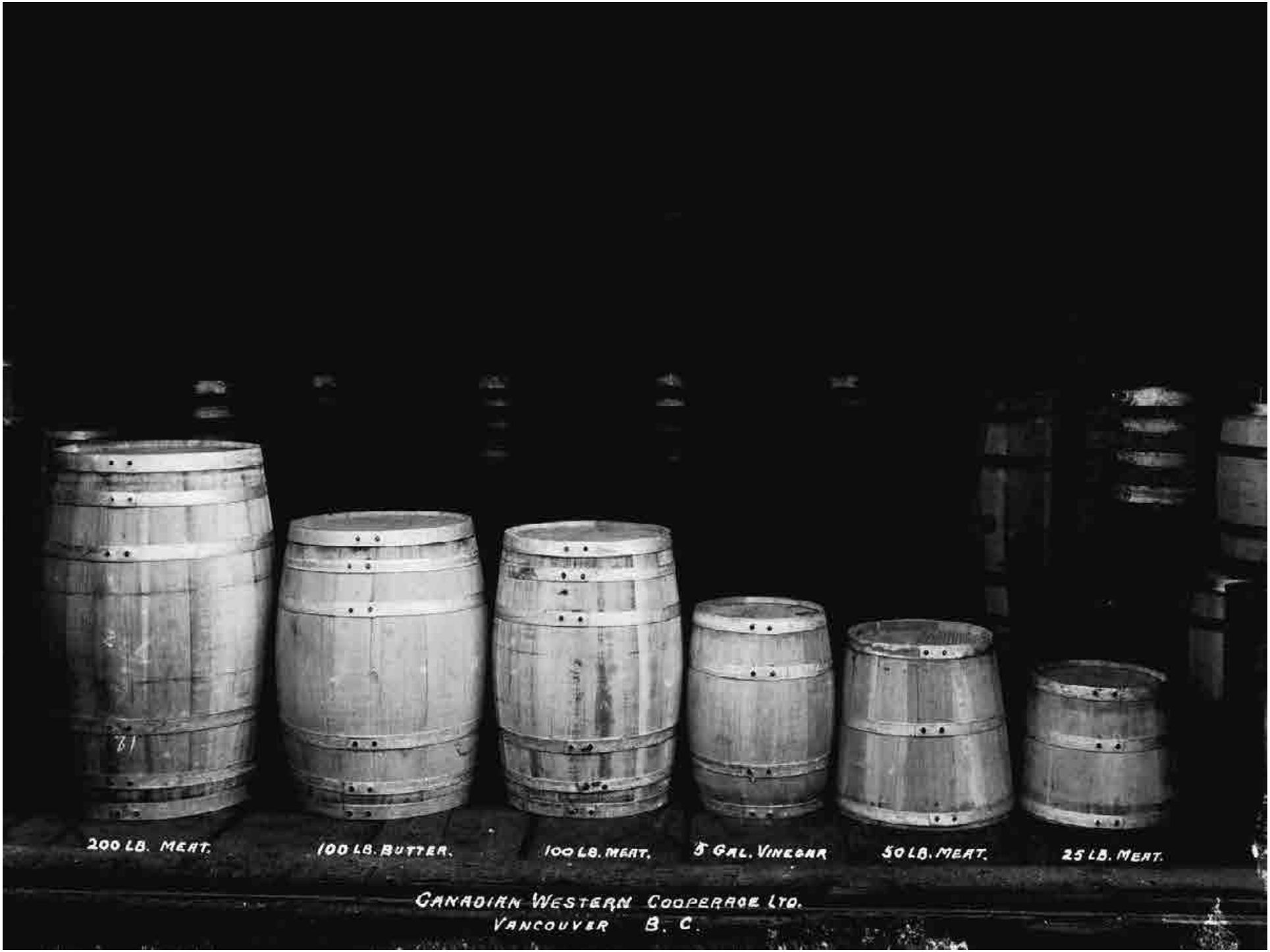

BC


HIPWELL'S
CRYSTAL
EXCHANGE
DAIRY
CRYSTAL
ICE
CREAM

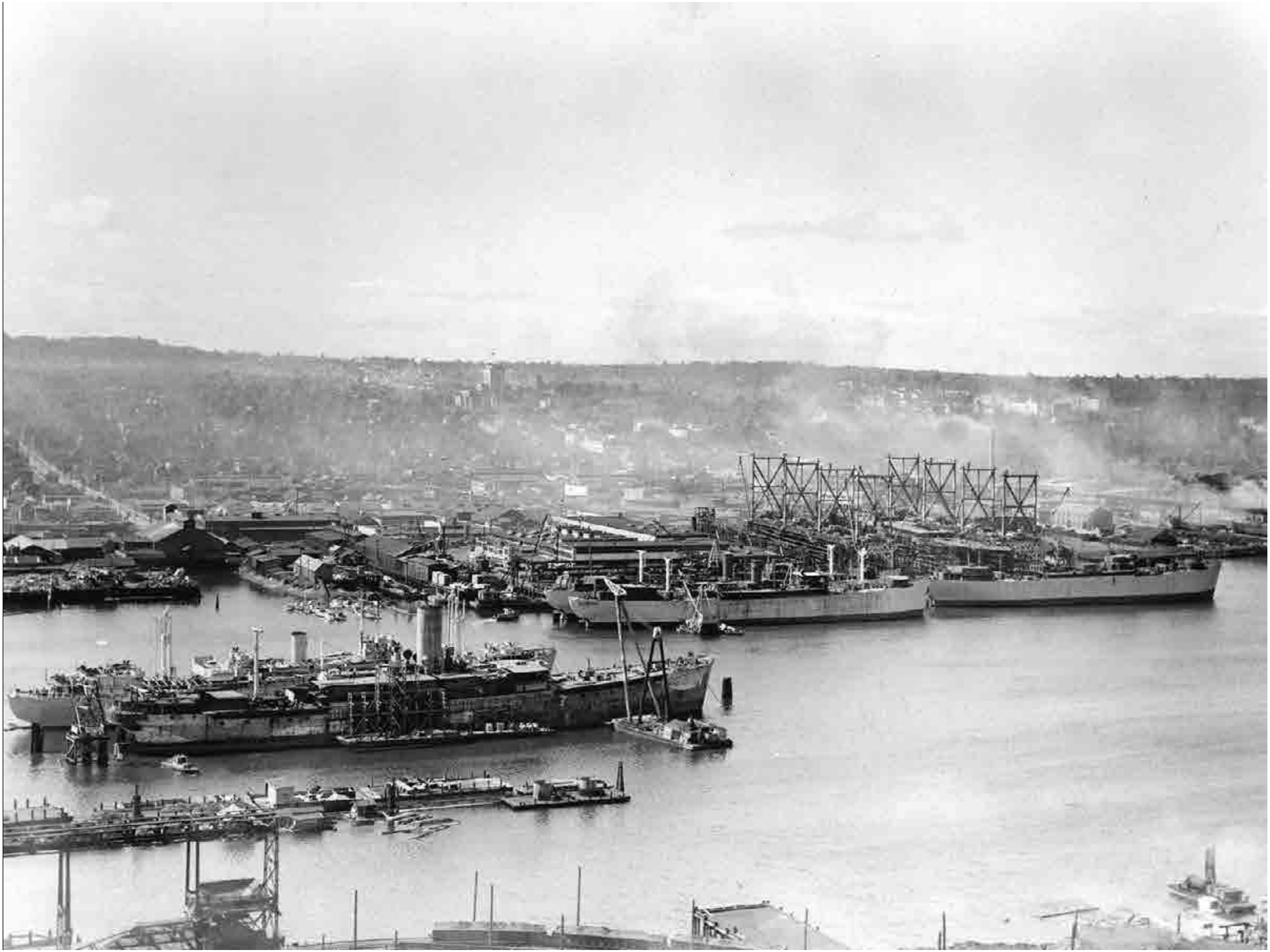


