

Jamaica Bay – New York's Conflicted Backyard

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Drew Symposium
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Why Study Jamaica Bay's History?

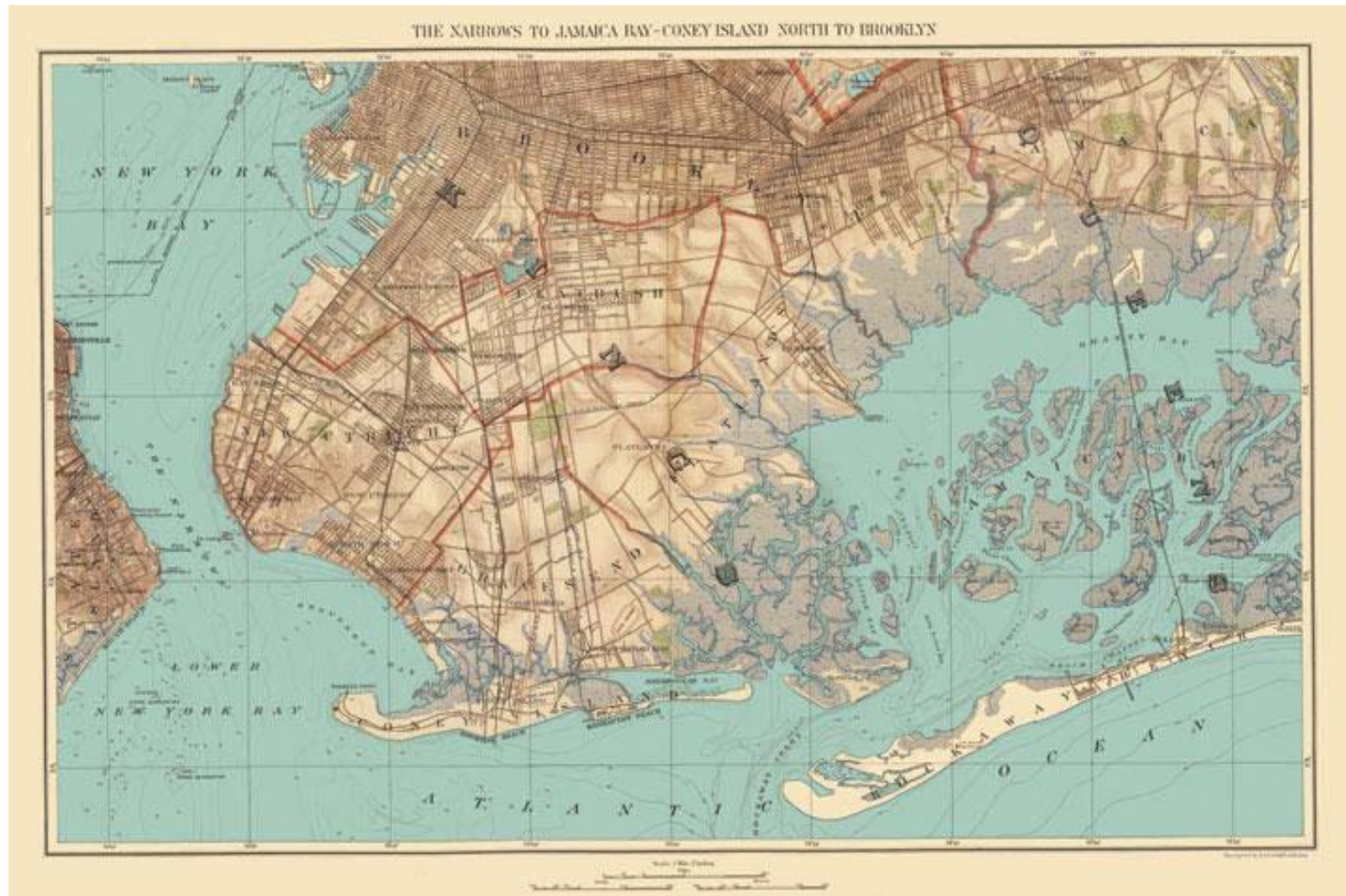
Jamaica Bay has served many uses for the people of New York. At one time or another it has been a source of food, a place to recreate, a place to live, a transportation hub, a manufacturing center, and a place to dispose of the city's putrescent waste products. From about 1860 to 1930, it was all of these things simultaneously.



Introduction to Jamaica Bay

- Shallow tidal estuary on the southern shore of Long Island.
- Eastern portion of the Bay is in Brooklyn and the western portion is in Queens
- The bay measures approximately 52 square kilometers (20 square miles.)
- The Rockaway Inlet is the only opening of the bay to the Atlantic.
- The bay contains many diverse habitats, including coastal shoals, mudflats, sand bars, open water (littoral zone), intertidal zones (low and high marshes), and upland areas. It is an important stop for migratory birds.

1880s Era Map Showing Jamaica Bay and its relations to Brooklyn and Queens

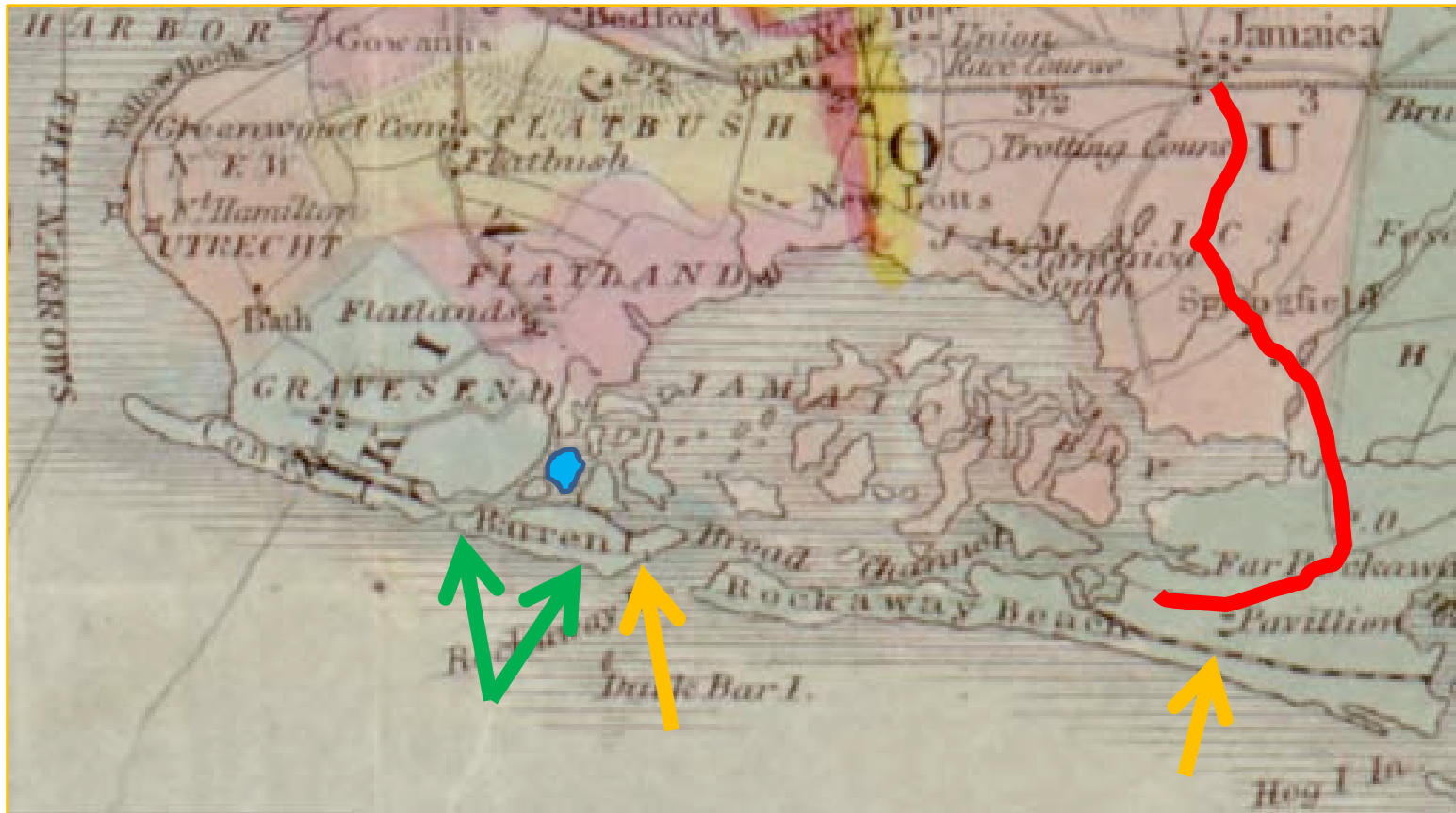


The Eras of Jamaica Bay

- 1665 – 1860: Mostly agricultural, salt hay and milling are of primary importance.
- 1860 – 1923: Balance of conflicting needs
Waste Management / Fishing / Port Expansion / Recreation
- 1923 – 1930's: Robert Moses Saves the Bay. (But trashes Staten Island)



1850's



Color codes for this map are provided on the next slide

Key to 1850's Map

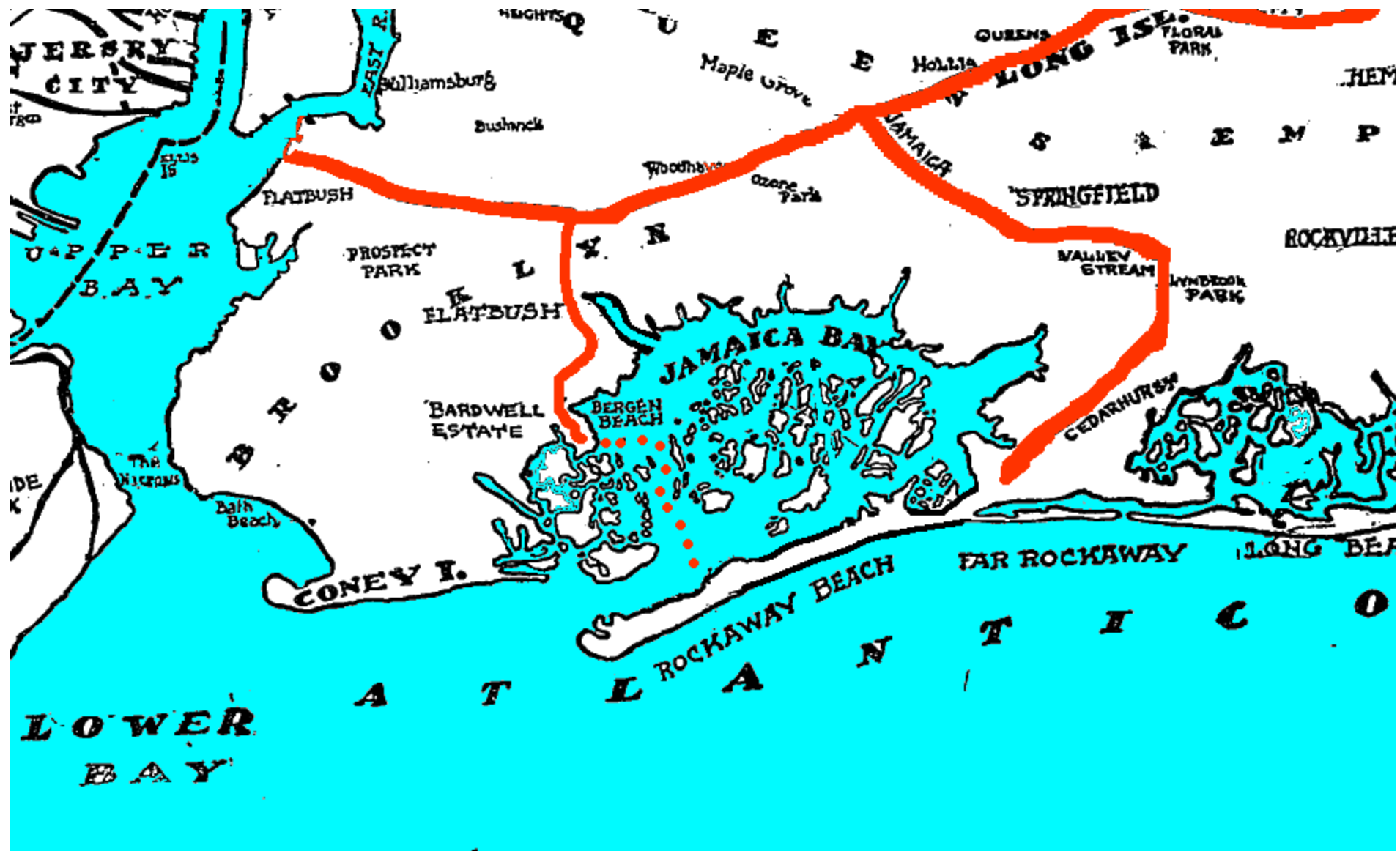
The first stage coach route to the Rockaway Peninsula is shown in RED.

