



Brooklyn Waterfront Research Center

Historical Maps, Geospatial Methods, and New York's Early Chemicals and Petroleum Industries

Peter Spellane

NYC College of Technology CUNY

NY GEOCon November 13, 2013

New maps



The point of this talk:

1 History

In the 19th and 20th centuries ...

2 Economic geography

Newtown Creek, a narrow channel between Brooklyn and Queens ...

3 Geospatial referencing

Examined with GIS methods, historical maps ...

4 Environmental legacy



Photograph, Robin Michals

Abraham Gesner's process for refining kerosene from coal:

After the liquid was obtained by dry distillation in a closed retort, it needed to be chemically treated to removed undesirable impurities.


Gesner used sulfuric acid, 5 to 10 percent the volume of the oil being treated.

US Patent 11203 (1854)

1859: illuminating oils

By the fall of 1859, there were in this country at least 33 "coal- oil" refineries actively engaged in the manufacture of hydrocarbon illuminating oils that differed very little in chemical composition from the petroleum-based illuminants that would shortly displace them. By far the largest of these coal-oil works was the pioneer plant of the New York Kerosene Oil Works, located on the east bank of Newtown Creek in what is now the Borough of Queens.

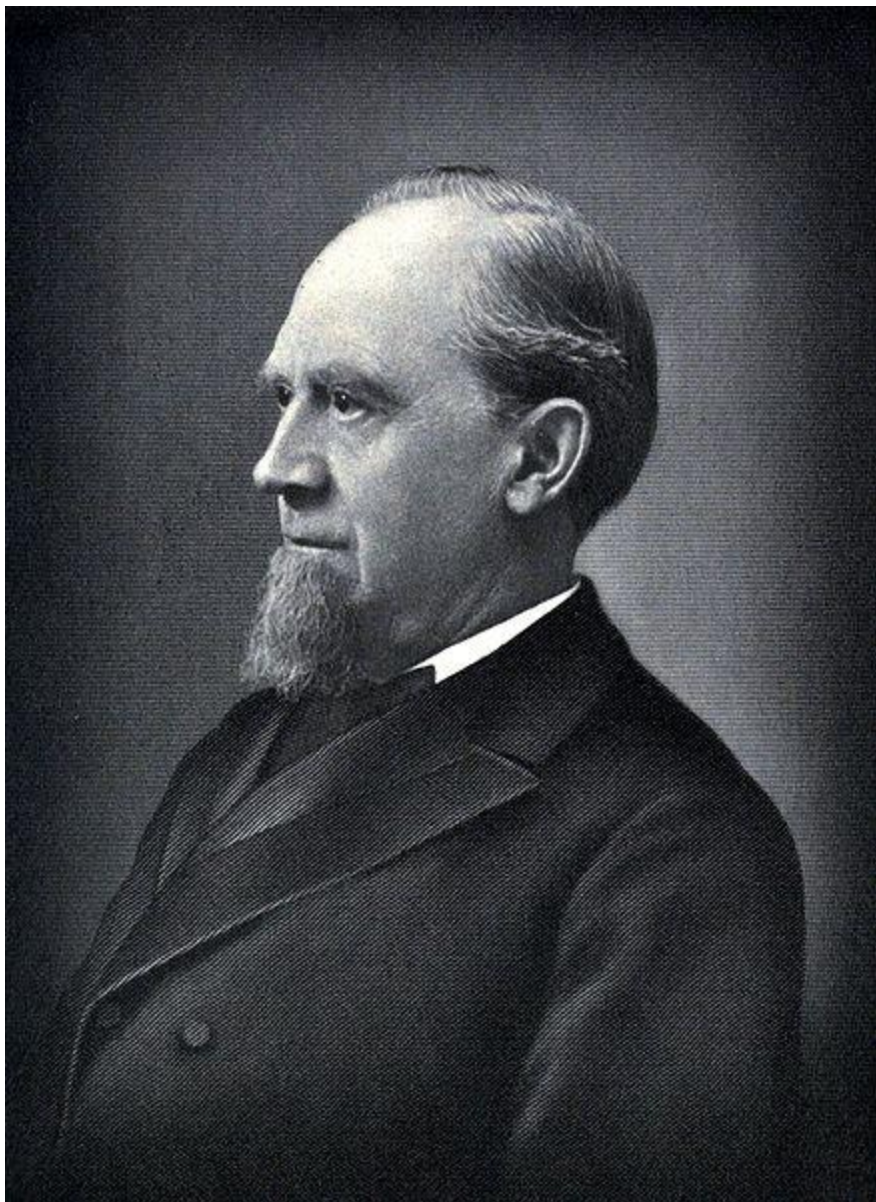
From "Dr. Gesner's Kerosene: The Start of American Oil Refining," by Kendall Beaton, *The Business History Review*, Vol. 29, No. 1 (Mar., 1955), pp. 28-53 .