POWER & SERVICES

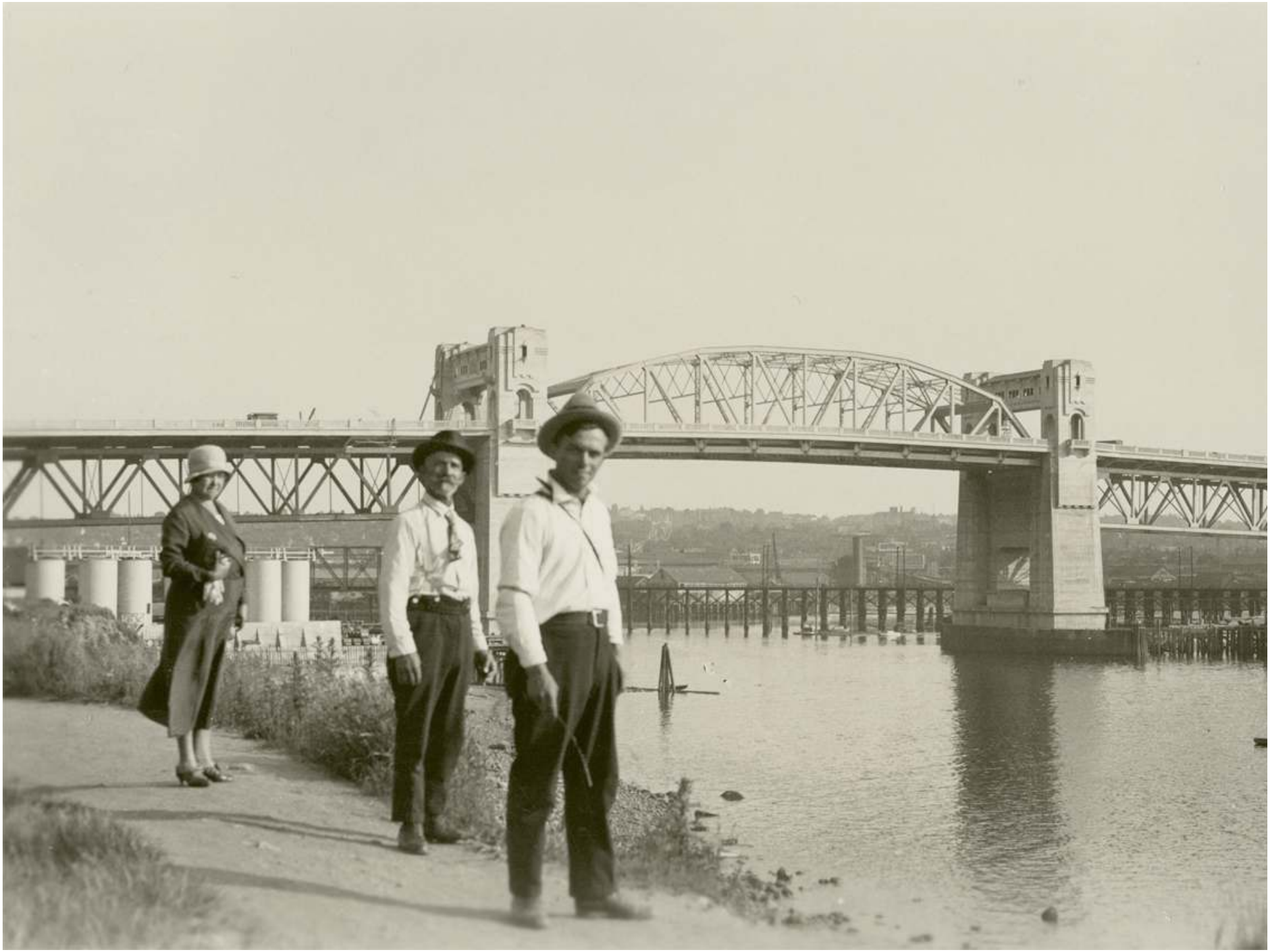

MANUFACTURING

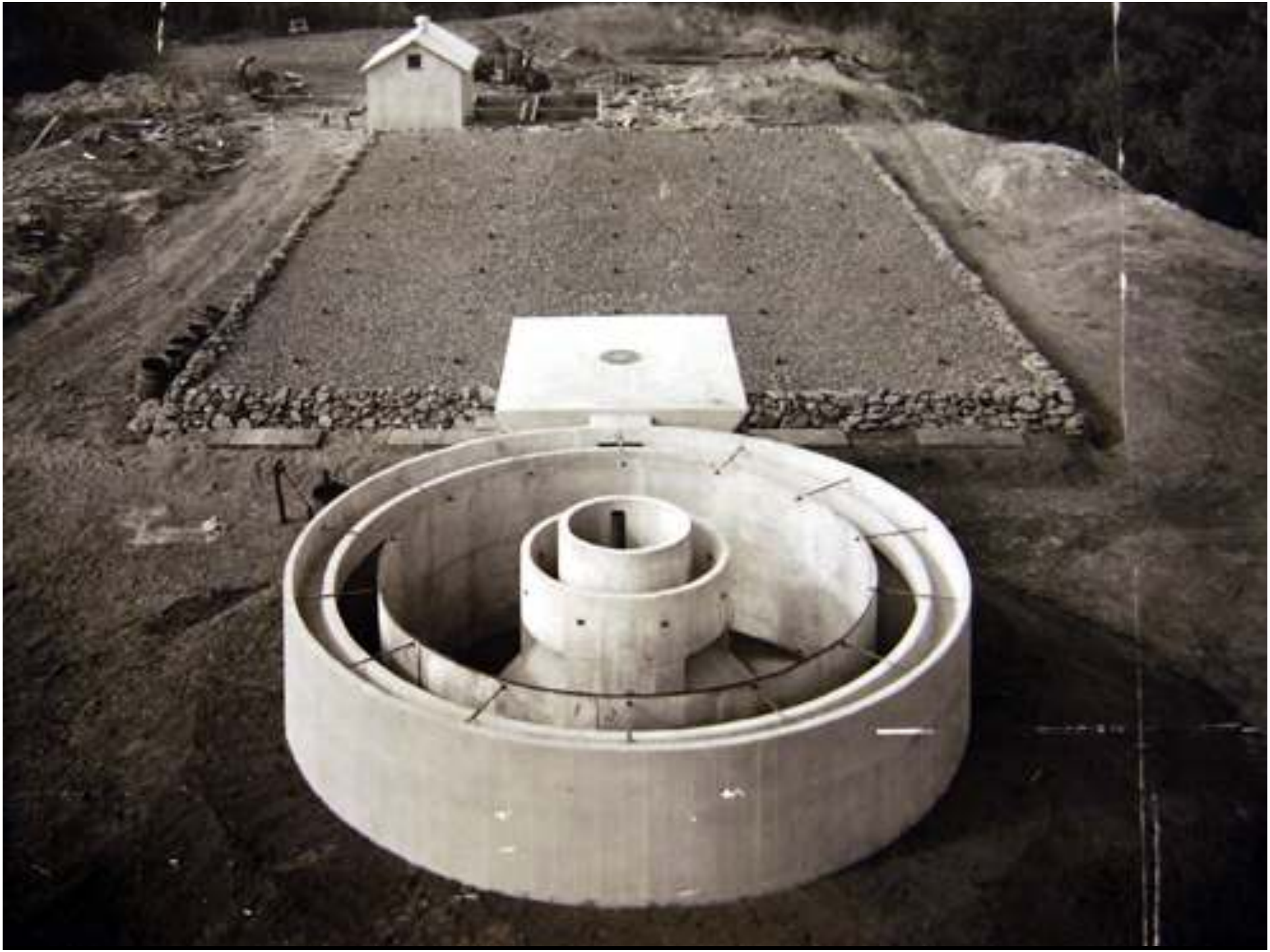

200 LB. MEAT.
100 LB. BUTTER.
100 LB. MEAT.
5 GAL. VINEGAR
50 LB. MEAT.
25 LB. MEAT.
CANADIAN WESTERN COOPERAGE LTD.
VANCOUVER B. C.