The Pavilion Hotel in Far Rockaway (1830s) and Dooley Hotel on Barren Island (1800) are shown in YELLOW

Cornell and Reynolds fertilizer plants on Barren Island (late 1850s) are shown in GREEN.

Because of Barren Island's proximity to the ocean, small boats could approach from the north and deeper water to the south allowed larger ships to dock. At low tide, it was possible to walk to the island

There was a causeway to Coney Island (1824) and a small number of roads to the bay shore which was at the time still largely marshlands, Tidal Mills on Mill Island (Deep blue) existed since the 1600s. Other tidal mills also operated on the creeks leading into the bay.

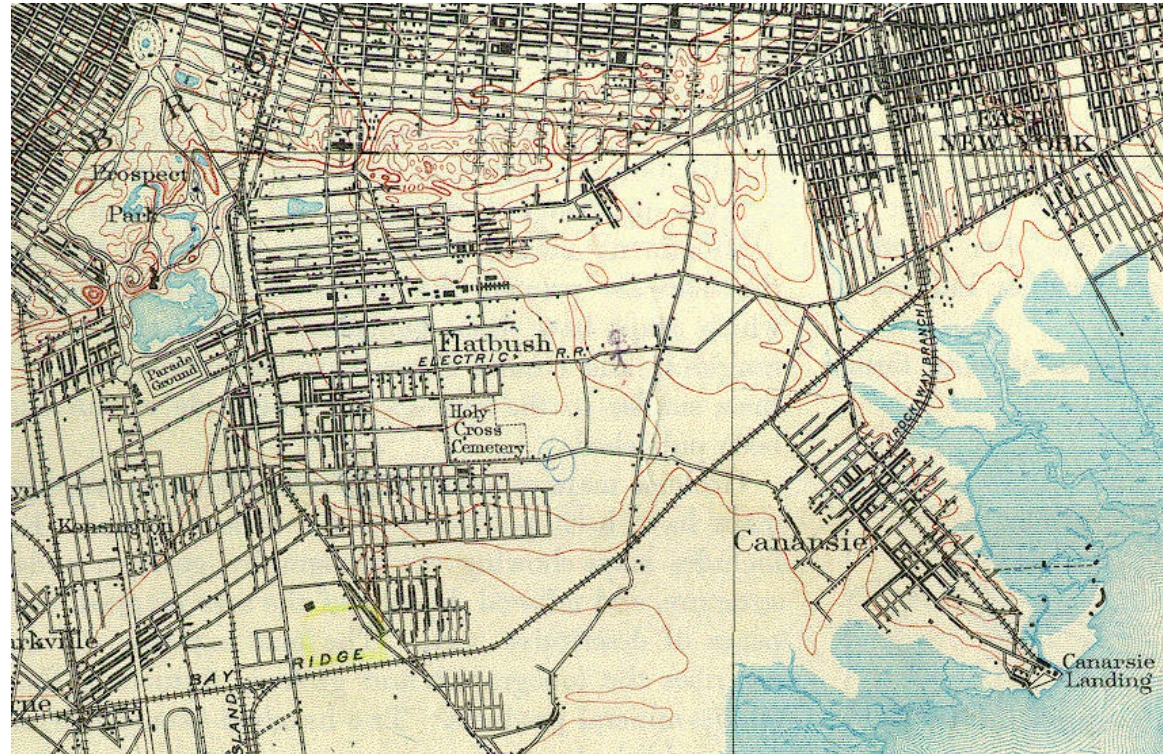


Railroads circa 1860 – 1870, Left - Brooklyn & Rockaway Beach (1865); Right – South Side Railroad (1869), a former stagecoach route. The 1862 horse car route to Coney Island is not shown. The dotted line shows the ferry route between Canarsie and Rockaway.

Canarsie Landing 1888

Prior to the construction of causeways over the bay, most travelers took the train to Canarsie and a steamboat to the Rockaway Peninsula.

The ferry landing became a popular recreation area.



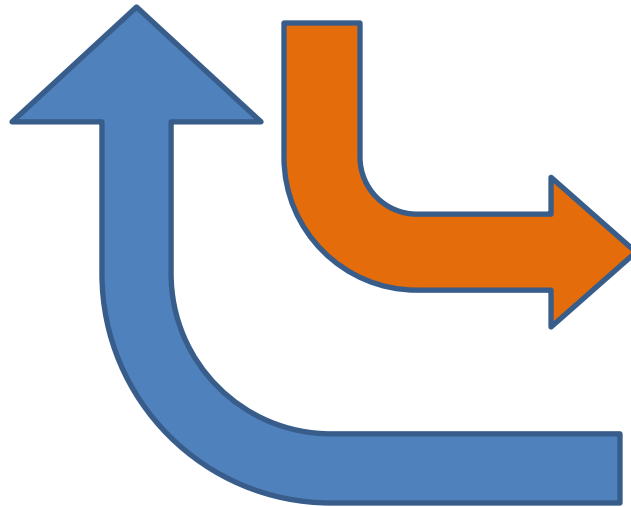
Some visitors preferred to swim in the calm waters of the bay instead of the ocean. Fishing boats were available for rent. In time other amenities were available for visitors. Canarsie remained a small fishing village for most of the 1800s. The first large-scale suburban development did not take place until the 1920s.

The Urban – Rural Nutrient Recycling System

- In the years before the Haber – Bosch process provided fixed nitrogen (1908-1910) and phosphate rock mining provided phosphates for agricultural fertilizers (1870s and later), it was necessary to return nutrients to the soil from urban waste products (manure, night soil, food wastes, etc).
- Theoretically, nutrients could be recycled indefinitely. (next slide)

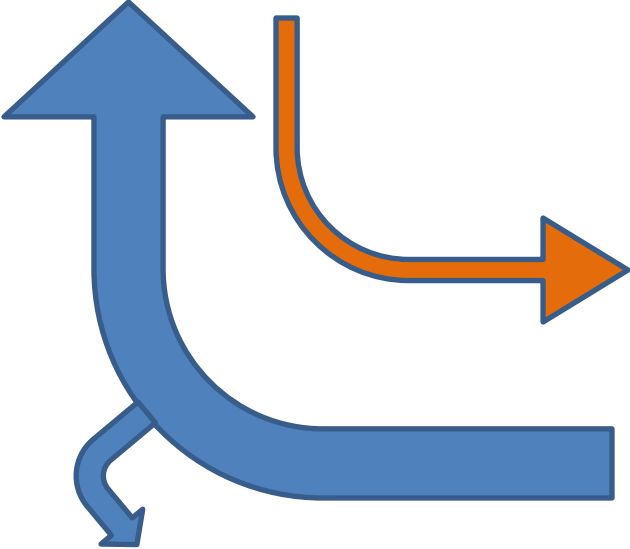
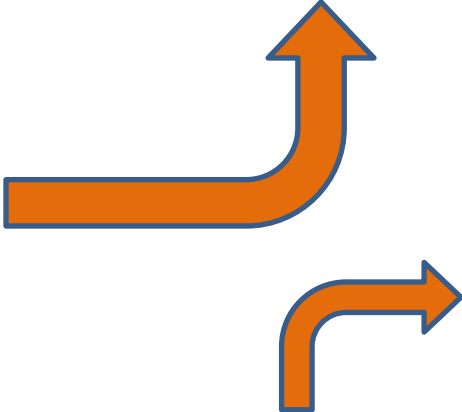
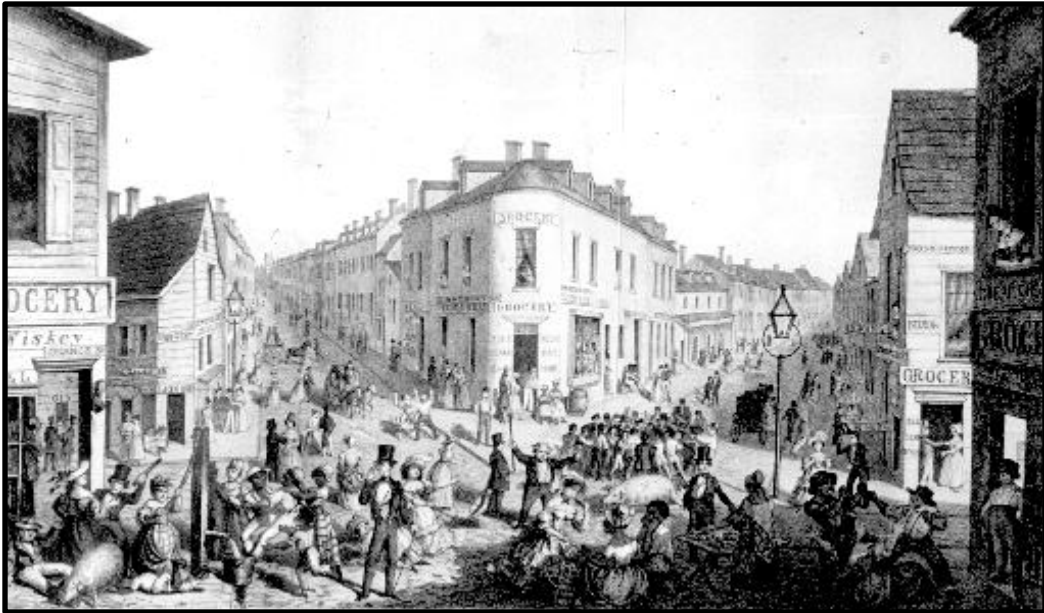


In a Perfect World...the system would be closed.



The Urban – Rural Nutrient Recycling System

- But in the real world, only a portion of the nutrients would be returned to the farms.
- Agriculturists were aware of the wasted nutrients washed into the oceans as sewage from the cities.
- Even on the farms some of the nutrients would be lost to erosion and poor soil management.



So What to Do?

- Manufacture superphosphates
- Import guano
- Use lime and marl
- Use fish meal
- AGGRESSIVELY COMPOST ANY ORGANIC WASTE FROM THE CITIES

15 Centre St., **E. C. DRAKE,** 15 Centre St.,
N. Y. N. Y.

DEALER IN ALL KINDS OF

MANURE, GUANO, POUURETTE, &C., &C.

MANUFACTURER OF

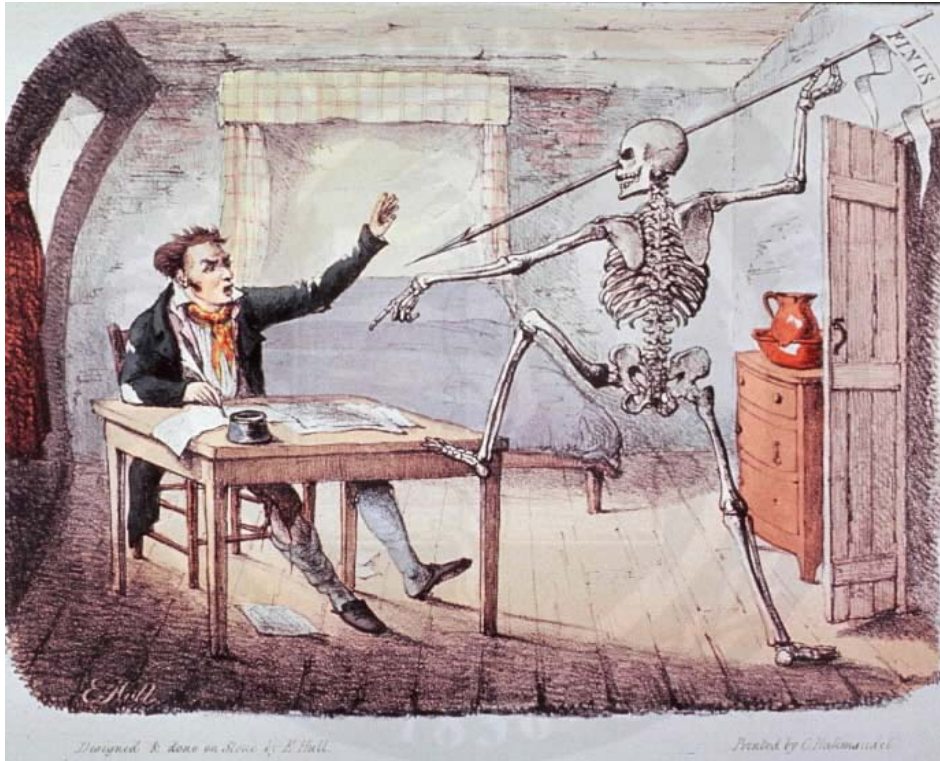
Lodi and Barren Island
BONE AND SUPERPHOSPHATE.

Guano, Poudrette, and all Kinds of Manure for
Agricultural Purposes,
CONSTANTLY ON HAND.

Also, Several Kinds of

RAKES, FORKS, MOWERS AND REAPERS
ON EXHIBITION.

