

Chilling The Tropics: Frederic Tudor and the Rise and Fall of Indo-American Ice Trade in Colonial India

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Abstract: *This article explores the rise and fall of the Indo-American ice trade in India, focusing on the entrepreneurial endeavors of Frederic Tudor, a Boston based businessman who pioneered the trade in the early 19th century. Tudor's innovative approach to harvesting, storing and transporting ice from the United States to India revolutionized the way people in tropical climates accessed this precious commodity. However, the trade's success was short-lived, as technological advancements and changes in global economic conditions eventually led to its decline. This article examines the historical context, economic factors, and environmental considerations that contributed to the rise and fall of the Indo-American ice trade, shedding light on a fascinating yet overlooked chapter in the history of globalization.*

Keywords: Boston ice, Yankee, Hooghly Slush, Ice House, Banians, Manufactured ice, Globalization.

"Ice is a luxury but not a necessity in the hot lands of the world... the taste for ice, like that for the pickled olive, is a cultivated one" – Ice and Refrigeration, 1893.¹

The 19th century tropics were marked by a striking contradiction, despite sweltering temperatures, the demand of cooling was insatiable. Ice, a rare and valuable commodity in these regions, was a luxury that only a select few could afford, yet it became a highly sought after indulgence. Frederic Tudor, a pioneering entrepreneur, capitalized on this opportunity, defying conventional wisdom to establish a thriving ice trade between the United States and tropical India. Through his innovative approaches to harvesting, transporting and storage, Tudor overcame formidable logistical challenges, forging a lucrative business empire that exemplified the spirit of early globalization. This article delves into the captivating story of Frederic Tudor and the ice trade, illuminating the intersection of entrepreneurial vision, technological innovation, and global commerce.

The pursuit of comfort is likely as ancient as humanity itself. While it is

impossible to pinpoint the exact origin and use of ice by human beings, one of the first written records of ice can be found in the Holy Bible where it mentioned, 'The coolness of snow in the heat of the harvest.'² The use of cooling snow was known to various ancient civilization, including the Romans. The Moors in Spain were familiar with methods of preserving ice. As cultural exchange flourished during the Renaissance, the enjoyment of ice cream spread from Italy to Spain and eventually to Paris, where it became a popular treat among the French.³

Ice, once regarded as useless and abandoned in the USA. However, as the population expanded and industries developed, the value of ice became apparent, transforming it from a seemingly useless substance to a highly sought after resource. Notably, early American leaders were involved in the practice of ice harvesting. George Washington personally oversaw ice harvesting at Mount Vernon, while Thomas Jefferson and James Monroe had ice houses at Monticello and Ashlawn, respectively. Philadelphia, ice houses served as community refrigeration for storing meat and dairy products. Meanwhile, in the Boston area, two ponds, Fresh Pond and Spy Pond, were renowned for their fine, clear ice. William Fletcher was the first man who carried ice in Boston market for merchandise.⁴ But it was Frederic Tudor's 'bizarre idea' of ice trade beyond the local market, expanded the industry to unprecedented heights. Tudor's entrepreneurial spirit and willingness to take risks did help to popularize ice in tropical markets, creating a global industry that catered to the elite.

Before venturing into the ice trade, Frederic Tudor had explored various business opportunities, including trade in textiles, spices and other commodities. However, it was his experience as a merchant during the Napoleonic Wars that sparked his interest in the ice trade. Tudor observed that the British blockade of Europe had created a shortage of ice in Caribbean, where it was highly prized by the wealthy elite. Also, a Philadelphian, W. F. Nichols, informed him that ice 'brought a good price in the West Indies.'⁵ Recognizing an opportunity to fill this gap, Tudor began to investigate the feasibility of harvesting and exporting ice from New England to the Tropical region.

Deemed a 'slippery Speculation', the ice trade seemed doomed to fail, yet Frederic Tudor persevered. The front page of his 'Ice House Dairy' reflected his determination and motto regarding his new risky venture, 'He who gives back at the first repulse and without striking the second blow, despairs of success has never been, is not, and never will be a hero in war, love, or business.'⁶ In 1805, despite the risks, Tudor set his sights on the Caribbean island of Martinique, braving not only logistical challenges but also the treacherous treat of yellow fever that plagued the region. On February, 1806, Boston newspaper informed the reader that, 'No joke, A vessel has cleared at the Custom House for Martinique with a cargo of ice. We hope this will not prove a slippery speculation.'⁷ But the Martinique Gazette for March 1806 mentioned that,

"The Brig Favorite commanded by Captain Pearson sailed the 13th of

February and happily arrived St. Pierre, the 5th March, and is now disposing of her cargo to great advantage. It will be a remarkable epoch in the history of luxury and enterprise that on 6th of March ice creams have been eaten at Martinique probably for the first time since the settlement of the country and this too in a volcanic land lying fourteen degrees north of the equator."⁸