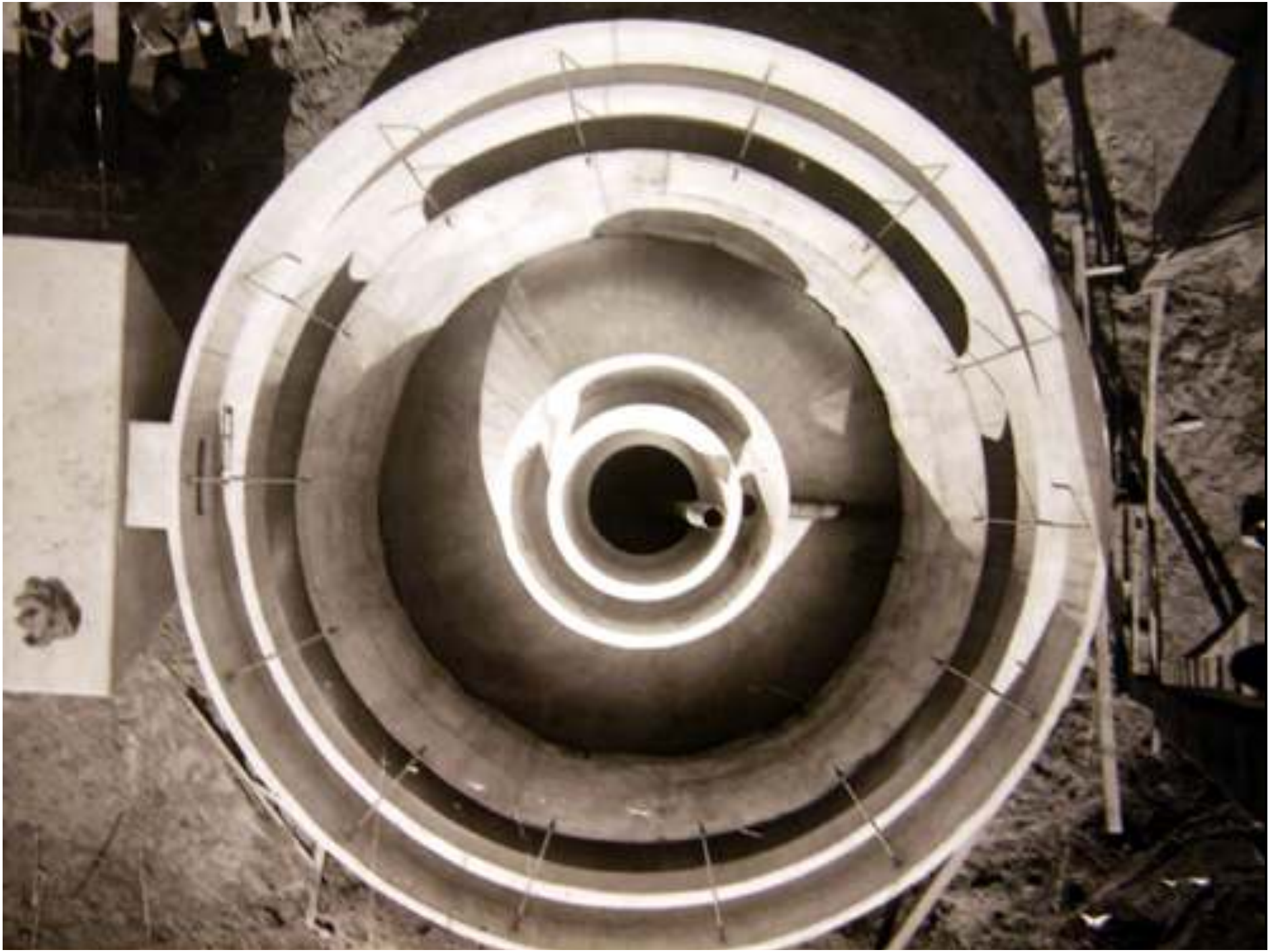

WRM-2400

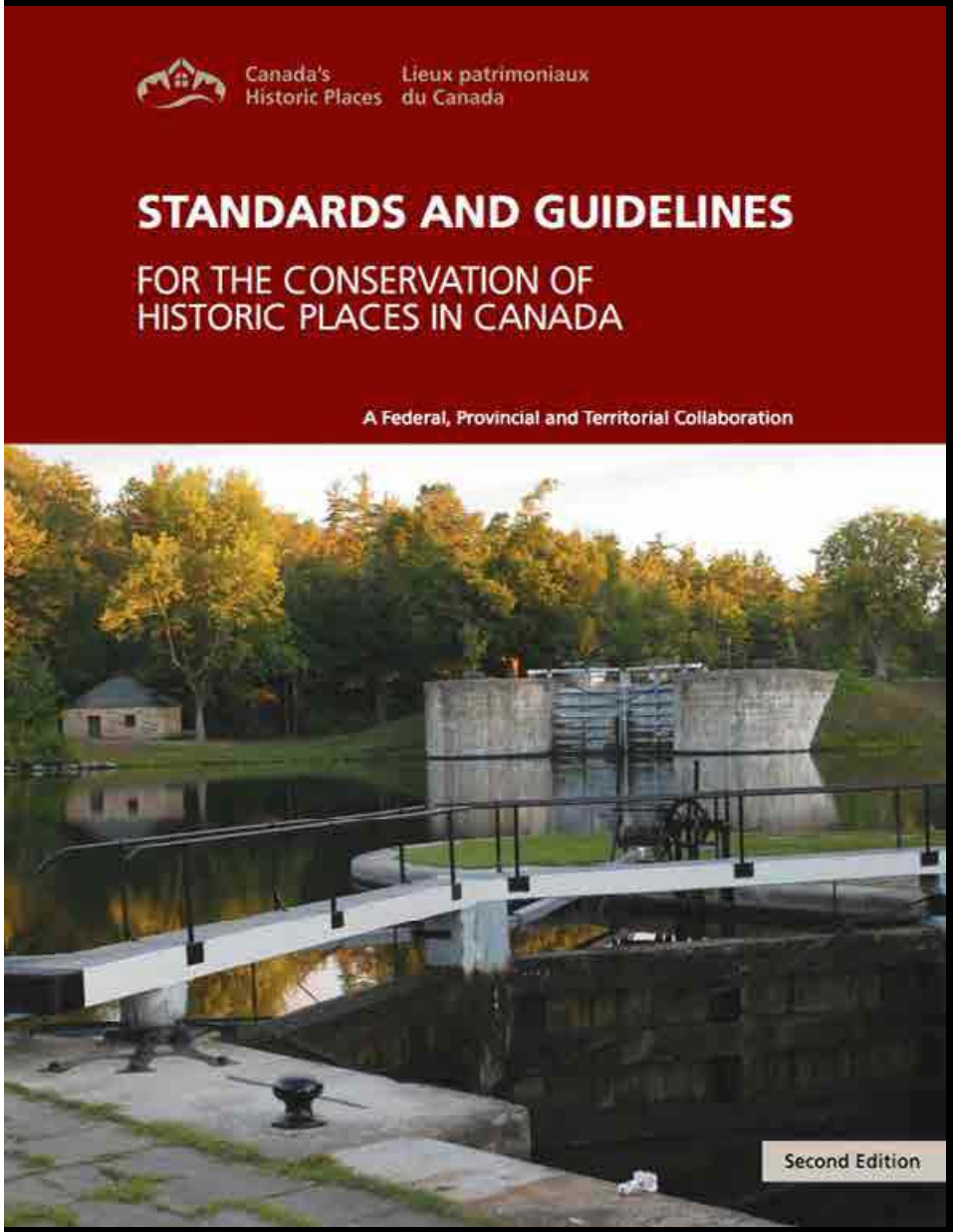


TRANSPORTATION & COMMUNICATION









HERITAGE VALUE

In the *Standards and Guidelines for the Conservation of Historic Places in Canada*, Heritage Value is defined as:

The aesthetic, historic, scientific, cultural, social, or spiritual importance for past, present or future generations.