15 Centre St., Country Orders a Specialty, 15 Centre St.,
NEW YORK. NEW YORK.



During the first half of the 1800s physicians, municipal officials, and public health reformers came to understand how poor sanitation and crowded conditions could cause disease. In an era before antibiotics infectious disease could strike with alarming swiftness as this 1840s era print illustrates.

Recycling food waste and other putrescible wastes into fertilizer was seen as solving two problems:

1. Removing disease-breeding materials from the cities.
2. Returning soil nutrients to the surrounding farms and thus guaranteeing future food production.

What Can be Recovered from Garbage? And What Does it Have to Do with Jamaica Bay?

- The next slide lists the materials that could be recovered from New York's food wastes according to calculations performed in 1917.
- Barren Island in Jamaica Bay became the site of several plants that rendered animal carcasses and recycled putrescible wastes into fertilizer.
- During the 1800s, farmers on Long Island used twice the amount of fertilizer as farmers in other parts of the country.

New York Food Waste 1917

Substance	Percentage
water	73.78
Organic matter	22.63
oil	5.32
ash	3.6
Nitrogen	0.7
Phosphoric acid (P ₂ O ₅)	0.43
Potash (K ₂ O)	0.27
Total	106.73

New York's Waste Management, Circa 1900

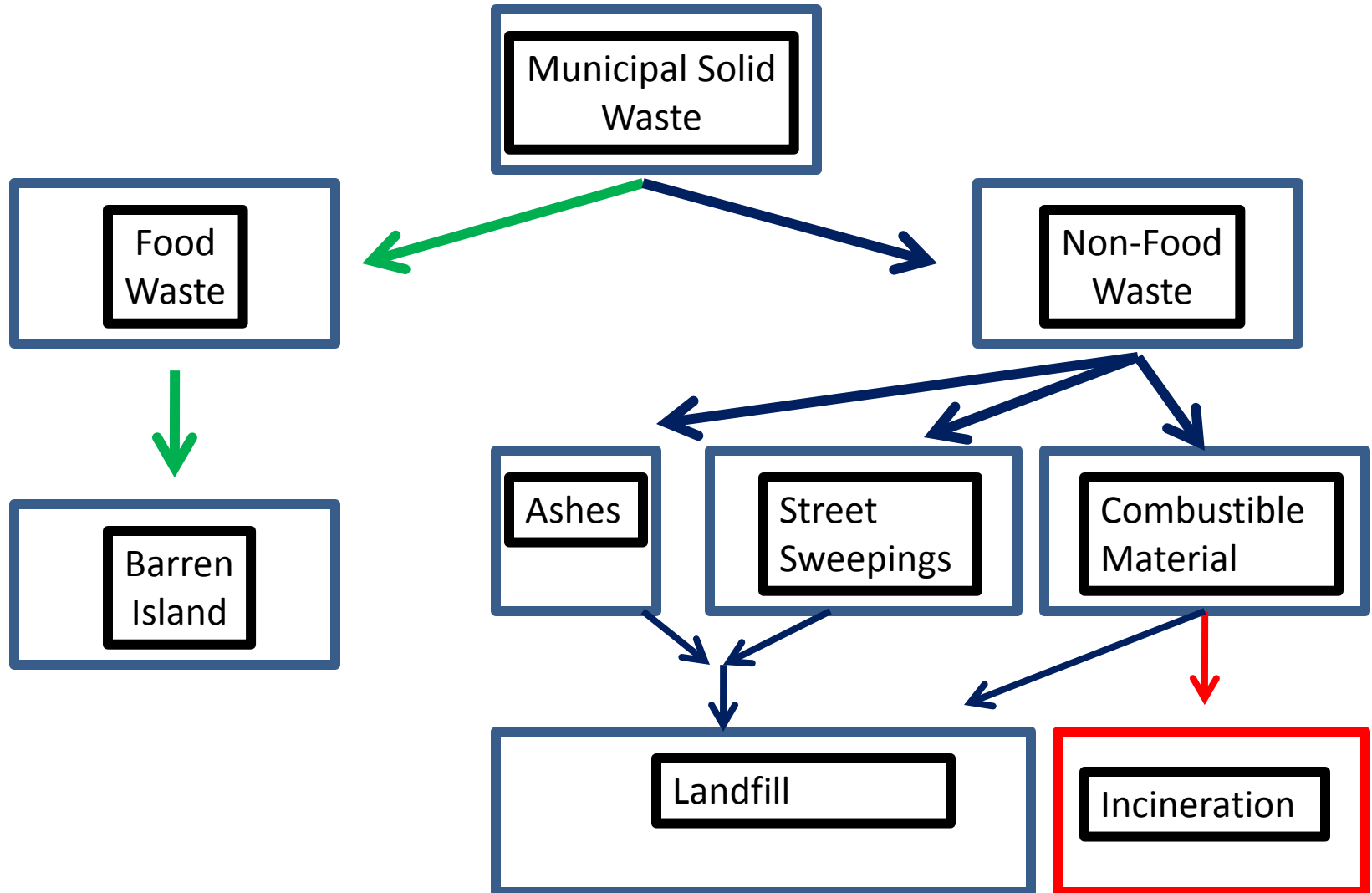
The next three slides show how Jamaica Bay fit into New York's waste management system at turn of the 20th century. Note that the waste processing operations on Barren Island were only a part of the city's total waste management system.

In 1896 the city adopted waste management laws that would feed the plants on Barren Island a seemingly inexhaustible stream of waste. It became mandatory for householders to separate moist food wastes, rubbish (defined as dry wastes), and ashes.

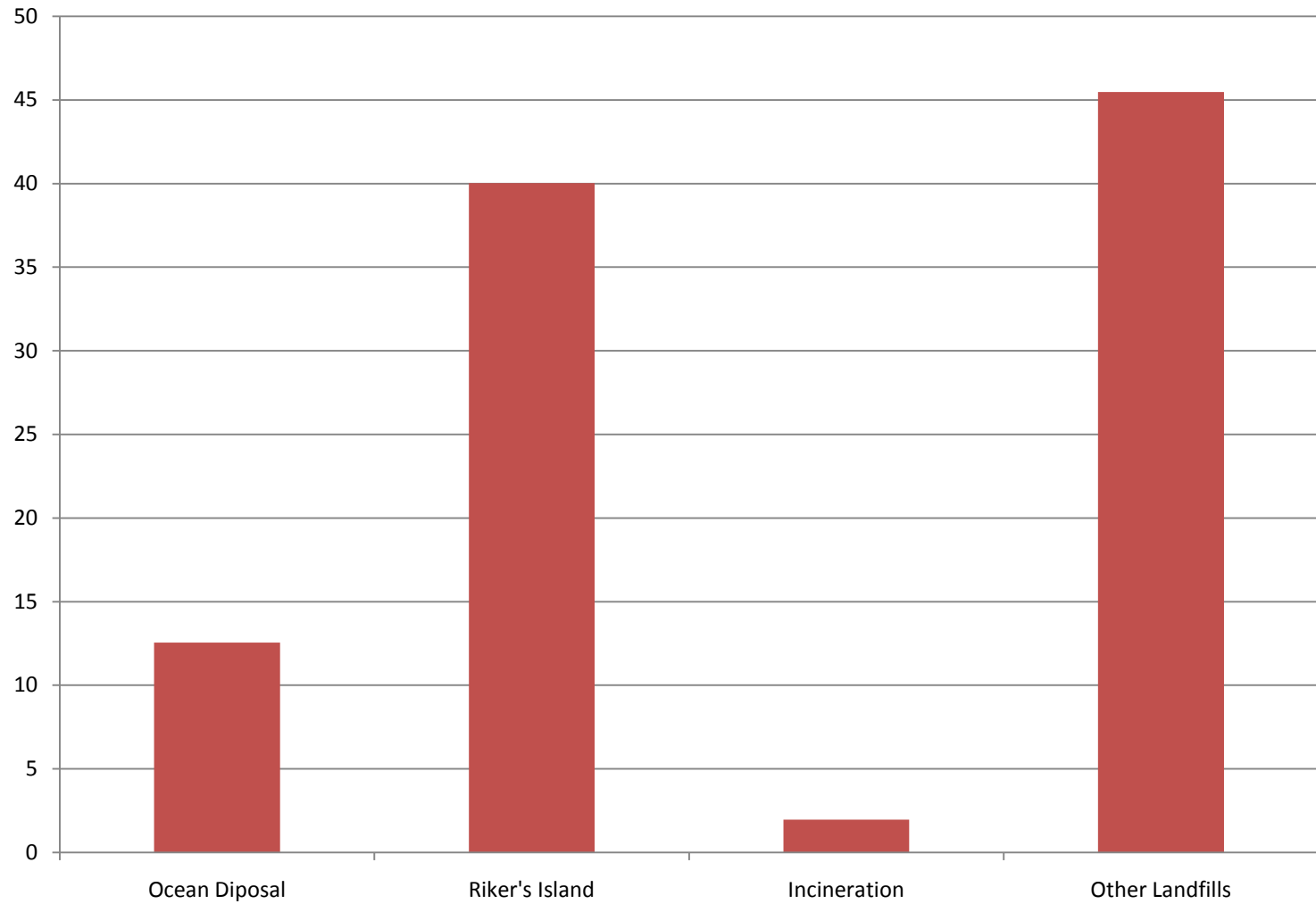
The city's draft and carriage horses still generated many tons of manure but by the late 1800s manure was no longer seen as a commercially viable fertilizer because of its high water content. Moving manure from the cities back to the farms essentially meant moving more water than nutrients.

Manure , usually swept up from the streets, was mixed with ashes from coal stoves and fireplaces to create a landfill material.

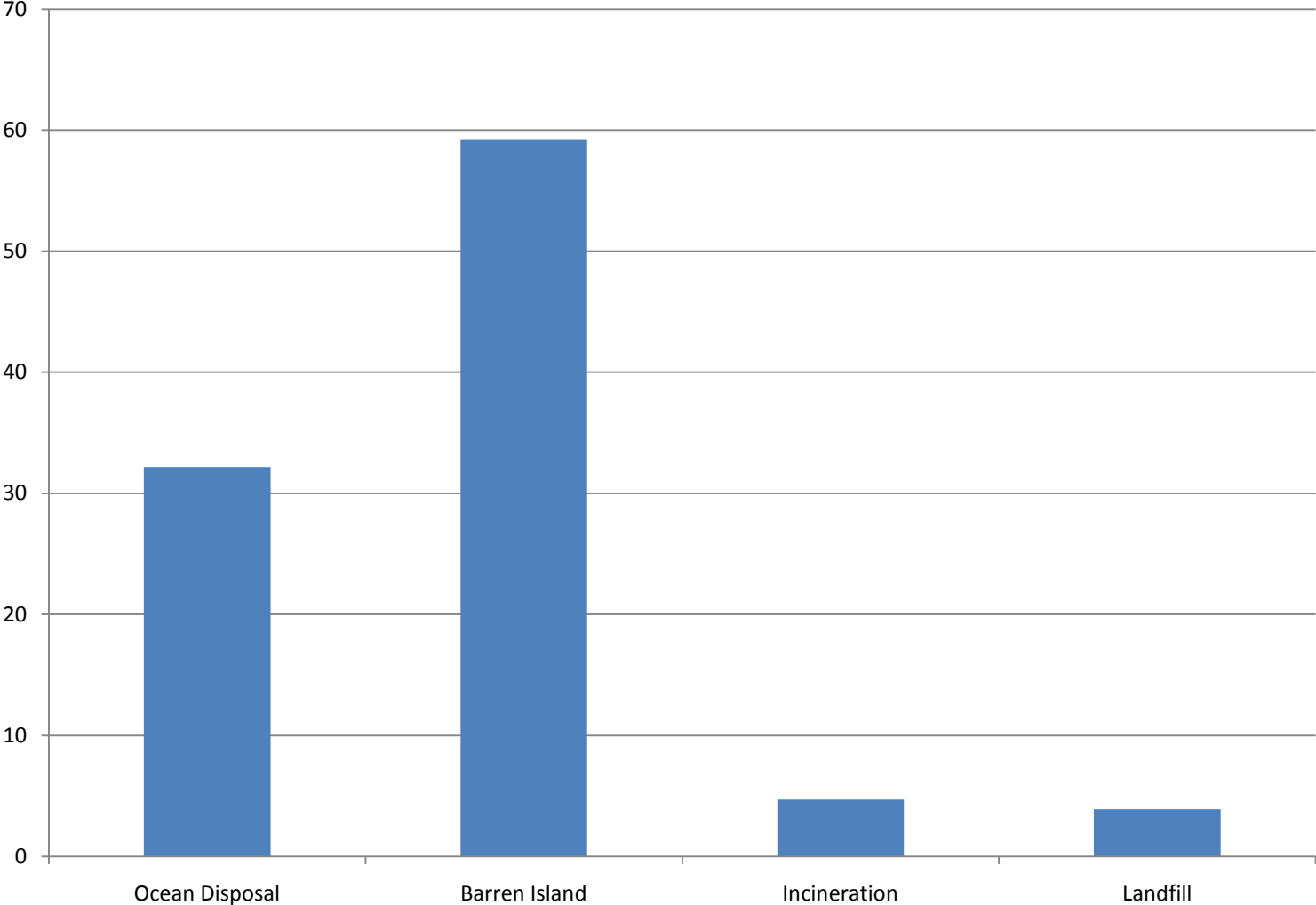
New York's Waste Management 1907



Non - Putrescible Waste Disposal - 1907



Putrescible Waste Disposal - 1907



Ocean Disposal

- The charts on the previous slides show that ocean disposal was widely used for many types of waste. Wastes frequently washed up on Manhattan and Brighton Beaches. In the hot weather when the beaches were most crowded and most vulnerable.
- In July of 1880 there were reports of straw, hay, vegetables, fruit, washing up on the beaches at high tide and sending the bathers (most of whom were paying hotel guests) scurrying indoors.
- Austin Corbin, president of Manhattan Beach Association, chartered the tugboat *Sarah* to follow the garbage scows from New York (remember that this is before consolidation). Corbin was accompanied by two Manhattan Police department officers, who obtained a warrant for the arrest of the tugboat captains who were towing the garbage scows.
- The law required that no garbage be dumped within three miles of Coney Island, Rockaway, or Far Rockaway. Although allowing for winds and tides, a more realistic distance would have been about five miles from shore. The scows also had to be unloaded within two hours of the start of the ebb tide (tide going out)
- When testifying in court, the captain claimed that the scows were sinking and unloading the trash was necessary to save the lives of the crews.