North American Kerosene
Gas Light Company

1856

Kalbfleisch Chemical Works



Charles Pratt

“Pratt was especially interested in the emerging petroleum industry and in the 1860s he helped oversee the creation of the Devoe and Pratt Manufacturing Company—later the Devoe Manufacturing Company. This subsidiary operated an oil refinery on the Newtown Creek in Queens. Its special “Patent Cans” were particularly well suited to exporting kerosene lamp oil and other products to warm climates such as the Far East, and its brand was recognized throughout the world.”

Landmarks Preservation Commission, October 28, 2008, Designation List 406, LP-2308, F.W. DEVOE & CO. FACTORY

Flow chart of batch operations at Pratt Oil Refinery ca. 1871, producing kerosene from petroleum

from F. Williamson and A. R. Daum, The American Petroleum Industry, Evanston, Northwestern University Press, 1959

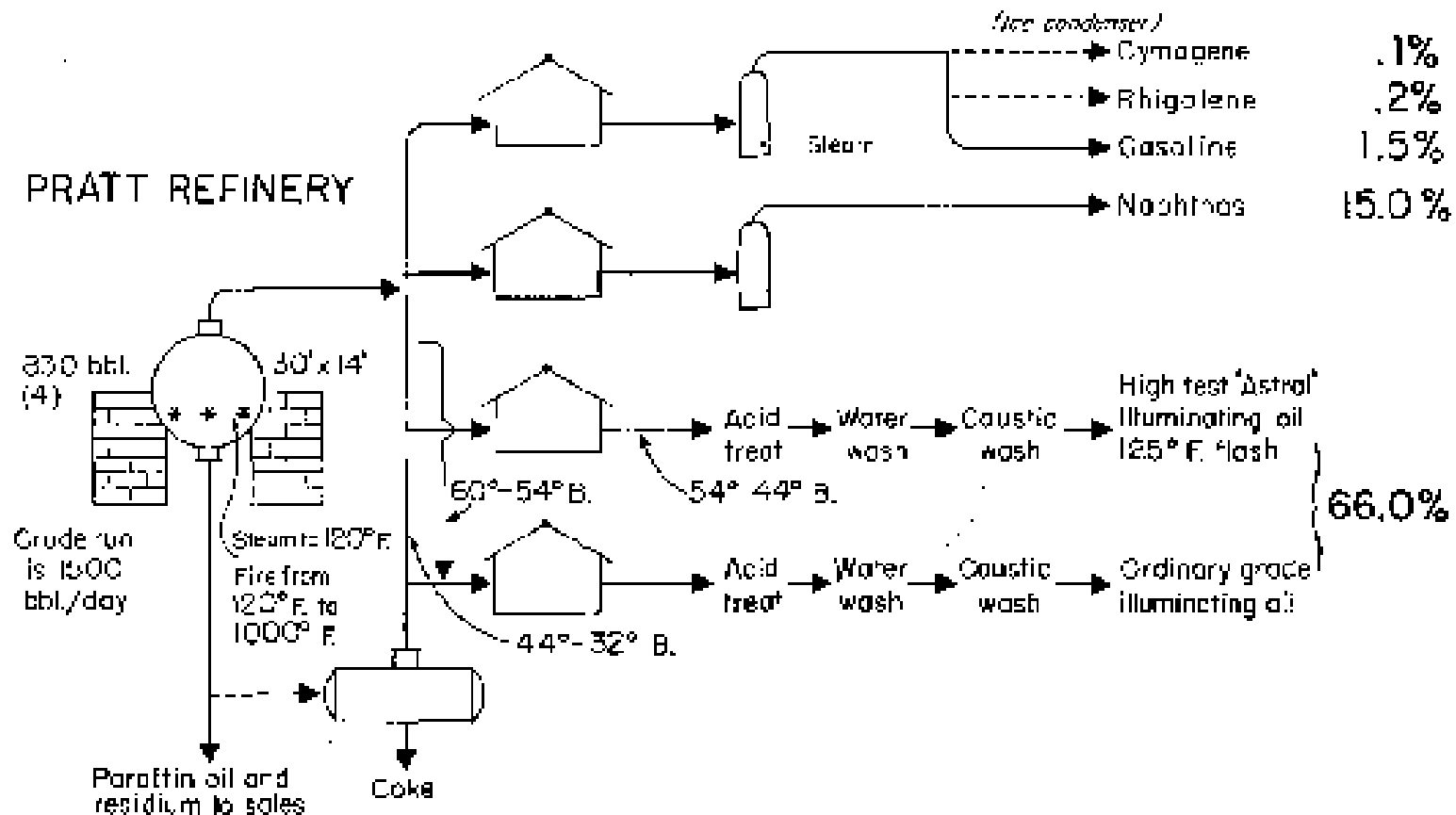
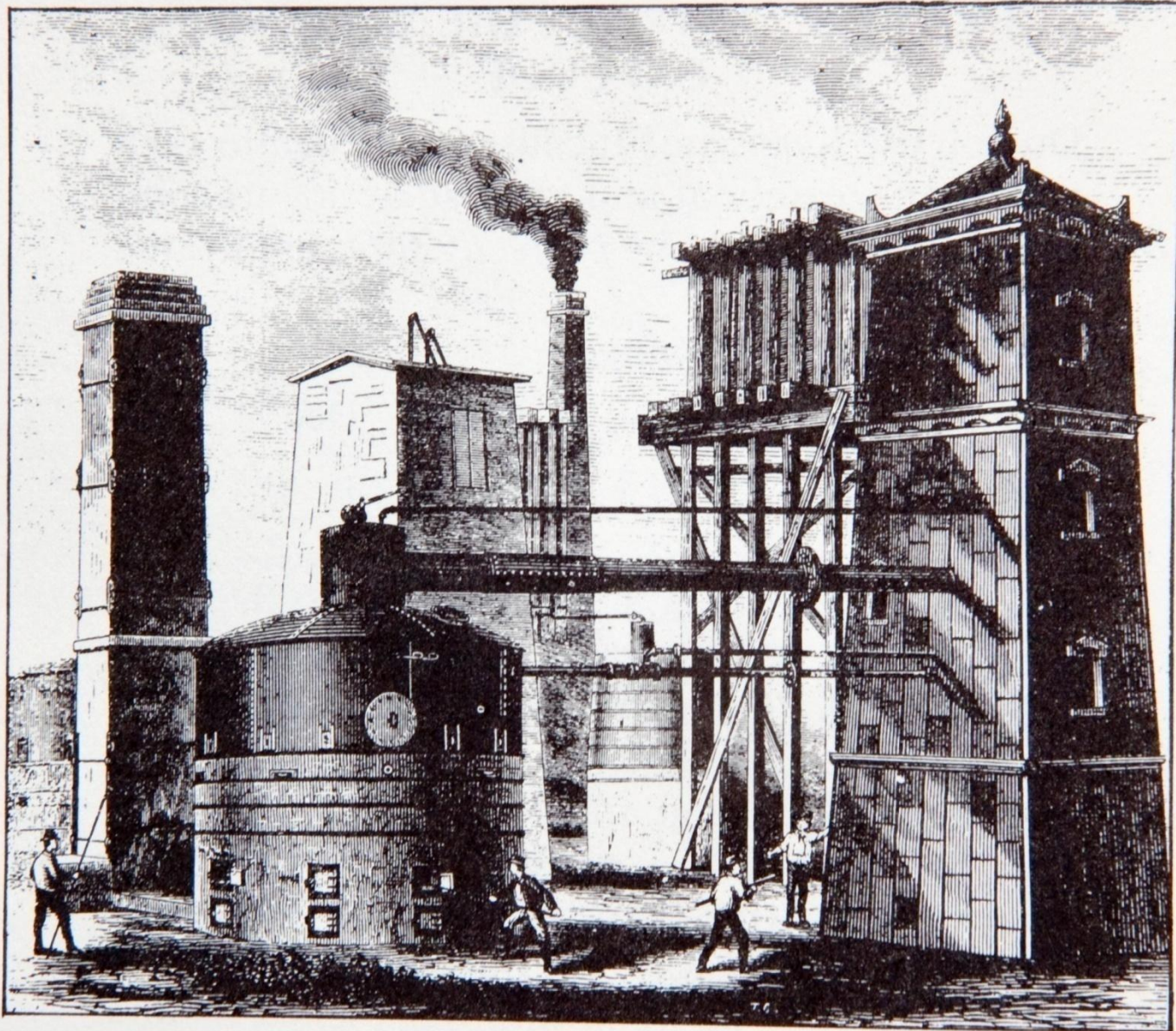
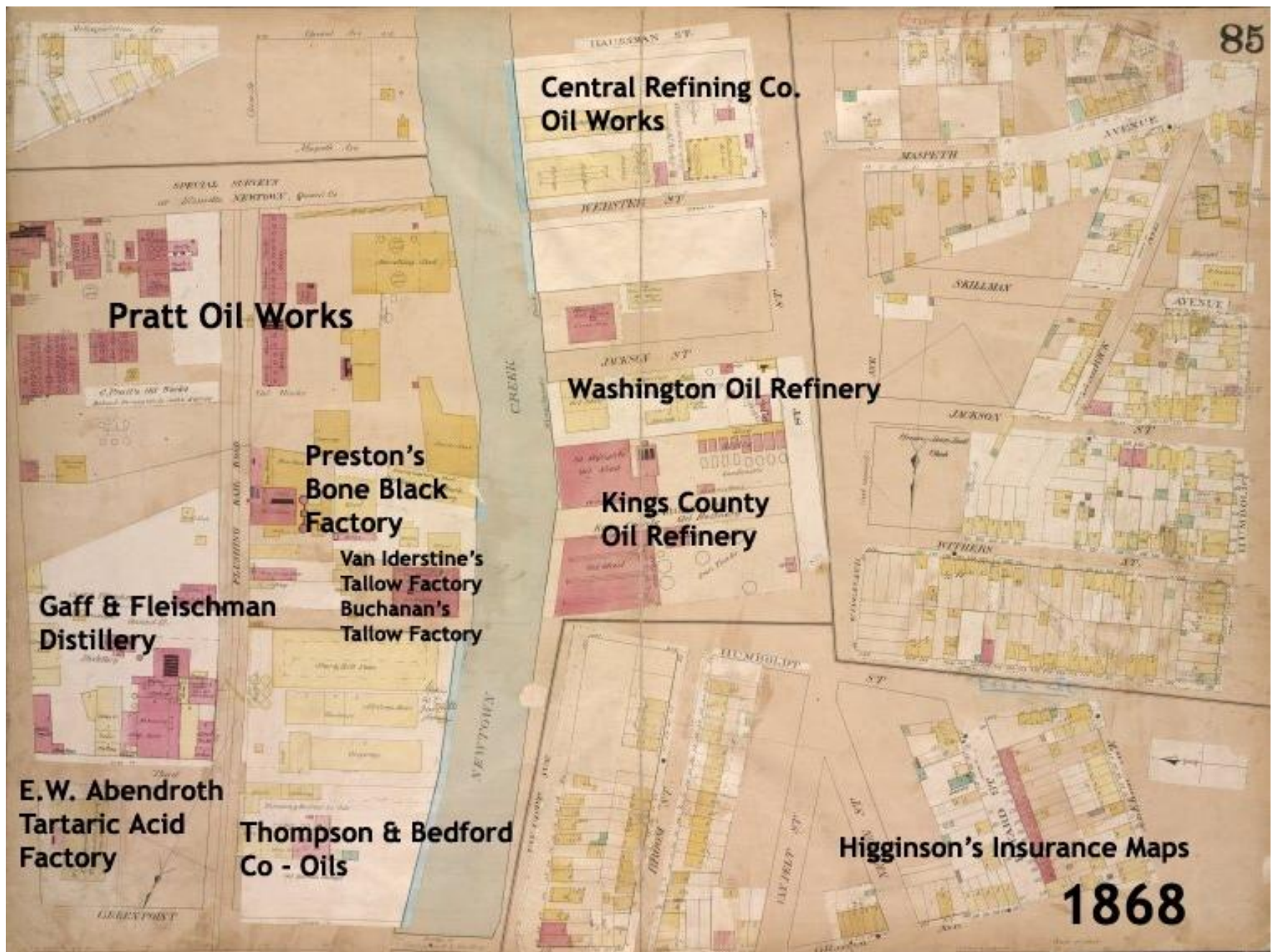