H E R I T A G E

her-it-age [her-ə-tij]

noun

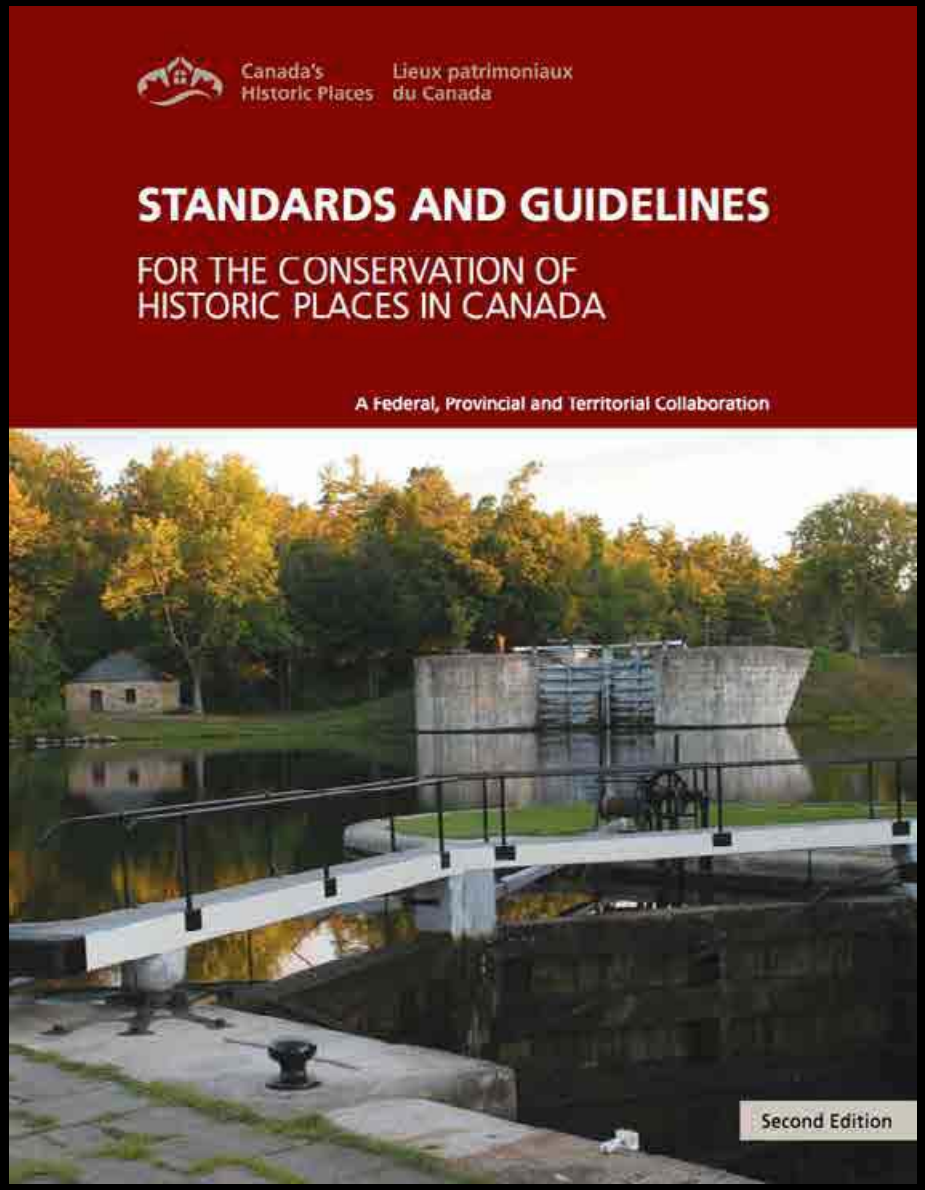
1. Something that comes or belongs to one by reason of birth.
2. Something transmitted by or acquired from a predecessor.

origin:

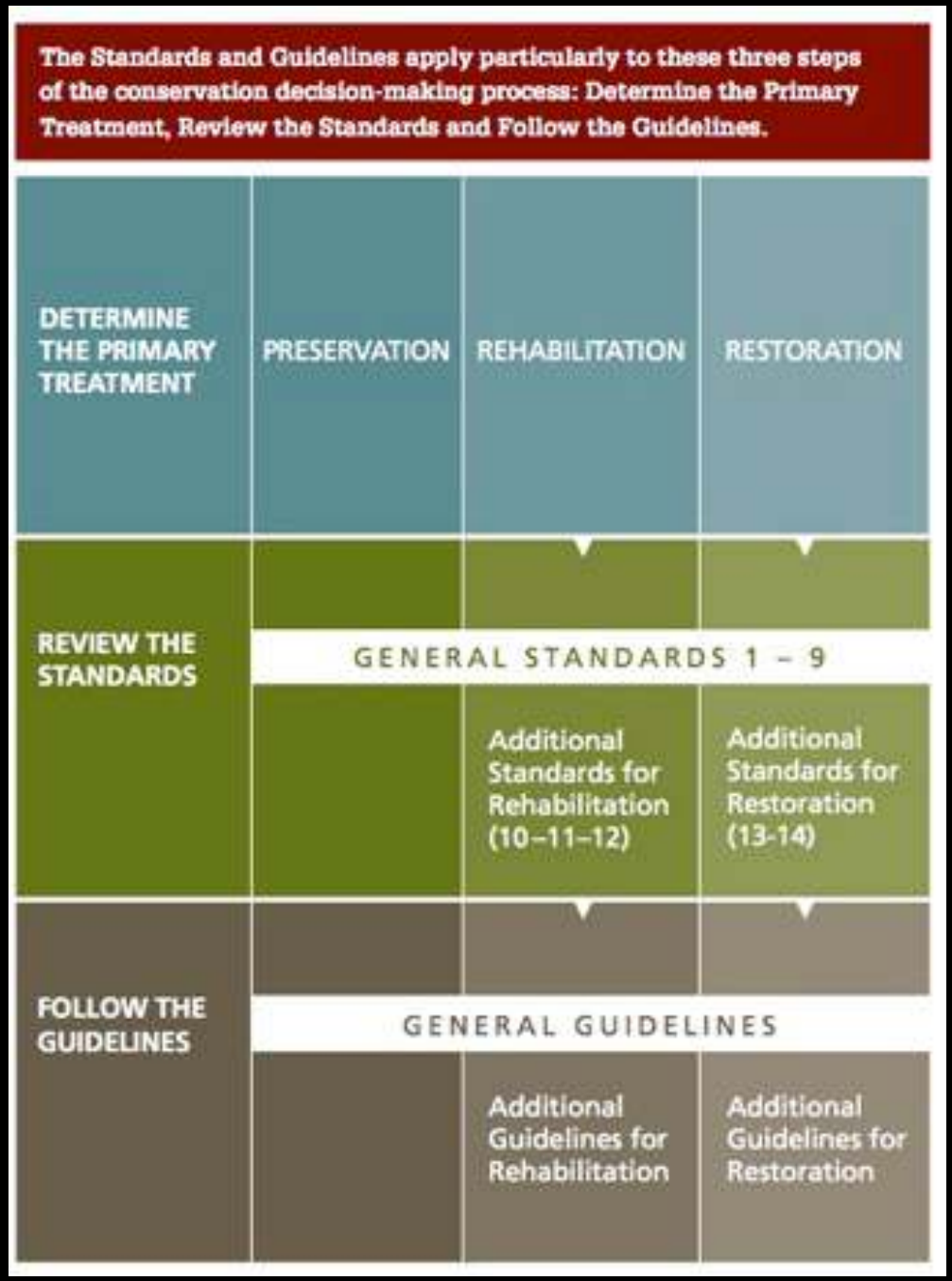
1175–1225; Middle English <Middle French, equivalent to *heriter* to inherit>