Transporting Waste to Jamaica Bay

The following description of garbage loading on Manhattan's piers was written in 1878:

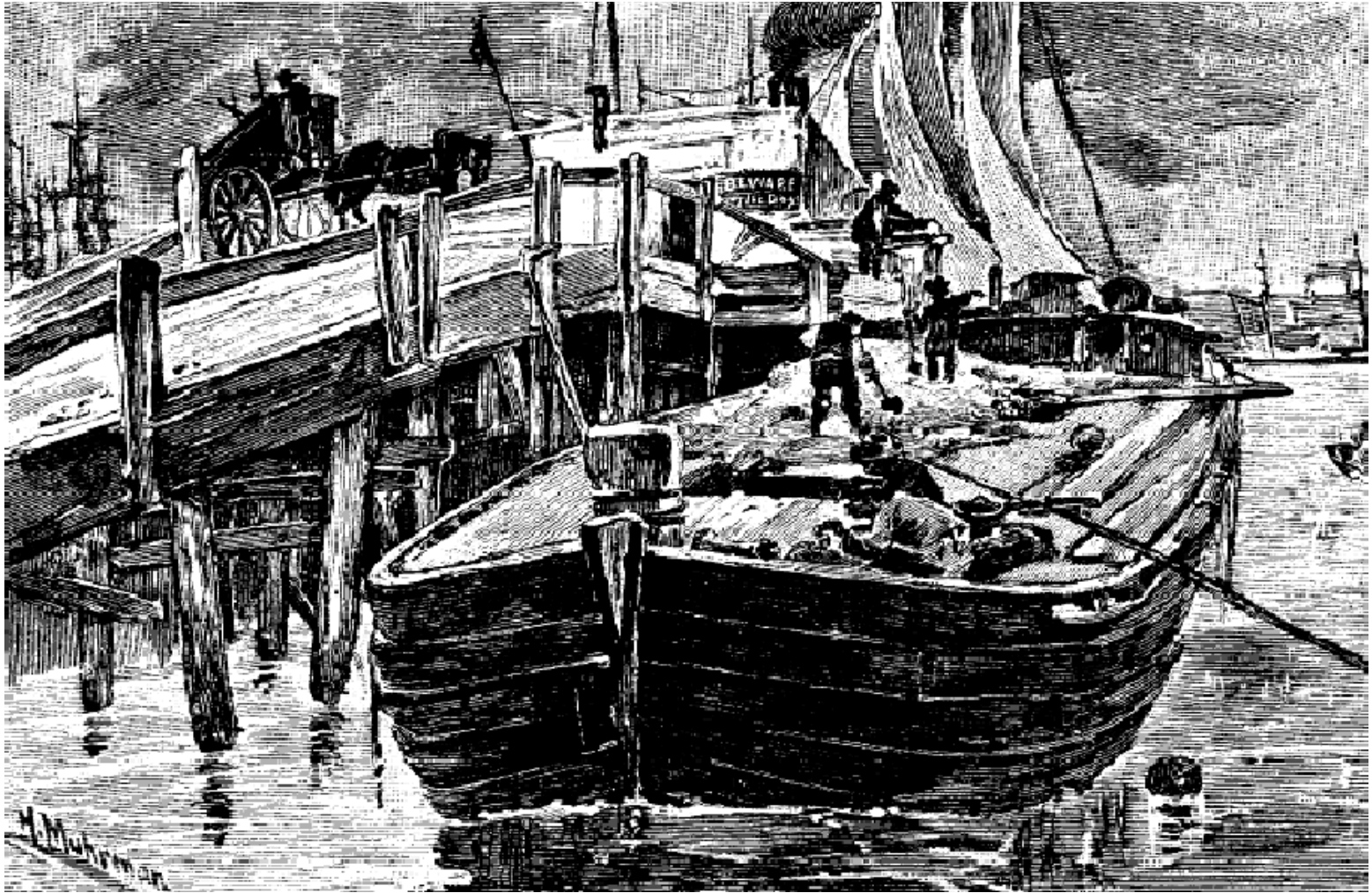
“The pier is built quite high, that the carts may rise above the heap of refuse on the deck of the lighter even at high tide. The space just under the floor of the pier, between the rows of piles, is enclosed with old planks, and divided into several rooms, one for storing bones, one for tin-cans and old metal, one for old boots and shoes, and one for rags.

But the whole scene is extremely repulsive, although the business is quite profitable. The city hires a trimmer to trim or pile the loads on the lighter. He lets out this work to two or three Italians for one-half of the pickings, and now and then visits his dump, dressed in broadcloth, kids, and diamonds. The Italians sell the bones, metal, rags, and boots to peddlers, and thus make from \$12 to \$20 per week. The watchman on the pier told me that they live chiefly on the garbage, that they save enough money in a few years to go home as a count and spend it a while, and then return from sunny Italy to claw over the garbage of New York.

Now and then they allow their wives and sweethearts to come from Baxter street and help pick. Then the garbage pile is covered with a picturesque company of grimy and ragged figures eagerly snatching refuse in a cloud of offal dust. It is a strange phase of life. They have their social distinctions, too, for the cartmen who collect the refuse consider themselves immeasurably superior to the pickers. And certainly they have, at least, the advantage of an honest and hard-working horse...”

Up to about 1878 the city paid \$10.50 per week for each man working on the scows. The payment increased gradually, until 1892-93, when it reached a height of \$1,795. At the end of 1894 it had fallen to \$1,675.

Loading Garbage in Manhattan





It was dangerous work to ride a scow overflowing with trash out to the Atlantic Ocean in all kinds of weather. This image from about 1903 shows garbage being loaded onto the scows.

Arrival at Barren Island



This 1930 era photograph shows Barren Island from the bay. Although the recycling plants are no longer in operation, the geography of the island was unchanged.

Products Produced on Barren Island by P. White's Sons 1884 - ?

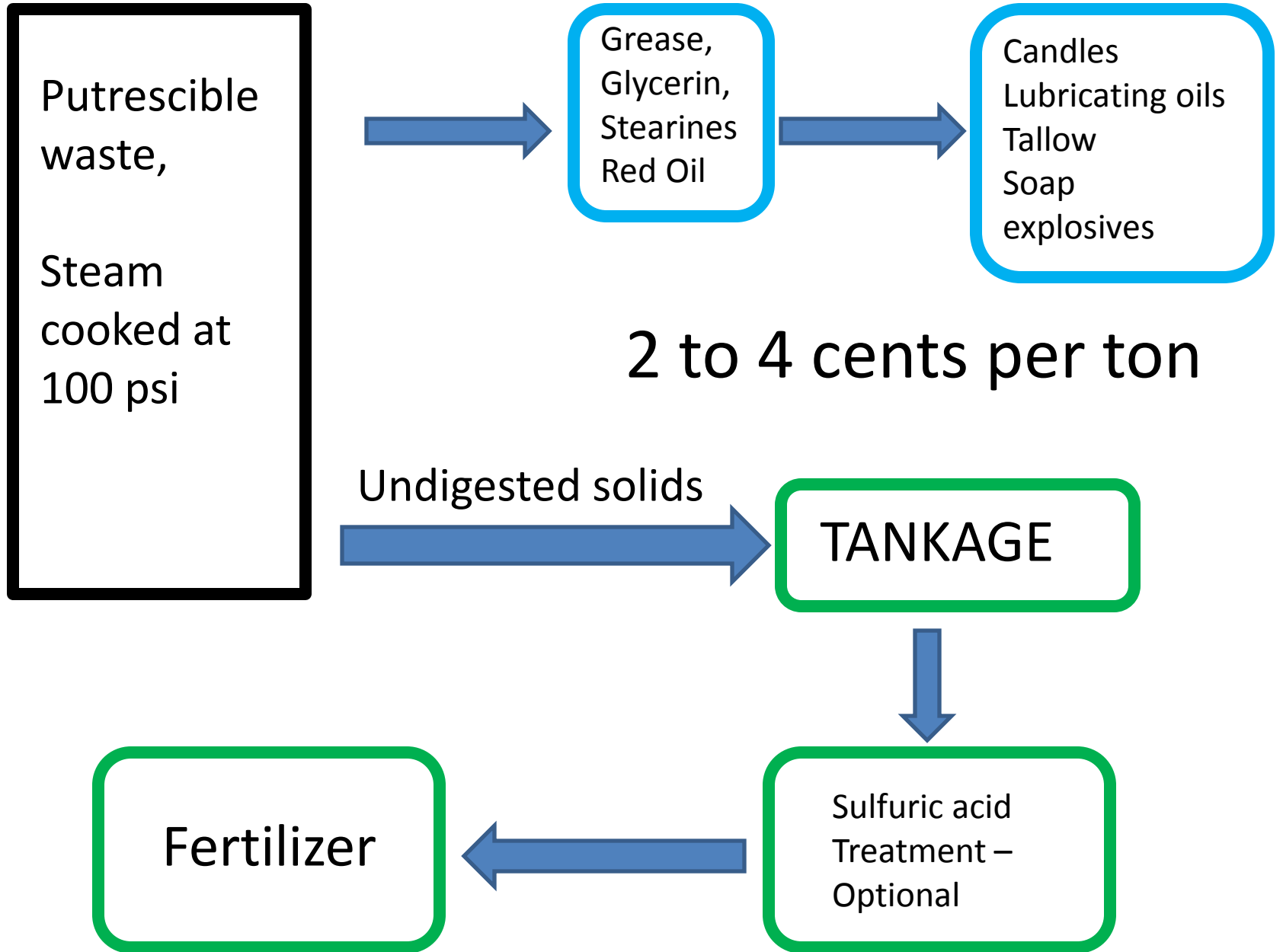
- Blood
- Bone
- Meat
- Menhadden
- Dried Blood
- Sulphate of ammonia
- Dried fish scraps
- Tallow
- Grease
- Fertilizer

In 1885, P. White's Sons company was managed by Thomas F. and Andrew J. White. They had an office on Peck Slip in Manhattan and a small plant near New Brunswick, New Jersey, but the main plant was on Barren Island. They had no shortage of raw materials in the form of blood, bones, and meat as their company controlled the dead animal and offal contracts for both New York and Brooklyn. In addition to the fertilizer sold under the name "Farmers' Pride", the company manufactured a number of specialty fertilizers including sulphate of ammonia, dried blood, and dried fish scrap.

Recovery of Useful Products

- The next slide shows the basic process by which oil was recovered from food wastes and animal carcasses.
- There were two main products, oil that could be sold for industrial uses and the left over solids that were used for fertilizer. The sale of oils provided most of the money for the operation.
- The basic technology was developed in the first half of the 1800s and the factories on Barren Island employed it extensively.