FIGURE 11-10. Flow chart of batch operation.



Gasoline still, fractionating tower, and condenser at the Pratt Astral Oil Works.
(Scientific American, Supplement, May 18, 1872)



**Central Refining Co.
Oil Works**

Pratt Oil Works

Washington Oil Refinery

**Preston's
Bone Black
Factory**

**Kings County
Oil Refinery**

**Van Iderstine's
Tallow Factory
Buchanan's
Tallow Factory**

**Gaff & Fleischman
Distillery**

**E.W. Abendroth
Tartaric Acid
Factory**

**Thompson & Bedford
Co - Oils**

**Higginson's Insurance Maps
1868**

Newtown Creek, East of the Greenpoint Avenue Bridge, including detail of the Charles Pratt Oil Works in Queens. From Higginson's *Insurance Maps of the city of Brooklyn L.I.* surveyed, drawn & published by J.H. Higginson. 1868. Volume 4, detail from plate 85. Courtesy of New York Public Library.

Pratt's Astral Oil

**PRATT'S
ASTRAL OIL**

WILL NOT EXPLODE

See Pratt's Astral Oil

See Pratt's Astral Oil

**PRATT'S
GAS MANUFACTORY
& GENERAL WARE**

OILHOUSE of the PRATT Established 1870 **STRICTLY PURE OILS.**

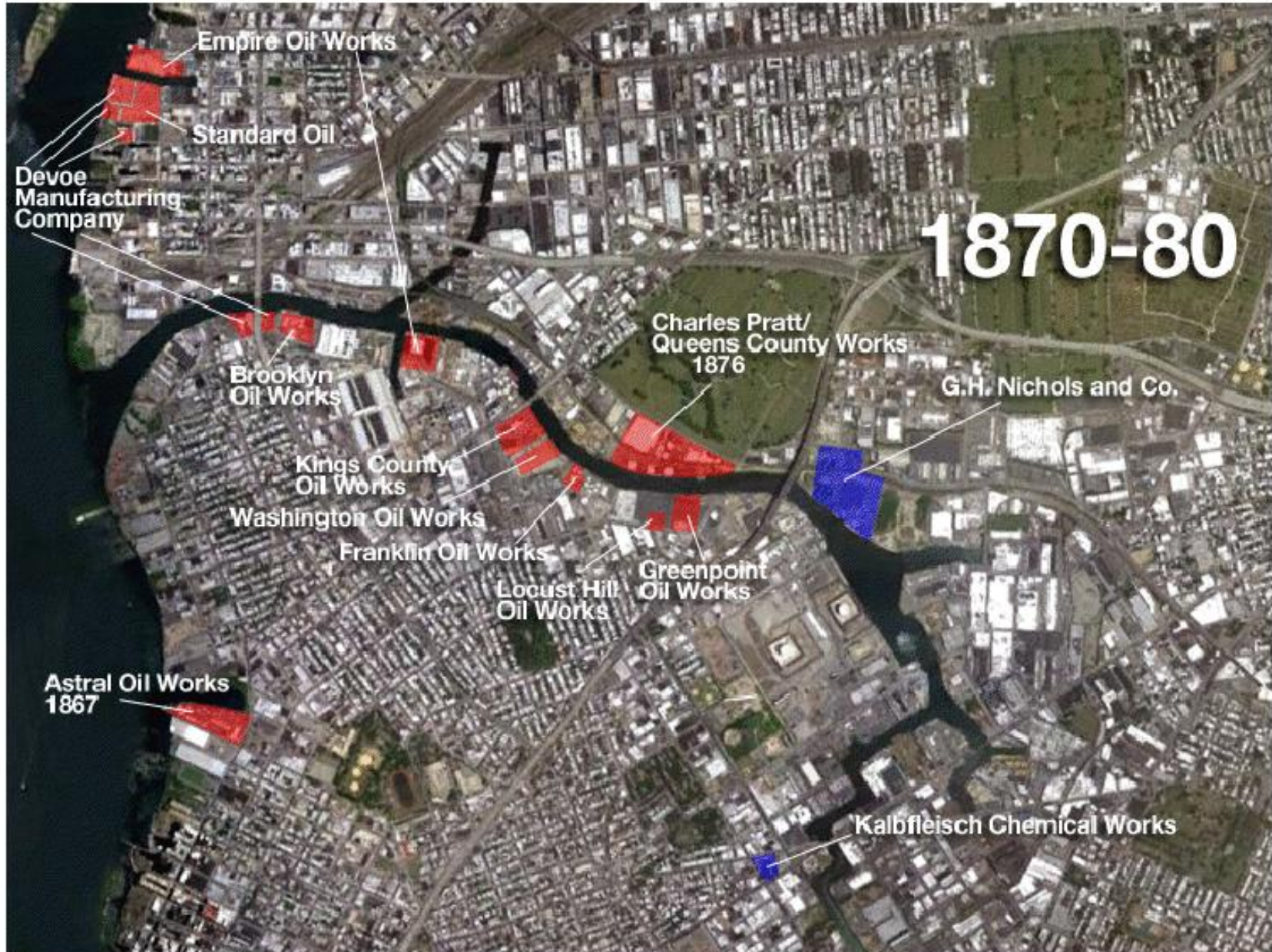
WORKS: Brooklyn, E.D. and Long Island City, L.I. - OFFICE: 108 Fulton St. New York.