HERITAGE CONSERVATION

STANDARDS AND GUIDELINES



The Standards and Guidelines apply particularly to these three steps of the conservation decision-making process: Determine the Primary Treatment, Review the Standards and Follow the Guidelines.



THE STANDARDS

NINE STANDARDS FOR ALL HERITAGE PROJECTS

1. *Conserve the heritage value of a historic place. Do not remove, replace, or substantially alter its intact or repairable character-defining elements. Do not move a part of a historic place if its current location is a character-defining element.*
2. *Conserve changes to a historic place, which over time, have become character-defining elements in their own right.*
3. *Conserve heritage value by adopting an approach calling for minimal intervention.*
4. *Recognize each historic place as a physical record of its time, place and use. Do not create a false sense of historical development by adding elements from other historic places or other properties or by combining features of the same property that never coexisted.*
5. *Find a use for a historic place that requires minimal or no change to its character-defining elements.*

THE STANDARDS

NINE STANDARDS FOR ALL HERITAGE PROJECTS

6. *Protect and, if necessary, stabilize a historic place until any subsequent intervention is undertaken. Protect and preserve archaeological resources in place. Where there is potential for disturbance of archaeological resources, take mitigation measures to limit damage and loss of information.*
7. *Evaluate the existing condition of character-defining element to determine the appropriate intervention needed. Use the gentlest means possible for any intervention. Respect heritage value when undertaking an intervention.*
8. *Maintain character-defining elements on an ongoing basis. Repair character-defining element by reinforcing the materials using recognized conservation methods. Replace in kind any extensively deteriorated or missing parts of character-defining elements, where there are surviving prototypes.*
9. *Make any intervention needed to preserve character-defining elements physically and visually compatible with the historic place and identifiable upon close inspection. Document any intervention for future reference*.

PRESERVATION

The action or process of protecting, maintaining, and/or stabilizing the existing materials, form, and integrity of a *historic place* or of an individual component, while protecting its historic value.

STANDARDS 1 TO 9 APPLY

REHABILITATION

The action or process of making possible a continuing or compatible contemporary use of a *historic place* or an individual component, through repair, alterations, and/or additions, while protecting its heritage value.

THREE ADDITIONAL STANDARDS RELATING TO REHABILITATION

10. *Repair rather than replace character-defining elements. Where character-defining elements are too severely deteriorated to repair, and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements. Where there is insufficient physical evidence, make the form, material and detailing of the new elements compatible with the character of the historic place.*
11. *Conserve the heritage value and character-defining elements when creating any new additions to a historic place and any related new construction. Make the new work physically and visually compatible with, subordinate to and distinguishable from the historic place.*
12. *Create any new additions or related new construction so that the essential form and integrity of a historic place will not be impaired if the new work is removed in the future.*

RESTORATION

The action or process of accurately revealing, recovering or representing the state of a historic place or of an individual component, as it appeared at a particular period in its history, while protecting its heritage value.