Putrescible waste,

Steam cooked at 100 psi

Grease,
Glycerin,
Stearines
Red Oil

Candles
Lubricating oils
Tallow
Soap
explosives

2 to 4 cents per ton

Undigested solids

TANKAGE

Sulfuric acid
Treatment –
Optional

Fertilizer

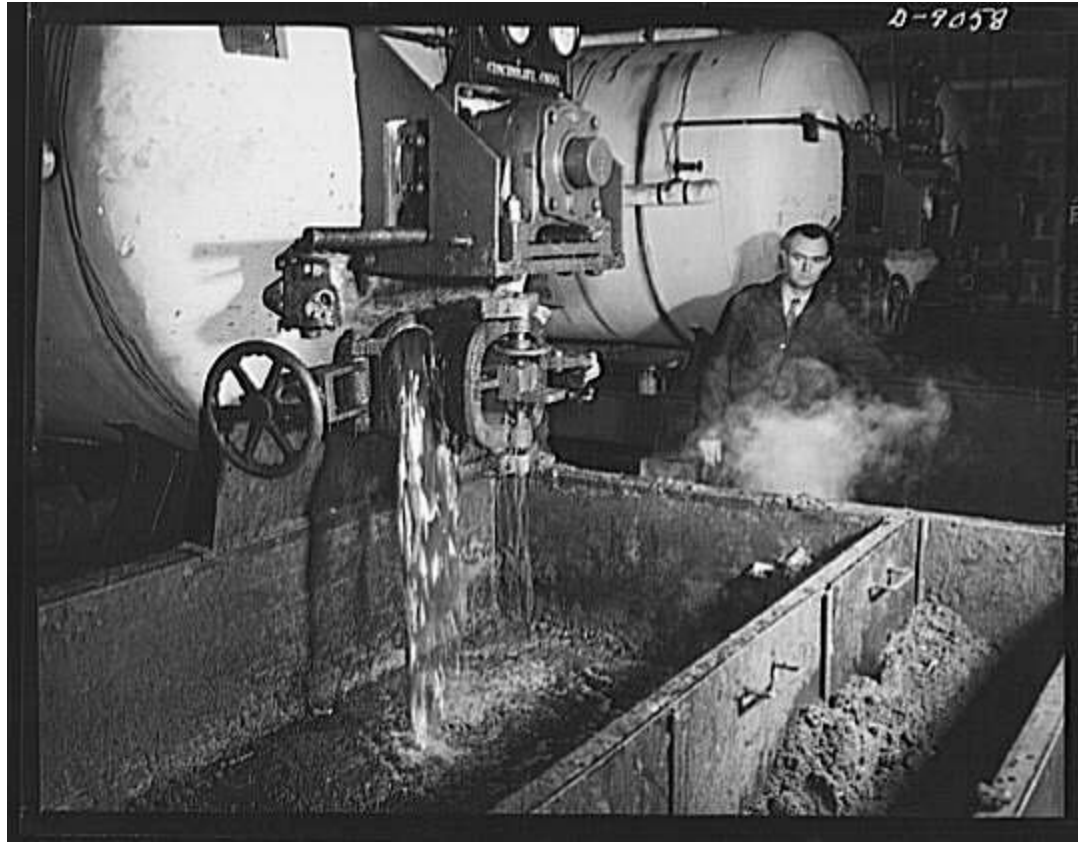


A series of photographs by the Office of War Information show a school field trip to a grease recovery plant during World War II. The plant was located in Virginia and extracted glycerin for explosives manufacturing. Here the students are bringing kitchen grease in tin cans to a central collection point.



The students seemed eager enough when bringing cans of kitchen grease to the collection point, but once inside the plant do not seem so confident.





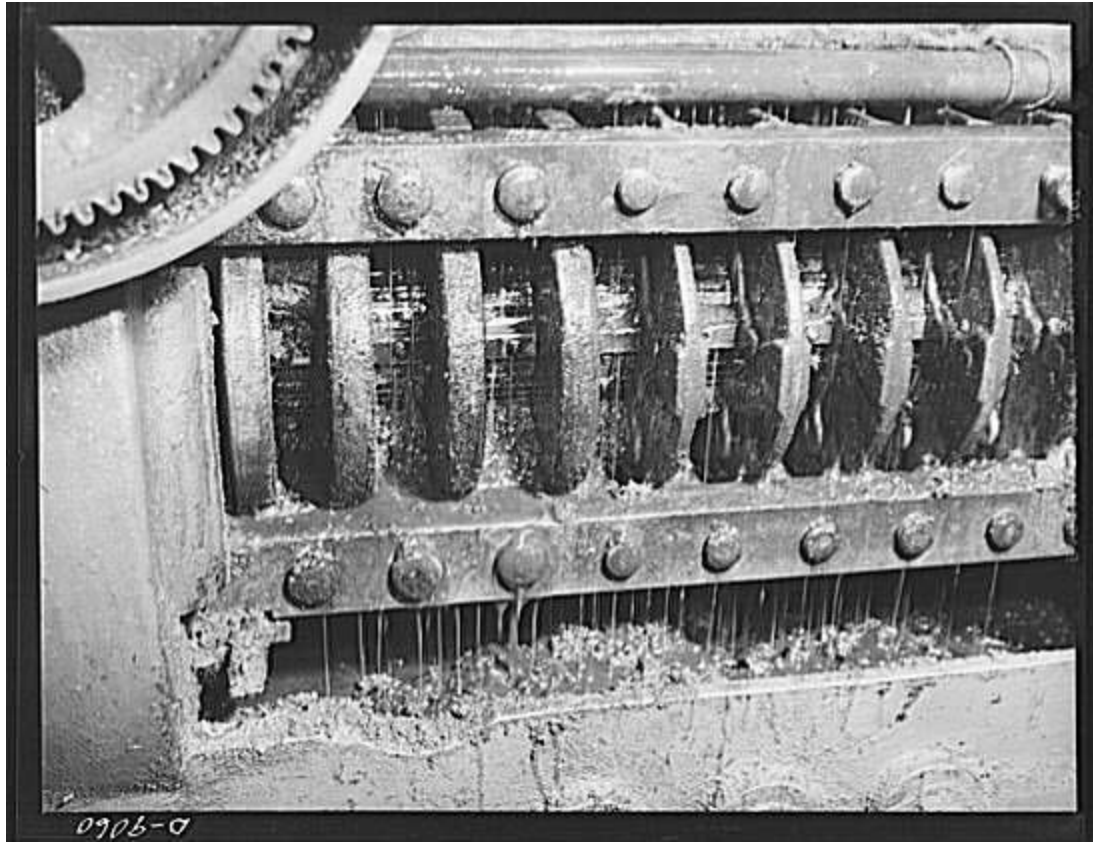
Here grease is being let out of a steam-heated digestion vessel. The ones used on Barren Island were described as being ten feet high and four feet wide. Doors on the top of each digesters were loaded from hand trucks. As the tanks were filled, the doors were locked, and steam at 100 psi was admitted from the bottom



Once the grease was extracted, waste water was drawn off. Note the tin cans inside the extractor.



After heating, the materials left in the digesters were often pressed to recover the last remaining grease. Here a worker prepares to load a press.

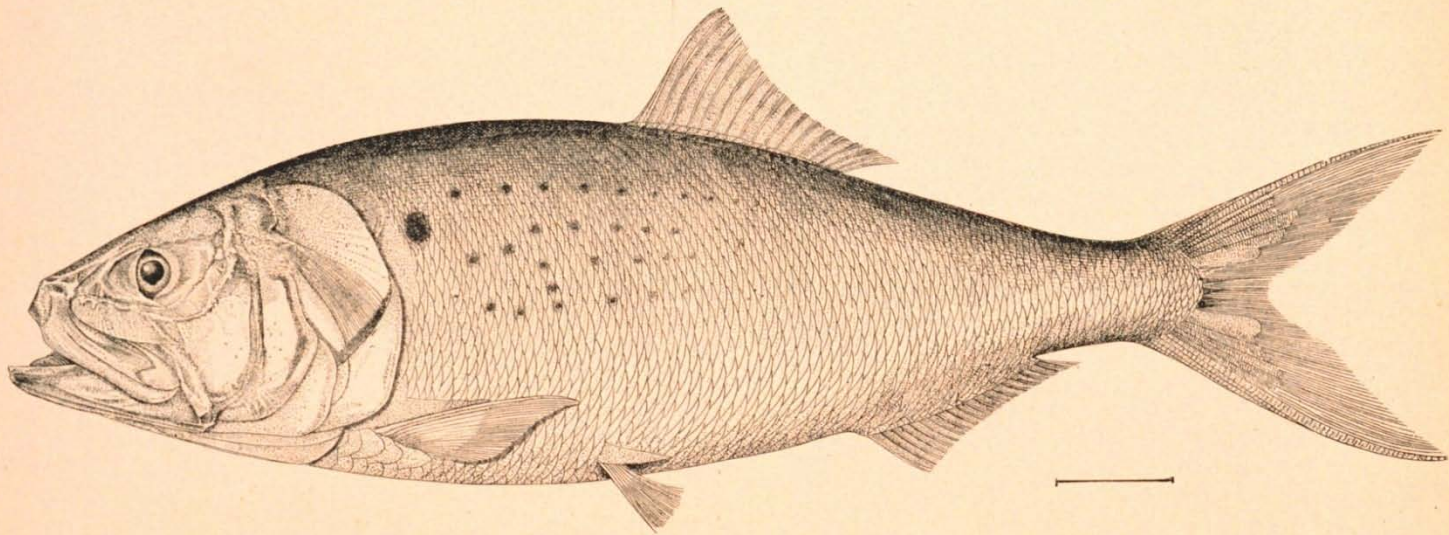


The last of the grease is recovered from the press.



The grease is loaded into tank cars for shipment to another plant where the glycerin will be extracted for manufacturing nitroglycerin for the war effort.

Menhaden as Fertilizer



THE MENHADEN OR MOSSBUNKER.

Brevoortia tyrannus (Latrobe), Goode. (p. 569.)

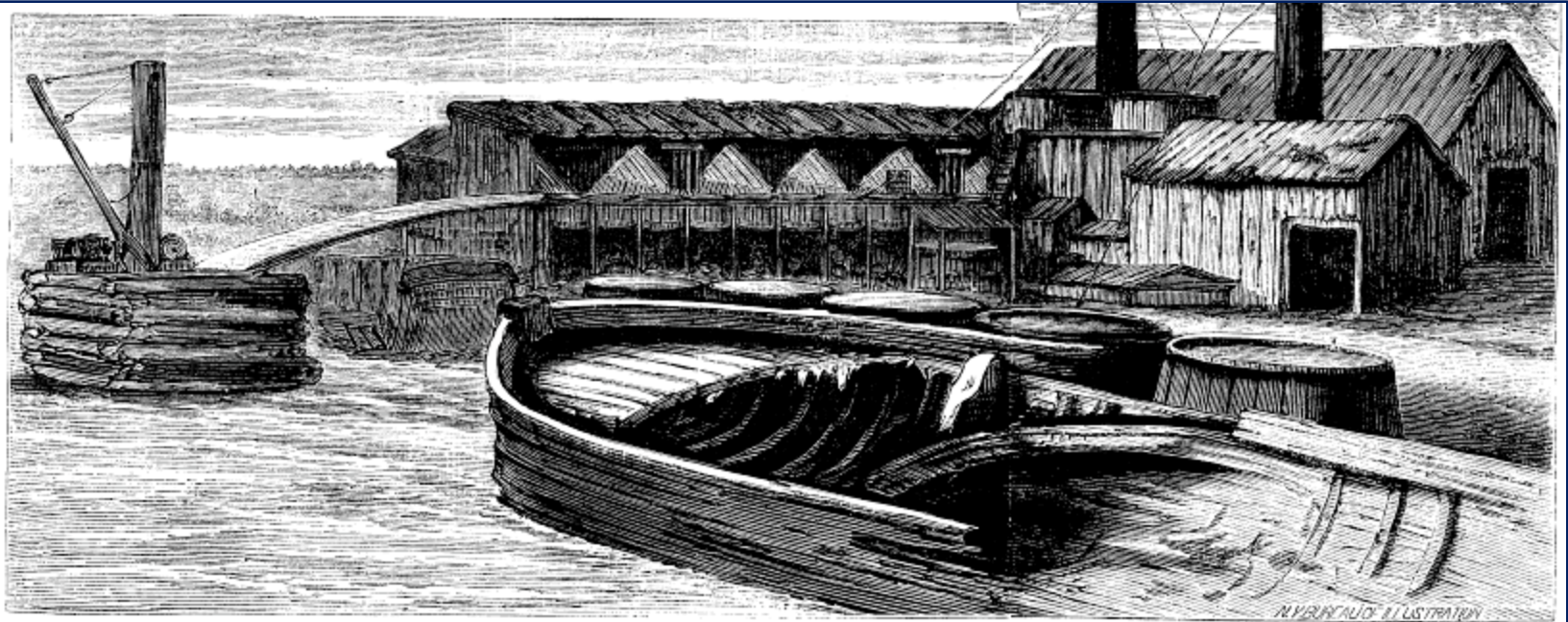
Drawing by H. L. Todd, from No. 20666, U. S. National Museum, collected at Wood's Holl, Mass., October 18, 1877, by Vinal N. Edwards.