The first cargo amounted 130 tons of ice, but the shipper lost \$ 4500. In 1807, the second shipment of 240 tons was sent by Brig. Trident to Havana. But all these early ventures were met with loss, Ships were interfered and delayed due to complicated relation between USA and European powers. But after the close of the hostilities, Tudor was able to rejuvenate his business. He established ice house in Jamaica. In 1815, the Spanish government gave him the monopoly right to trade at Havana. In 1817, Tudor sent a consignment of ice to Charleston, South Carolina.⁹ In 1818, Frederic Tudor moving towards Southern coast to offer ice to Savannah, Georgia, where he sold \$ 30,000 worth of ice. But within nine months he became penny less due to the depression of 1818-19. During that year he sent another cargo to New Orleans.¹⁰ But ice was sold their \$ 40 per ton and Tudor faced huge loss once again. Besides, Tudor's ice harvesting success was precarious, hinging on winter's chill. The mild Massachusetts winter of 1828 left his ponds unfrozen, potentially devastating his business. Tudor once remarked in frustration, 'The frost covers the windows, the wheels creak, the boys run, winter rules, and \$ 50,000 worth of Ice floats for me upon Fresh Pond.'¹¹

Until the 1830s, Tudor's ice trade ventures were limited to shorter voyages. However, driven by ambition, he expanded his operations, embarking on more daring and enterprising endeavors that would take his business to new heights. Tudor's most audacious dream was to bring ice from New England's frozen ponds to Calcutta's sweltering streets, offering a rare respite to British colonial rulers struggling with the extreme sultry weather of India. Tudor's plan to export ice to India made him the laughing stock in Boston. Many mocked the utopian idea of shipping ice across the vast distances. But he was far sighted and he realized, 'During the late tropical weather ice represented a real power in the community; just as in winter coal is an absolute necessity.'¹²

There was a marked change in Anglo-American relationship which expedited Tudor's dream to trade with India. The Treaty of Paris in 1783 marked a turning point for American trade with British territories. Prior to this, the British East India Company had a stranglehold on trade in India, excluding American merchants. However, the treaty and subsequent diplomatic maneuvers, including those by Lord Cornwallis in 1788, praised open India markets to American traders.

For his ambitious venture to Calcutta Tudor partnered with Samuel Austin and William Rogers. Tudor harvested ice from Boston's frozen lake, especially from Walden Pond and used a practical preservation method: packing the ice in straw or sawdust to slow down the melting during the long journey.¹³ Henry

David Thoreau lived near Walden Pond and wrote about his experiences in his famous book 'Walden'. He interestingly commented that, 'Thus it appears that the sweltering inhabitants of Charleston and New Orleans, of Madras and Bombay and Calcutta, drink at my well.'¹⁴ The first cargo shipment, Tuscany carried 180 tons of 'crystal blocks of Yankee coldness', arrived at Calcutta on 6th September, 1833 after sailing for 3-4 months. Gavin Weightman mentioned that, 'Frederic's ice was a sensation in Calcutta.'¹⁵ But at least 10% of the total ice carried by Tuscany was melted. The unloading of ice from Tuscany was quite a spectacle. John Whidden described few years later in his *Old Sailing Ship Days*,

"Along the water front of the city are great mooring buoys, where the ships lie in tiers of twos and threes. The landings opposite these tiers, running up the bank from the river's edge, are called 'ghauts'. Going into moorings in the inner tier to discharge our ice, a bridge of boats was made, with a plank walk about four feet wide, from the bank to the ship, ice blocks being hoisted from the hold and lowered over the ship's side upon the heads of three coolies stationed to receive them. It was very hot, and the moment the cold water began to trickle down their black backs, they would shiver, and strike a beeline for the ice-house, never stopping until their load was off their heads."¹⁶

While Tudor's ice shipment to Calcutta created a sensation among the city's residents, it's worth noting that ice was not entirely new to Bengal. In fact, locals had previously used methods to cool themselves, and there were existing practices for harvesting and storing ice in certain process. Gladwin in 1788 translated an anonymous Mohammedan writer who wrote on Murshid Quli Khan, the nawab of Bengal. The writer made a very interesting comment that, 'He despised all the refinements of luxury, particularly in dress, and refrained from everything that is prohibited in the law. No high seasoned dishes were served up to his table, neither frozen sherberts nor creams, only plain ice.'¹⁷ This ice was collected from the Rajmehal Mountains in winter and stored for the whole year. Dr. Wise describe how the natives of Bengal produced ice by their indigenous process. Hooghly, forty miles from Calcutta was chosen as ice making tract. All the native ice consumed in Calcutta was prepared at Hooghly in between the end of November to the middle of January. Dr. Wise describe the process of this 'Hooghly Slush',