The advertisement is a detailed black and white illustration. At the top, the brand name 'PRATT'S ASTRAL OIL' is written in large, stylized, outlined letters. Below this, a horizontal banner contains the safety claim 'WILL NOT EXPLODE' in bold, capital letters, flanked by decorative flourishes. The central part of the image depicts a large industrial complex, identified as 'PRATT'S GAS MANUFACTORY & GENERAL WARE'. The building is multi-storied with many windows. In front of the factory, several large sailing ships with multiple masts are docked at a pier. A smaller steamship is also visible. The scene is set in a harbor or dock area. At the bottom of the illustration, there is a small banner with the text 'OILHOUSE of the PRATT' and 'ESTABLISHED 1870' on the left, and 'STRICTLY PURE OILS.' on the right. Below the entire illustration, the address and office information are printed: 'WORKS: Brooklyn, E.D. and Long Island City, L.I. - OFFICE: 108 Fulton St. New York.'

SPECIAL SURVEYS
at Blissville, NEWTOWN, Queen's Co.



Sulfuric acid production and oil refineries



William Nichols and Newtown Creek

William Nichols, born in Brooklyn in 1852; attended Brooklyn Polytechnic Institute and New York University, earning a BS degree in Chemistry in 1870.

1870 Nichols joined Laurel Hill Chemical Company as a chemist. In 1871, with Baumgarten retired, the company became Walter and Nichols Co. The company acquired more land and built capacity for production of sulfuric acid, HNO_3 , and HCl. Reorganized as G. H. Nichols and Company.

1876 J. B. F. Herreshoff joined the company, began a career of developing new technologies that affected all areas of the company's operations.

1880s As other producers did, the G. H. Nichols Co. began to use pyrites as the source for sulfur (formed in the thermal decomposition of FeS_2).

1890 G. H. Nichols develops an interest in refining copper from the company's pyrite waste stream.

1890 Herreshoff developed a form of the contact catalytic process (SO_2 product of chamber process oxidized to SO_3 in flow through red-hot Pt tube), with strong effects on the company's fortunes.

1891 G. H. Nichols and Co. splits, conveying land to the Nichols Chemical Company; G. H. Nichols and Co continues to refine copper.

1892 Nichols constructs one of the first large-scale systems for electrolytic refining of copper: Nichols Lake Substitute (NLS) competes with Lake Superior copper, the US Bureau of Mines standard.