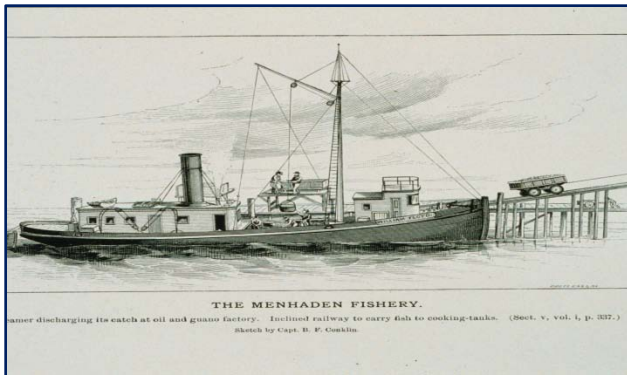
Beginning in the mid-1800s fertilizer manufacturers began supplementing their product's nitrogen content by the addition of fish scrap.

The use of the menhaden as a fertilizer had been common since the late 1700s but the difficulty of transporting the fish more than a few miles inland limited the practice to coastal areas.

In the latter half of the 1800s steam powered fishing boats known as purse seiners (shown above) harvested large schools of menhaden off the eastern coasts. The home base for several of these boats was Barren Island.



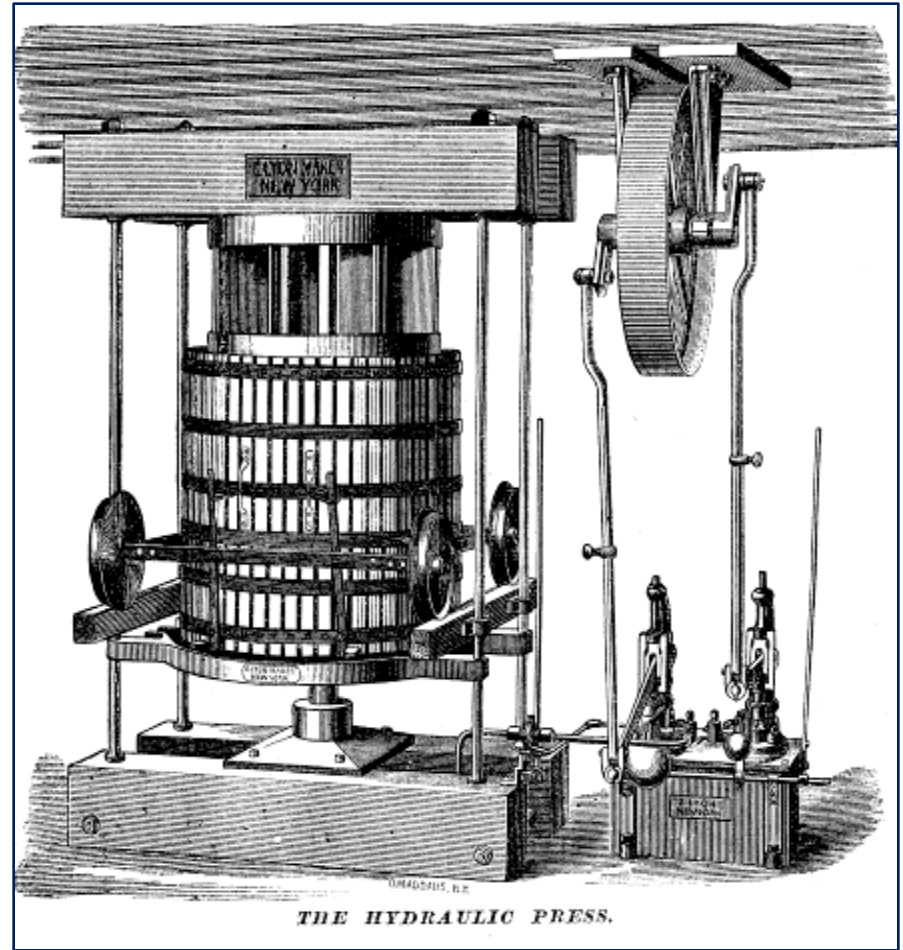
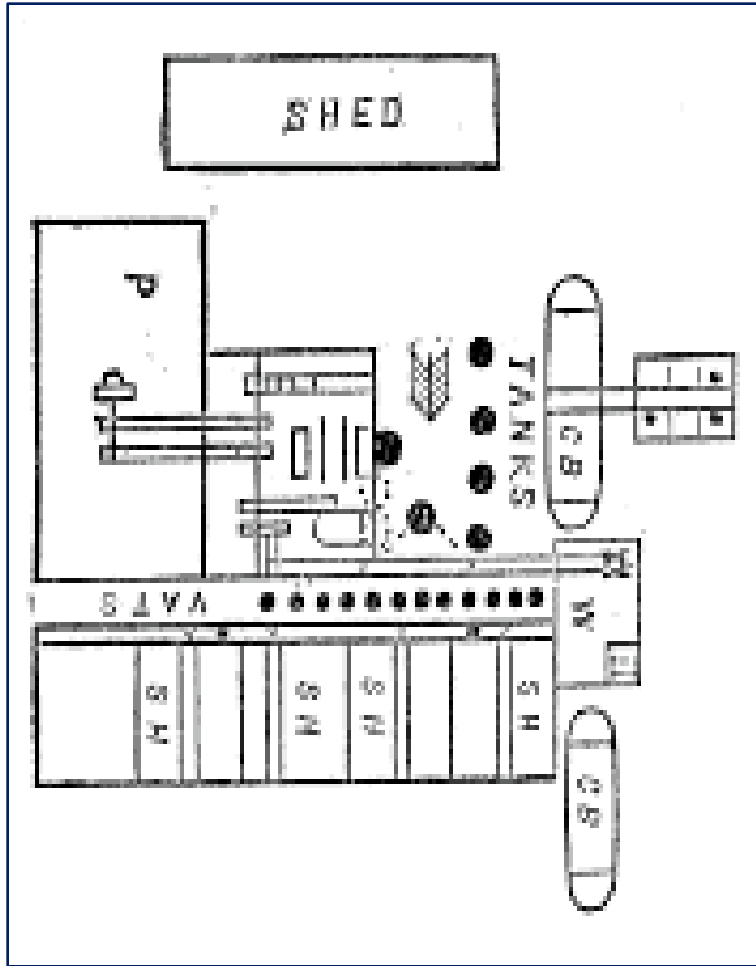
THE FISH-OIL MANUFACTORY ON BARREN ISLAND.



THE MENHADEN FISHERY.

Steamer discharging its catch at oil and guano factory. Inclined railway to carry fish to cooking-tanks. (Sect. v, vol. 1, p. 337.)
Sketch by Capt. D. F. Owskin

Fish oil factories were often crudely constructed because they were frequently forced to move on account of the smell. A plant on Barren Island (circa 1870s) is shown above and a bunker boat is shown to the left.



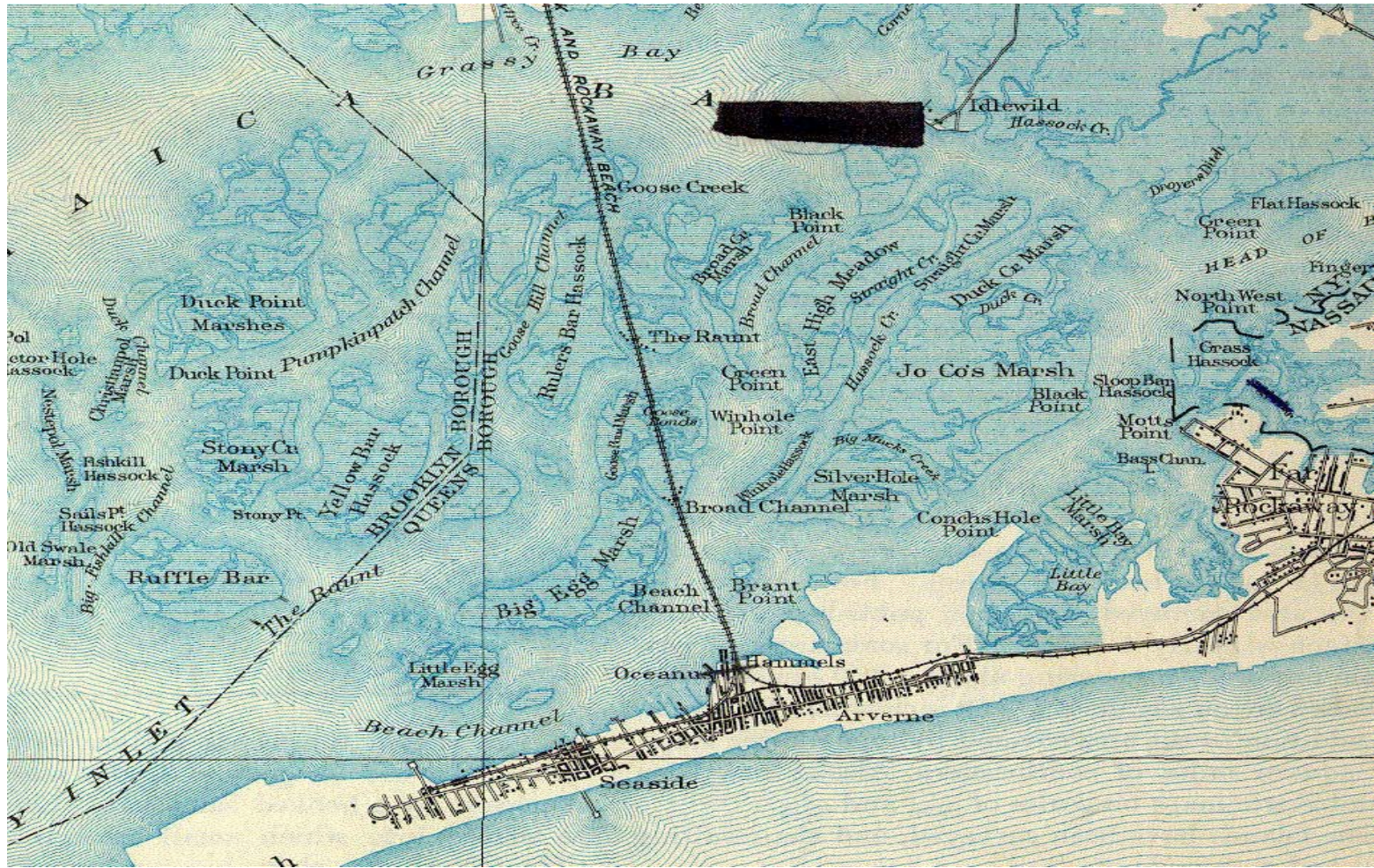
The plan of a Barren Island fish oil plant of the 1870s is shown on the left and an hydraulic fish oil press on the right.

Industries on Barren Island

- Cornell East Fertilizer 1859
- West Factory Fertilizer 1859-60 (Owned by Reynolds?)
- **Smith & Company** **Menhaden 1868-71**
- **Goodkind Brothers** **Menhaden 1872-77**
- Swift & White Fertilizer 1870-81
- **Hawkins Brothers** **Menhaden 1872-88**
- **Jones & Company** **Menhaden 1872-81**
- **Valentine Koon** **Menhaden 1872-74**
- Barren Island Manufacturing Fertilizer 1875-88
- Thomas A. Shae Fertilizer 1875-81
- E. F. Cole Fertilizer 1878-95
- Barren Island Bone Fertilizer 1884-93
- P. White & Sons Fertilizer 1884- ?
- **Barren Island Fertilizer & Oil Disposal 1890-95**
- Wimpfeimer Fertilizer ? -1890
- **Menhaden Company** **Menhaden 1881- ?**
- **N.Y. Sanitary Utilization Co.** **Disposal 1905-19**
- **Products Manufacturing** **Disposal 1919 - 34**
- Vaniderstine & Sons Hides 1910



Recreation and Population Growth



Recreation and Population Growth

- Residential and resort development around the bay was dependent on two factors, the availability of railroad transportation and the availability of dry land.



THE NARROWS TO JAMAICA RAY-CONEY ISLAND NORTH TO BROOKLYN



Note the large areas of marsh along the shores of the bay in the 1880s. Some of the filled areas and dry land are outlined in red.



A trestle over the center of the bay was built in the 1880s by the New York, Woodhaven & Rockaway Railroad. The crossing became part of New York's subway network in 1953.

Construction of the Cross Bay Boulevard in the mid-1920s accelerated development on the Rockaway Peninsula and the islands in Broad Channel. The small bungalows are typical of the early buildings on the Rockaway Peninsula.