TWO ADDITIONAL STANDARDS RELATING TO REHABILITATION

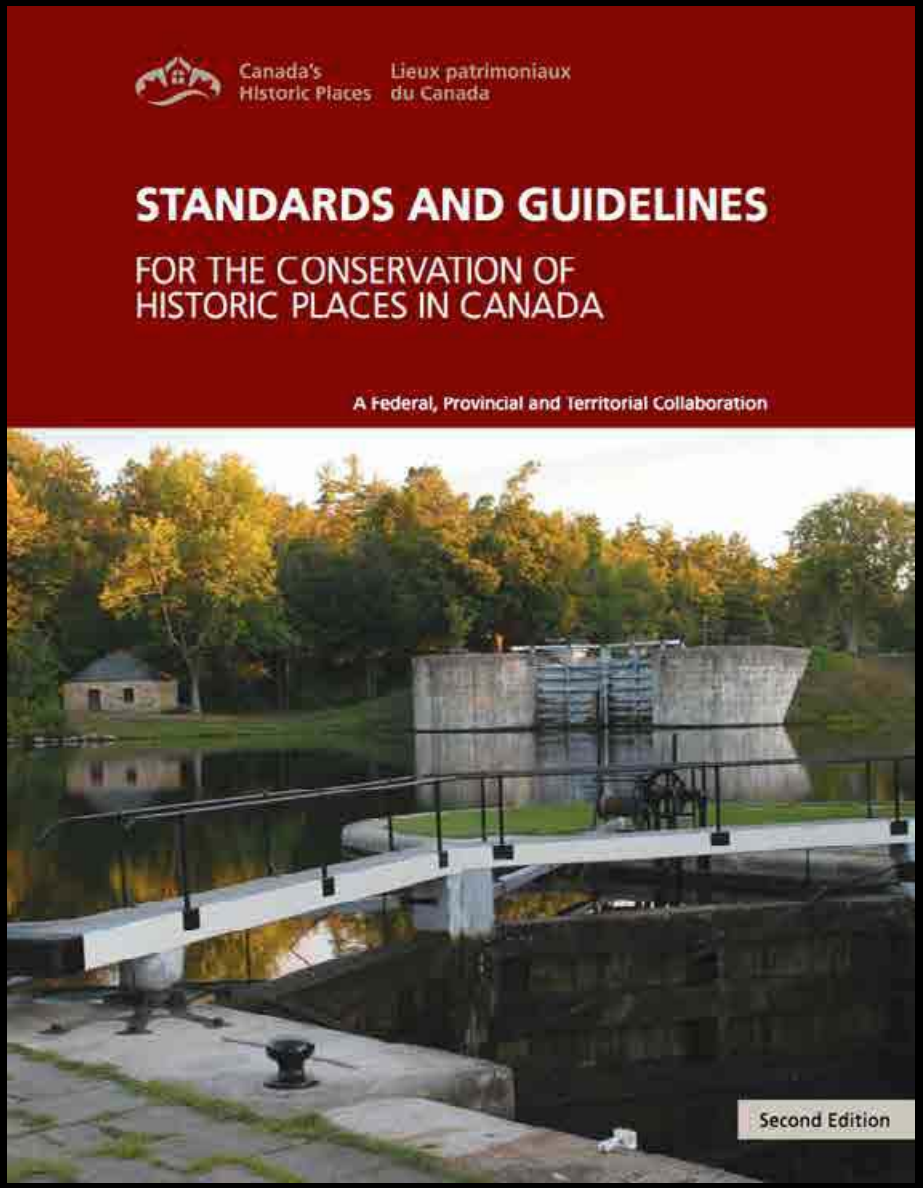
13. *Repair rather than replace character-defining elements from the restoration period. Where character-defining elements are too severely deteriorated to repair and where sufficient physical evidence exists, replace them with new elements that match the forms, materials and detailing of sound versions of the same elements.*

14. *Replace missing features from the restoration period with new features whose forms, materials and detailing are based on sufficient physical, documentary and/or oral evidence.*

STANDARDS AND GUIDELINES

GUIDELINES FOR
FOUR CATEGORIES
OF RESOURCES:

1. Cultural Landscapes,
2. Including Heritage Districts
3. Archaeological Sites
4. Buildings
5. Guidelines for Engineering Works, including Civil, Industrial and Military Works



4.1 GUIDELINES FOR CULTURAL LANDSCAPES, INCLUDING HERITAGE DISTRICTS

From its dense urban areas in the South to the wide open expanses in the North, the Canadian landscape exhibits countless contrasts and subtleties. Natural forces and climatic conditions have combined to form landscapes that are uniquely different from one region to another. Across this land, and across the centuries, the peoples of Canada have continually shaped these landscapes, which today bear witness to their individual histories, traditions and lifestyles.

For the purposes of these guidelines, a *cultural landscape* is defined as any geographical area that has been modified, influenced or given special cultural meaning by people, and that has been formally recognized for its heritage value. Cultural landscapes are often dynamic, living entities that continually change because of natural and human-influenced social, economic and cultural processes.

While the resulting forms may sometimes be simple and other times complex, there is a common language and approach developed for the conservation of cultural landscapes. For example, a widely accepted framework developed by UNESCO places cultural landscapes into three categories: *designed; organically evolved (vernacular); and associative* (UNESCO, Operational Guidelines for the Implementation of the World Heritage Convention, 2008, Annex 3).

Cultural landscapes vary dramatically in size and character—from heritage districts, to prehistoric rock art sites, and to designed landscapes, such as parks and gardens. Indeed, cultural landscapes can be as old as ancient land and water routes, or as recent as a mid-20th-century parkway system.

Before undertaking project work affecting character-defining elements, a survey of their characteristics, conditions and interrelationships should be prepared—such as the interrelationship between built features, water, vegetation and viewscapes at Hatley Park near Victoria.

Regular, ongoing maintenance helps extend the life of character-defining elements, and is an essential part of the conservation program. Every year dedicated volunteers spend thousands of hours caring for and preserving the historic garden at Maplelawn and Gardens NHSC in Ottawa.

4.2 GUIDELINES FOR ARCHAEOLOGICAL SITES

Archaeological sites are places or areas where tangible evidence of past human activity is located *in situ* on, below or above ground, or on lands under water. In the context of historic places, Archaeological sites fall under two categories, and these guidelines apply to both. They are:

1. Archaeological sites that are historic places because they have been formally recognized by an authority as having *heritage value*;
2. Archaeological sites that are part of an historic place, such as a building, engineering work, cultural landscape or heritage district, and that contribute as *character-defining elements* to that historic place's *heritage value*.

An archaeological site is characterized by its environment including stratified deposits with physical traces of the site's formation that help determine its age and interpret its complexity. A site can also include one, or a combination of, the following character-defining elements:

- Features, such as postholes, hearths, stone tool manufacture areas, industrial staging areas, cairns and rock art, and natural features that have cultural significance;
- Structures, such as remains of stone walls, industrial machinery, fish weirs, tent rings and wharves, which can be below or above-ground, or underwater;

Because their character-defining elements are often submerged or underground, a large number of archaeological sites are not accessible. Communicating their heritage value is a challenge. Exposed remains, such as at the ones at Champs-de-Mars, Montreal not only add to our knowledge of past times and people, but they can also enrich our environment.

- *Archaeological objects*, such as artifacts, soil and botanical samples, animal remains, pollen, or any specimen associated with the site that provides information on its characteristics, function and significance;
- Physical places with evidence of human activity identified through local knowledge or oral tradition;
- Spatial relationships between the features, structures, objects and physical places identified above.

These elements embody the heritage value of the archaeological site. *Character-defining elements* may include elements of aesthetic, historic, scientific, cultural, social or spiritual importance, and intangible qualities and uses. A site's heritage value may lie as much in the information contained in the elements as in their evocative force, as vestiges of past histories.