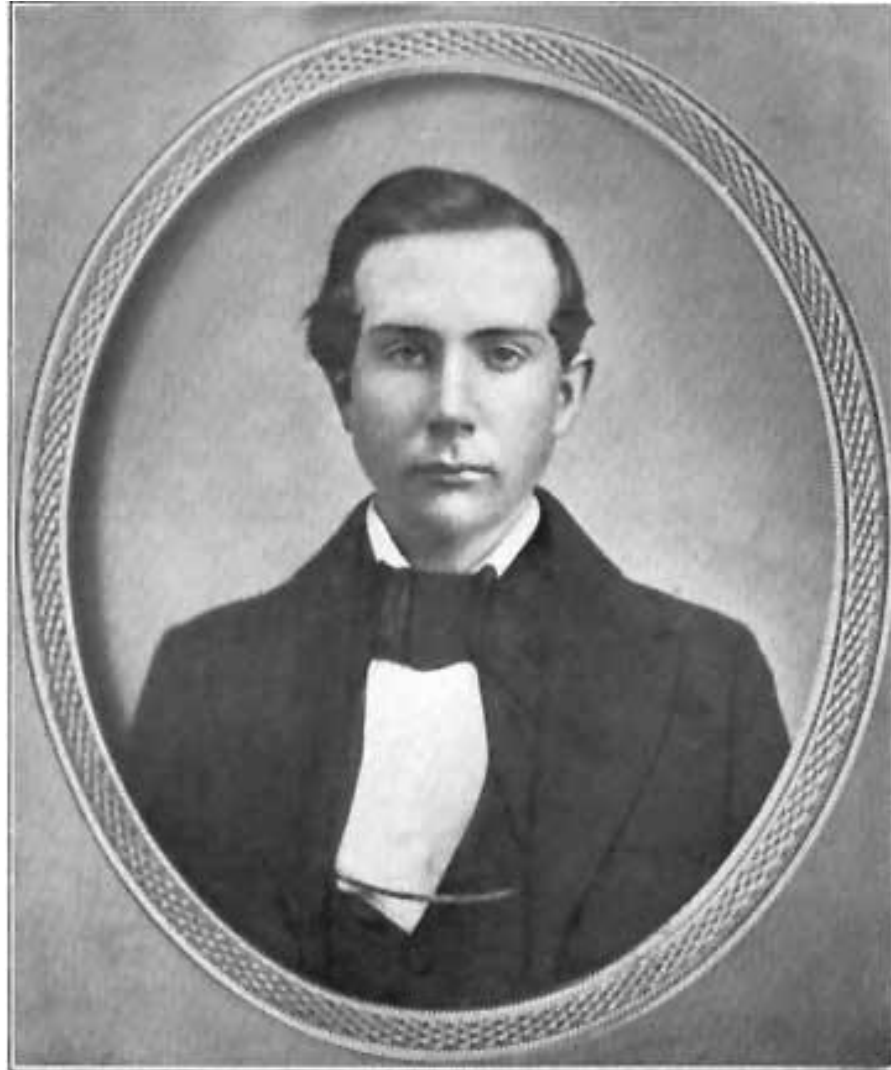
1895 Nichols produces high purity blister copper, cast as bars, ingots, wire, etc. G. H. Nichols and Phelps Dodge (supplier of pyrite) form partnership.

1899 Nichols leveraged the company's catalytic contact process to organize the General Chemical Company, merging 12 companies and 19 plants.

By the time Germany invaded Belgium, August 1914, the US sulfuric acid industry produced 4,047,982 short tons annually. The combined total of Britain, Germany, and France was about half as great.

REF: C. Cravens, Copper on the Creek, Furnace Press, New York, 2000; W., American Chemical Industry, background and Beginnings, Garland Publishing, Inc., New York and London, 1983; H. Wigglesworth, Industrial and Engineering Chemistry 19, 1205-6 (1927).