Housing Around the Bay

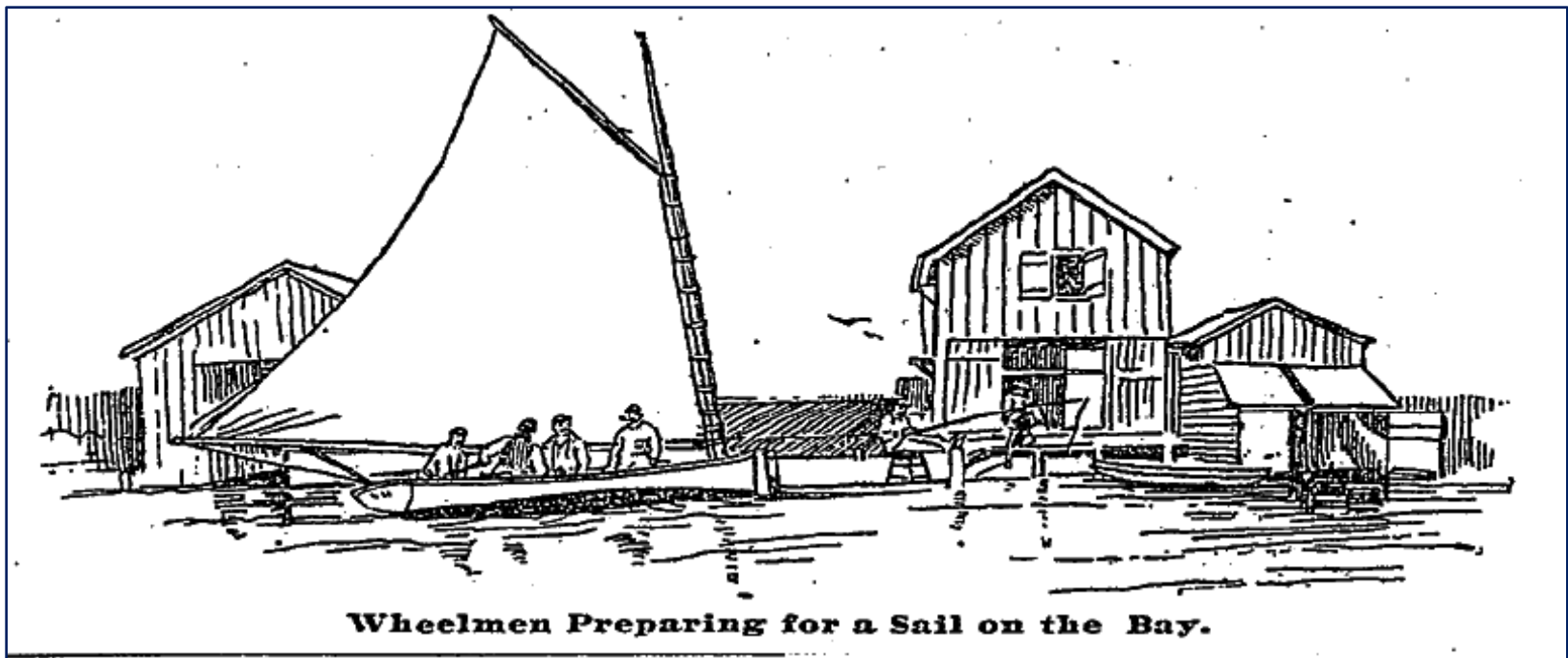
- The next two slides illustrate important points about the growth of housing around the bay.
- The next slide shows the approximate date of the earliest *large scale* housing developments in each of the neighborhoods around the bay. Note the earliest locations were also the driest.
- Landfilling was necessary to create buildable land around the bay. Ashes, dredge spoils, and garbage were all used.





Edgemere Landfill on the Rockaway Peninsula was the last landfill on the bay shore. It was closed in the 1990s. The top photograph shows how landfills were required for housing along the shores.





This illustration shows a typical Jamaica Bay clubhouse during the second half of the 1800s. The bay was home to boat clubs and yacht clubs as well as rod and gun clubs.

A description of some of these club buildings from the Raunt (an island in the bay) comes from March 7, 1904. The home of the Vigilant Yacht Club was described in as a frame building 20 by 25 feet and located near another frame building, the 20 by 40 foot boat building shop of George Schwindt and the Liberty Island Rod and Gun Club

The boats mentioned in these accounts are described as sloops, cabin catboats, open catboats, and sharpies, Catboats seem to have been the most common.

Houseboats on Jamaica Bay; the Low End of the Market

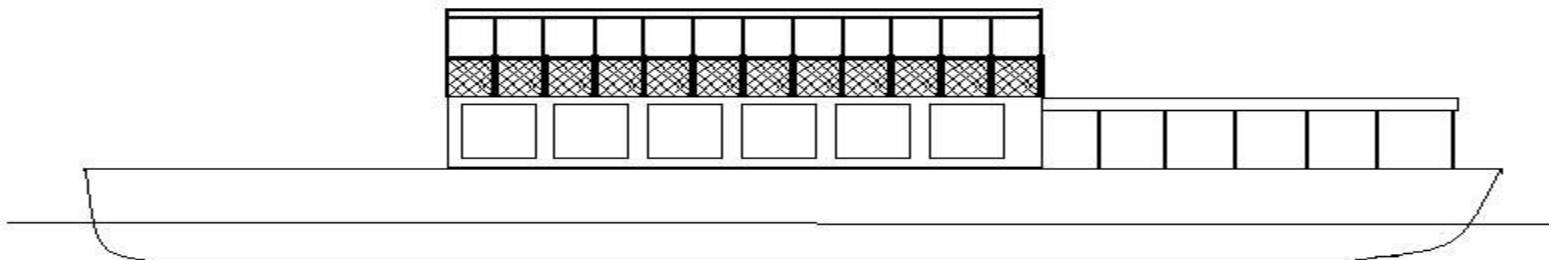


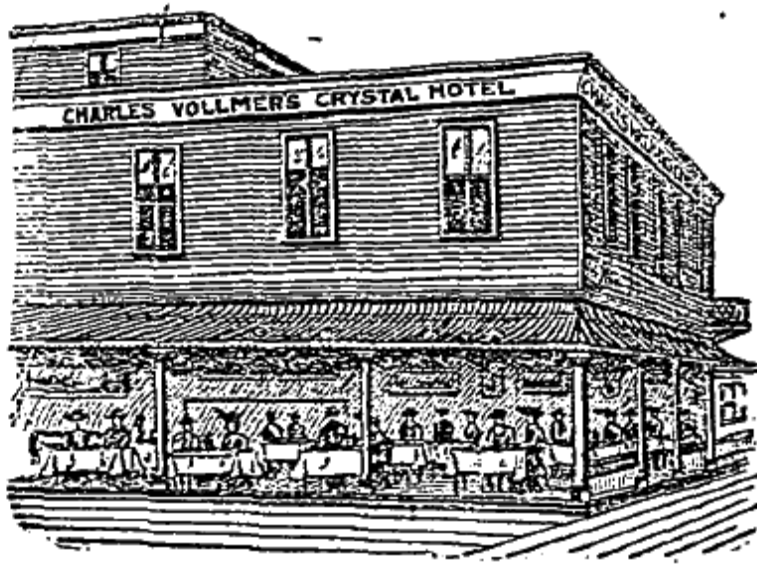
The New York Times observed in June of 1900 that; “To those who have a taste for outdoor life, yet do not care to assume the cares and expenses of a country seat, the houseboat offers particular inducements” A number of houseboats were used on Jamaica Bay.

Houseboats could be fitted with sails or engines but many were non-powered. This 1930s era photograph shows an unpowered boat typical of the low end of the market.

The Upper End of the Market

- Unpowered *Nirodha*, owned by Remington Vernon circa 1900. Remington Vernon was the developer of the Averne section of Queens.
- The \$10,000 boat was 107' long, had ten staterooms, a 16X10' reception room, baths and toilets, (hot or cold, fresh or salt water), her tanks could hold 1000 gallons of fresh water and 5 tons of ice





CRYSTAL HOTEL.

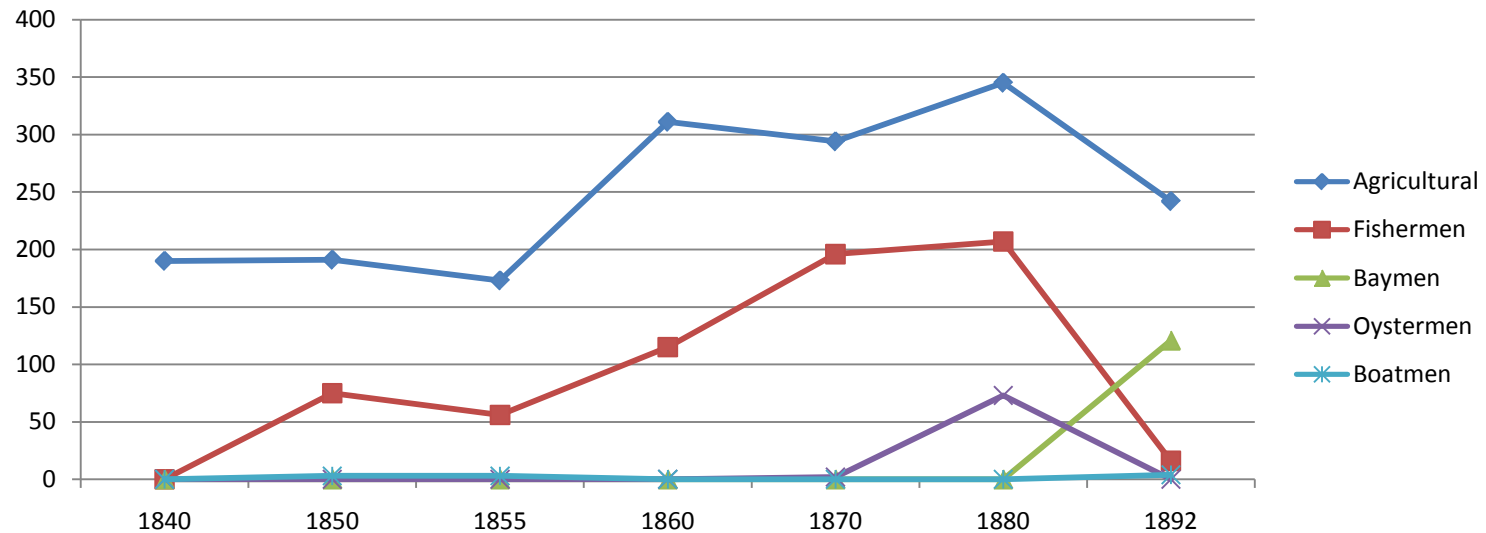
Charles Vollmer, who conducts the Crystal Hotel on Ocean Avenue, is considered one of the most popular hotel keepers at Seaside. His guests seem always to be in a happy frame of mind, which is an evidence that the genial proprietor sees to it that there is nothing lacking for the comfort and amusement of his patrons.

The hotel is one of the oldest on Rockaway Beach, and is noted for its original style of serving German dishes. The well appointed cafe is also an attraction.



Hotels and resorts grew up around Jamaica Bay and along the Rockaway Peninsula.

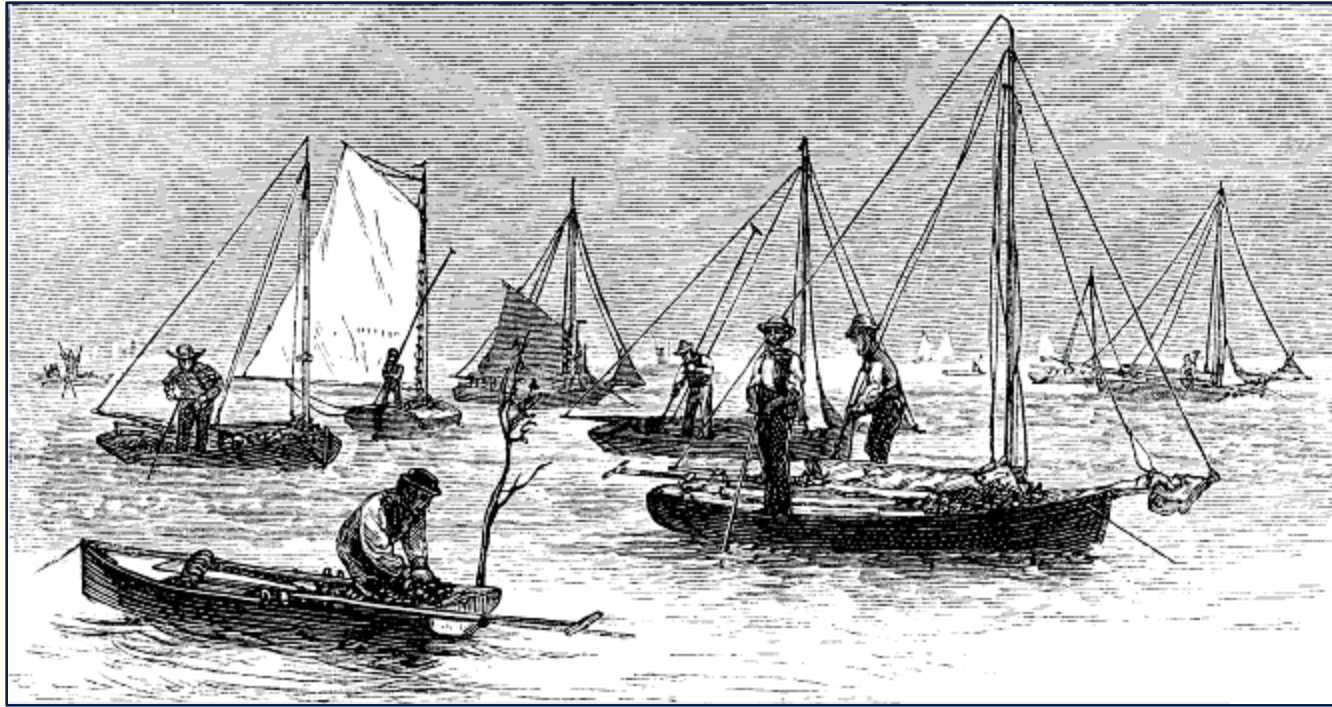
Occupations in the Town of Flatlands, Kings County



Generally speaking, before the Civil War there were almost no full time fishermen working Jamaica Bay. People who were primarily farmers fished part time.