4.2.3 INDUSTRIAL SITES

These guidelines provide direction when an archaeological site is associated with, or is a part of an industrial site, and contributes to its heritage value.

This partially uncovered hydraulic turbine at Pointe-des-Seigneurs, Lachine Canal National Historic Site of Canada in Montreal was installed and used by the Caledonian Iron Works Co. in the late 19th century.

Conserving archaeological remains of industrial components *in situ*, such as this turbine, contributes to our understanding of industrial processes and helps illustrate a site's functional arrangement.

In a comprehensive approach, industrial archaeology deals with all the components that contribute to understanding and communicating the knowledge and values associated with an industrial site. Industrial archaeological sites contain physical elements organized in a system constructed and used for industrial activities. The purpose of these sites often resides in their design, or in the concept behind their functions, reflecting an industrial process that is inherent in the interrelations of the site's material remains. As such, industrial archaeology aims to conduct a systematic study of structures and archaeological objects to better understand the industrial past. The process of industrial archaeology is usually part of a co-ordinated multidisciplinary approach.

Conserving an industrial site involves not only preserving physical remains, but also recognizing the site's development phases by studying the physical remains and how they evoke the human activities that took place at the site. Appreciating physical industrial remains is based on understanding the knowledge, values and messages they convey. A successful rehabilitation helps to understand the connection between a conserved physical record and the site, and to appreciate the interdependence of the site's character-defining elements. The chain of production, brand image, various technologies and social trends underlying this cultural heritage, are often studied. As well, physical and visual connections can communicate the interrelations between the industry, communication networks and adjacent human communities.

These guidelines should be used in conjunction with section 4.2.1, Archaeological Sites. When conducting work on an industrial archaeological site, it is important to also consult the Guidelines for Cultural Landscapes, the Guidelines for Buildings and the Guidelines for Engineering Works.

4.3 GUIDELINES FOR BUILDINGS

Buildings illustrate the evolution of Canadian architecture in terms of their form and setting and their assemblies, systems and materials. Buildings can express cultural, regional, local or individual uses, or construction practices, and embody meanings that evolve over time.

The broad range of buildings that are considered historic varies from modest to monumental, ancient to recent, and private to public. Buildings in a heritage district, or in a complex of buildings, may not be formally recognized individually, but may be recognized as contributing to the larger historic place. There is no typical historic building. Each is valued for its own reasons and faces its own challenges.

Buildings can represent identifiable expressions of one or more of the many different cultural, religious or interest groups that make up Canada's multicultural population. They can also be designated because they demonstrate an appropriate and/or innovative response to their climate and setting. Often the heritage value of a building, or group of buildings, illustrates a specific phase, or various phases, in the development of a particular building type, style or aesthetic. Some buildings are historic places because of their association with a particular person, event, theme or achievement.

These guidelines provide general recommendations appropriate to all types of buildings. However, because buildings can also be part of cultural landscapes, engineering works and archaeological sites, those guidelines should be consulted when appropriate. Also refer to the Guidelines for Materials that include traditional as well as modern building and finishing materials.

A building's setting can be as important to its interpretation and understanding of a historic place as is the structure itself. A train station moved away from its tracks is clearly out of context. A lighthouse is equally connected to its setting. The character-defining elements of the Head Harbour Light Station in New Brunswick includes all of the 3,000 square metres of the rocky outcropping and two nearby rocks as well as the five buildings on the site.

BALANCING CONSERVATION PRINCIPLES AND SUSTAINABILITY OBJECTIVES

Both heritage conservation and sustainability aim to conserve. In the case of heritage buildings, this includes considering the inherent performance and durability of their character-defining assemblies, systems and materials, and the minimal interventions required to achieve the most effective sustainability improvements. For example, it may be possible to improve the energy efficiency of an historic building by insulating the attic and basement rather than removing or concealing character-defining brick or plaster to insulate the walls.

4.4 GUIDELINES FOR ENGINEERING WORKS, INCLUDING CIVIL, INDUSTRIAL AND MILITARY WORKS

Engineering works, including civil, industrial and military works, are constructions built or sites transformed for purposes other than habitation; they exist primarily to produce goods or provide services for the benefit of human needs. Major engineering works have stimulated and facilitated development across Canada—significant innovations made in resource extraction, industry, transportation, and communications have contributed towards developing new, or adapting existing technologies to suit Canada's climate and geography.

Civil works can include constructions associated with:

- Transportation of humans or goods by land, rail, water or air, such as historic roads and routes, bridges, tunnels, highways, ships, lighthouses, and railways, canals, airports, harbours, subways and their associated supporting infrastructure;
- Energy-generation and transmission facilities and infrastructure, such as hydroelectric dams, powerhouses, power-generating stations and transmission towers and systems;
- Communications facilities and infrastructure, such as telephone, microwave, radio and television networks and systems; and,
- Water supply, flood control and irrigation facilities and infrastructure, such as waterworks, pump houses, sewer networks and water treatment plants, dams, canals, floodways and aqueducts.

The Doukhobor Suspension bridge, near Castlegar, BC, is an example of a civil engineering work with significant cultural symbolic value. Erected by members of the Doukhobor community, its construction represents a major achievement for a pioneer community and demonstrates the considerable capabilities of a people acting communally.

Industrial works can include constructions associated with:

- Manufacturing or industry, such as mills, factories and warehouses;
- Resource exploitation facilities and infrastructure, such as mines, quarries, oil wells and drilling sites, collieries, dredges, concentrators, laboratories and refineries; and,
- Agriculture and food processing facilities and infrastructure, such as farms, ranches, packing houses, grain elevators, breweries and canneries.

Military works can include defence-related constructions associated with:

- Fortifications or military ships;
- Naval, army and air bases, or missile ranges; and,
- Unique constructions, such as the *DEW line* or the *Diefenbunker*.

The heritage value of engineering works may be historical, technological, social, scientific or architectural. Some works may also have considerable aesthetic value due to the quality of their architecture, design or planning. Often, there is also heritage value in the relationship between an engineering work and adjoining or nearby archaeological sites, cultural landscapes or buildings.