John D. Rockefeller; the growth of the Standard Oil Company at Newtown Creek



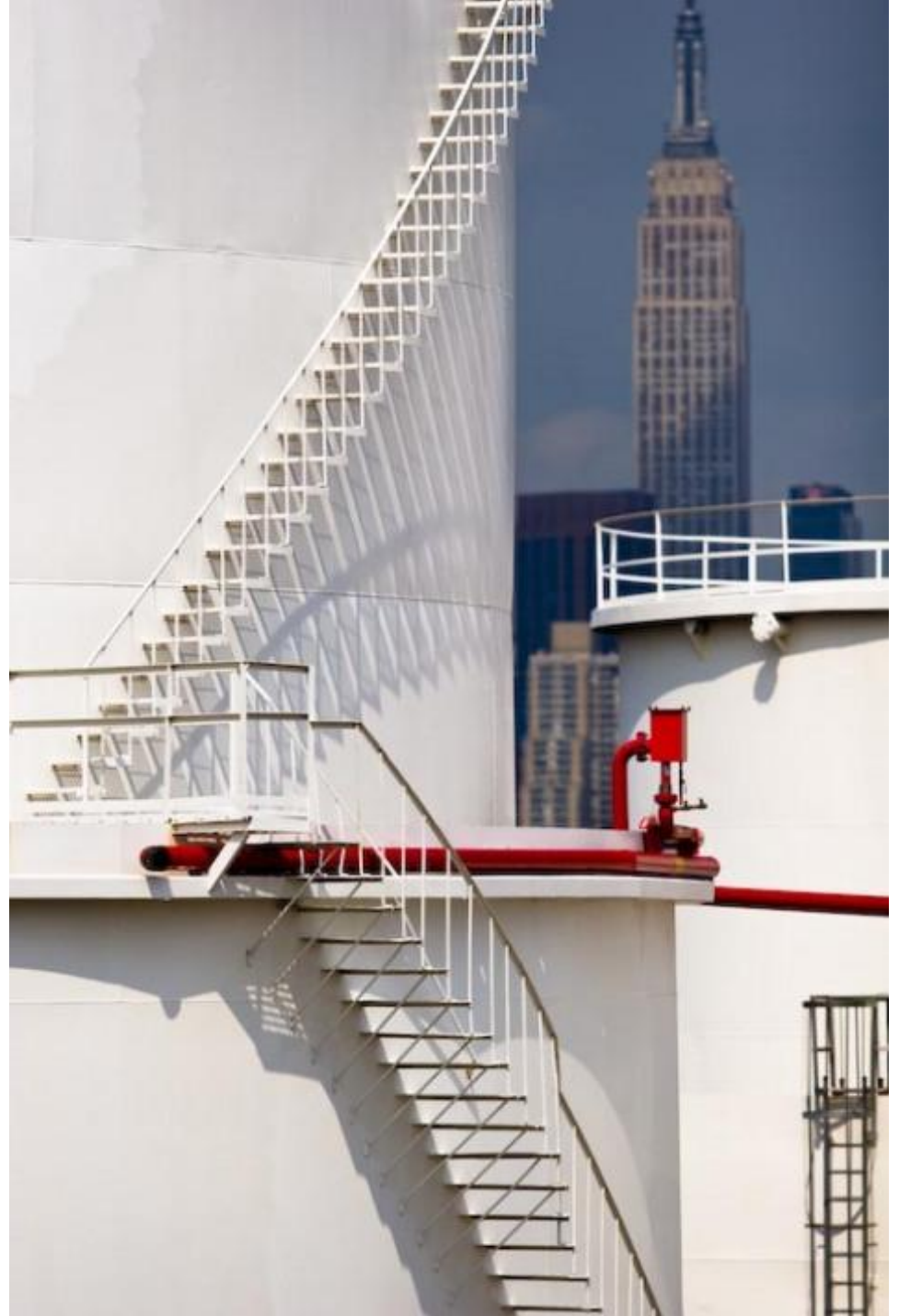
NYC DOITT aerial photograph 1924



NYC DOITT aerial photograph 2010



Photograph, Robin Michals



Thank you.



Brooklyn Waterfront Research Center

Anne Leonard

Robin Michals

New York Public Library: The Lionel Pincus and Princess Firyal Map Division
and the Science Industry and Business Library

Brooklyn Historical Society



This work has been made possible in part by two major grants from the National Endowment for the Humanities. Because democracy demands wisdom.

Water and Work: The Ecology of Downtown Brooklyn

A one-year seminar series for sixteen faculty members, along with a public symposium, on the natural and cultural history of Brooklyn's waterfront.

Along the Shore: Changing and Preserving the Landmarks of Brooklyn's Industrial Waterfront

Two one-week workshops for fifty community college faculty members on selected Brooklyn waterfront landmarks.