Note that agricultural employment increased steadily throughout the 1800s.

Brooklyn's farmers were among the most intensive users of fertilizers, often using twice as much per acre as farmers in other parts of the country, this allowed them to supply cabbages and vegetables to the growing city.



There are no remaining shell middens from the aboriginal inhabitants of the area although at one time there was said to be a large shell midden near what is today east 92nd street in Brooklyn.

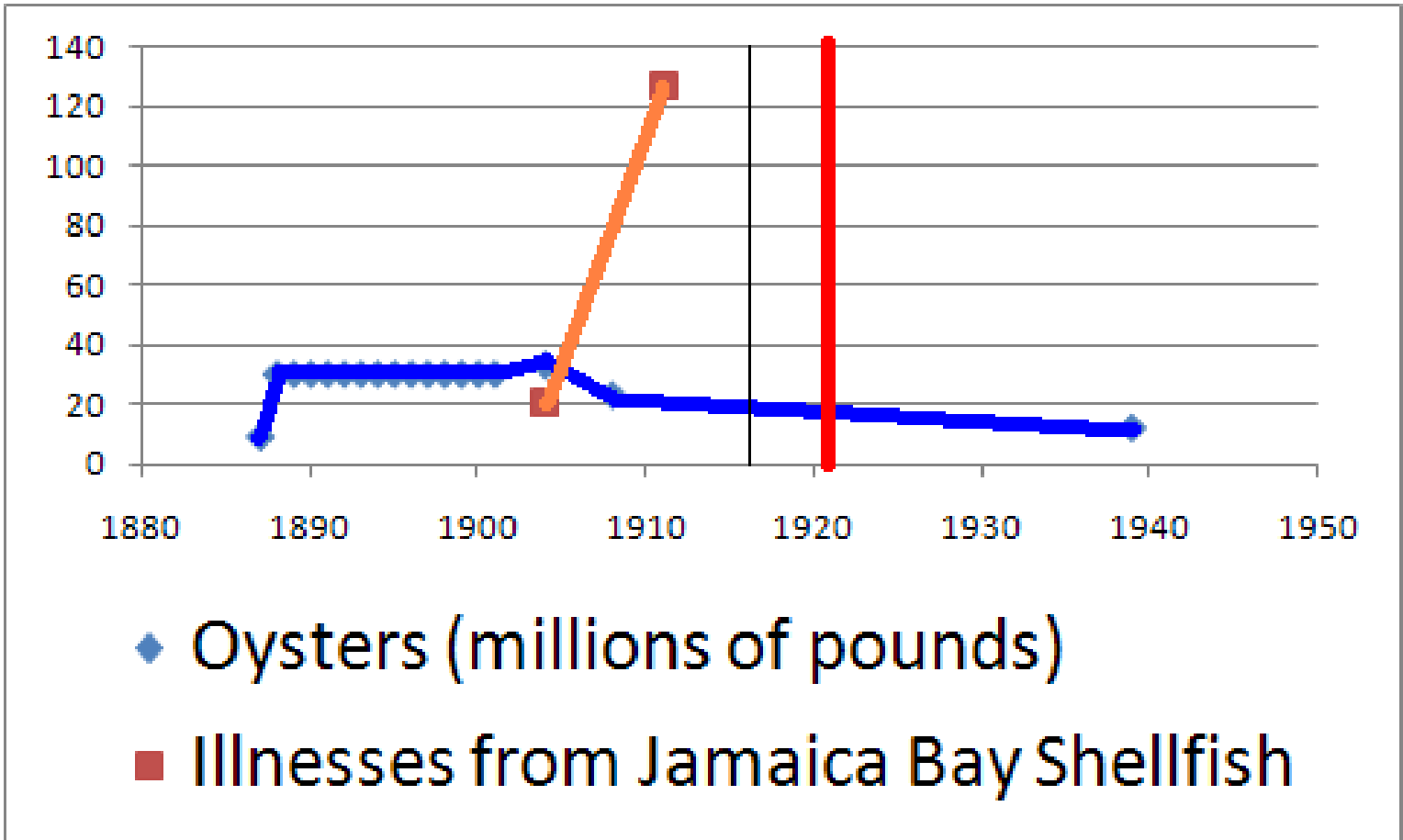
Until the end of the 1800s the Town of Jamaica claimed roughly two-thirds of the bay and the islands in it. The town also claimed the right to regulate fishing in the Bay.

The shellfishery emerged as an important industry only after the Civil War. This drawing shows typical shell fishing boats on the south shore of Long Island in the second half of the 1800s.

This 1930 era photograph shows a portion of Jamaica Bay's commercial fishing fleet. Note the freight barge used as a fish house. Barges of this type were still used for this purpose as late as 1977 by the Sciabarra Brothers Fish Company and the A.M.C. Fish Packing Company.



In 1977 there were still four commercial fishing operations working out of Jamaica Bay aside from recreational and charter fishing boats. In 1999 there were two commercial fishing operations in addition to the recreational and charter fishing boats.



50,000,000 gallons of sewage entering bay each year (black line)

Board of Health closes shellfish beds (red line)

Note: Oyster harvest is for the entire Mid-Atlantic region and Jamaica Bay followed the general trends for the region.

Jamaica Bay to be a Great World Harbor

- With the opening of the Panama Canal ship traffic to New York was expected to increase.
- At the turn of the twentieth century, wharf space was already inadequate.
- The growing city wanted to have space along its waterfronts for public recreation.
- Ships were growing larger and dock space was not.
- The city's leaders saw a new seaport in Jamaica Bay as a means of addressing these issues.

What the City Wanted in Jamaica Bay and What the City Had

- The next slide shows what the city of New York wanted and what it had.
- Top Left: The Brooklyn waterfront as it existed around the time of the First World War. The busy Bush Terminals of Brooklyn with an integrated system of docks, warehouses, railroad connections, and industrial sites was the model for a modern seaport.
- Bottom and Top right: The wharves at Mill Island, the only truly industrialized area of Jamaica Bay other than Barren Island. While the docks are fine for small freight carrying vessels, they are not for international traffic. Note the lumber boat calling at the various neighborhoods of Jamaica Bay



CHARLES CRABBE CO.

Lumber, Timber, Shingles
Mouldings and Mill Work

Deliveries made to all parts of Jamaica Bay by Power Freight Boat, making daily trips Free delivery to all parts of the Rockaway Penninsula, and F. O. B. in cars.

PLEASANT AVENUE AND RAILROAD
Telephone, 15 Hammels ROCKAWAY BEACH, N. Y.



A LIGHT DRAFT BOAT LANDING RAW MATERIAL AT A WATERFRONT FACTORY ON MILL BASIN (JAMAICA BAY). A SLIGHT EXPENDITURE WILL MAKE IT POSSIBLE TO BRING OCEAN CARGO VESSELS INTO THE HEART OF BROOKLYN AND QUEENS

To Build the New Seaport

- The next two slides show what features the new port would have had and what would have been needed to create it.
- A railroad right of way would have been 120 feet wide and connected the port to the freight railroads in New Jersey via a tunnel under the lower bay. (RED)
- A new cross-island canal would connect the port to the New York State Barge Canal via Flushing Bay (BLUE)
- Channels in the main part of the bay would have been 30' deep and the piers would have been 1000 to 1400' feet long
- Side creeks would have been dredged to a depth of 18'. Some work was completed in Mill Basin and Gerritsen Creek.
- 4,200 acres of marsh islands would have been filled and reshaped.



William Wilgus, the engineer most responsible for the construction of Grand Central Terminal, also proposed a freight subway that would encircle Manhattan Island and connect it to a new centralized railroad yard near Newark, New Jersey. Part of the plan was to have a new freight tunnel under the lower harbor and giving the new seaport a direct connection to the mainland.

Why did the Port Scheme Fail?

- Jamaica Bay in large part never developed as an industrial center because freight railroads never served the area.
- Developing the necessary freight railroad connections would have required an unprecedented level of cooperation among the railroads.



A Major Transportation Hub

- Jamaica Bay did become a major transportation hub with the construction of Idlewild Airport. Idlewild was later renamed John F. Kennedy Airport
- The Port Authority of New York and New Jersey has leased the airport from the City of New York since June 1, 1947.
- In 2007 alone, JFK had:
 1. 443,752 flights
 2. 47,716,941 passengers
 3. 1,656,431 tons of air cargo
 4. 115,363 tons of mail



Over the years there were a number of complaints about the smells coming from Barren Island.

The population in the area was increasing, tourists, hunters, fishermen, yacht clubs, and houseboaters all used Jamaica bay.

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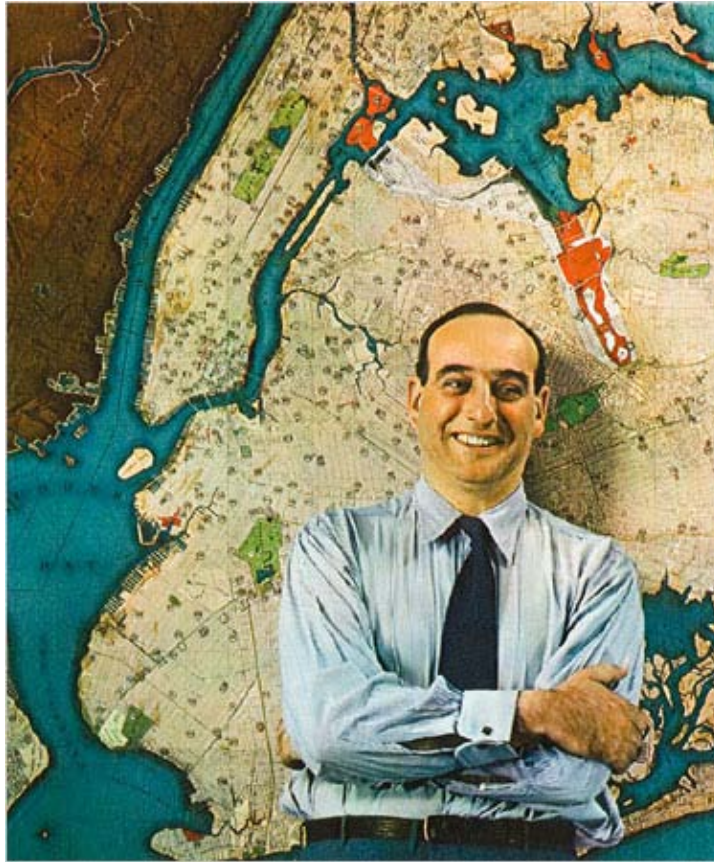
Oy! You can't smoke that filthy thing in here!

Cleaning the Air Over Jamaica Bay

- 1878 – Harper’s Magazine, first mention of stink in Jamaica Bay
- 1899 – State and city governments first attempt to close plants on Barren Island
- Governor Theodore Roosevelt signed law in 1900 intended to close down rendering plants on Barren Island but the law is struck down as unconstitutional, aside from the fact that there was no practical alternative
- 1918 – City begin to limit amounts of garbage sent to island. Declining number of horses.
- 1933 – Products Manufacturing Company surrenders last operating plant to the city.

Did Robert Moses Save the Bay?

- YES
- Closed plants on Barren Island and stopped overt dumping
- Built shore Parkway



- NO
- Housing construction continued
- True recreational development had to wait until the 1970s with the NPS

HISTORIANS DISAGREE

What Can We Learn?

- Garbage is about money - not morality.
- Financial incentives are needed to make recycling practical.
- There is no substitute for sorting.
- Waste disposal and residential areas have never been compatible.



For more information

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- Miller, Benjamin, *Fat of the land : garbage in New York : the last two hundred years*, Four Walls Eight Windows Press, 2000.
- Wines, Richard A, *Fertilizer in America : from waste recycling to resource exploitation* , Temple University Press, 1985.
- For Jamaica Bay maps, historical data, and lists of maritime resources,

<http://netdrive.montclair.edu/~olsenk/>