"the natives usually hollow out a piece of ground about 120 feet in length by 20 feet wide, to a depth of two feet, which they make as smooth as they can, and allow to dry by exposure to the sun. When quite dry, this hollow is covered with bundles of rice straw to the depth of a foot, or more, and then loose straw is strewed in, to a height within six inches of the surface of the adjoining land. Upon this bed of loose straw, the pans which are to contain the water to be frozen, are arranged in regular order."¹⁸

This ice carried by boat in the cold night to Calcutta. But this ice did not last throughout the year due to extreme heat. So, the Anglo-Indians took other methods to get relief. In Calcutta many households had 'bottle-Khanuh' where the wine, beer and water were cooled. Many Anglo-Indian dining room had wooden 'punkah', pulled by 'punkahburdari' staff.¹⁹

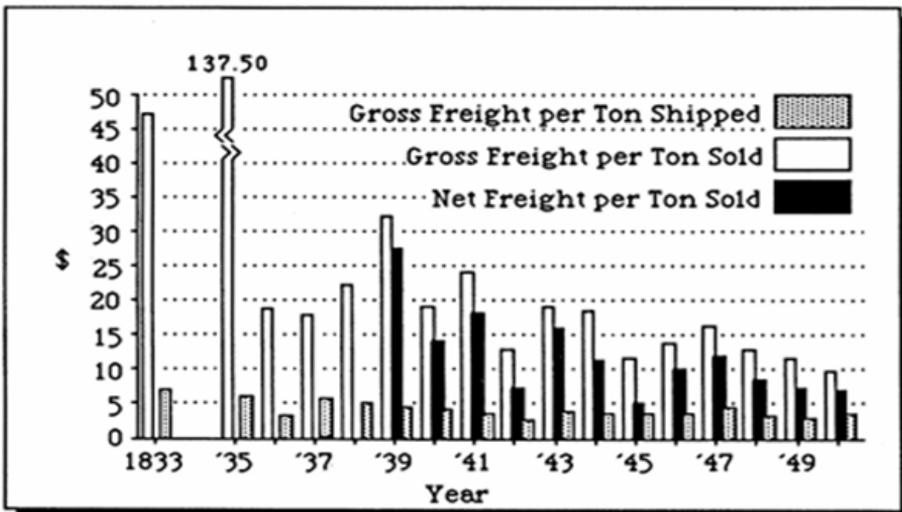
The Anglo-Indian community in Calcutta was indeed desperate for relief from the sweltering climate. Prior to Frederic Tudor's venture, ice imports were sporadic and unreliable, often dependent on the whims of various ice traders. Tudor's venture brought a measure of predictability and consistency to the ice trade, catering to the desires of the city's elite for a cooler respite from the heat. So, British Indian reactions to the advent of Tudor ice were very positive. H.E.A Cotton mentioned that, 'A block of pure ice weighing two maunds was a sight Calcutta had never seen. The sensation was great...'²⁰ Corn wrote a poem entitled '95 Degrees', published in *The Englishmen* in 1837, to commemorate Tudor ice in Calcutta-²¹

"Now kus kus tatties fail to cool
 And punkah breeze defying
 The mercury marks 95
 And we are almost frying.
 Still, some relief we may enjoy,
 For with our 'dall' and rice, Sir,
 Liquids become a luxury
 From Yankee Tudor's Ice, Sir.
 This blessing answers very well,
 For sundry other uses
 One, as a friend to you I'll tell,
 To Comfort it reduces. Send for a spon (choose a light brown)
 At Bathgate's you can get it,
 Make a large wig to fit your crown
 And with Ice water wet it."

It was decided that ice brought by Tuscany would be on sell every day after sunrise from Brightman's Ghaut, at the rate of four anna per seers. The inhabitants of Calcutta were requested to collect it as soon as possible because the cargo was not expected to last more than sixty days and further supply of ice were expected to reach at Calcutta by next June.²² It became a great concern of the Anglo-Indian community of Calcutta whenever an American ship failed to arrive on proper time. The panic reflected in a letter written by Emily Eden, the sister of Lord Auckland in June 1837,

"We are all in a horrid way about the ice, which oozed out yesterday; and no signs of an American ship; and the water we drink would make very good tea as far as warmth goes, but the Bishop had persuaded the ice managers to give him the last little scrapings of ice on the plea of our dining there."²³

Therefore, construction of ice houses became a pressing necessity to store and preserve ice, given the limited supply and the tropical climate of Calcutta. Lonouville Clark, a barrister of Supreme Court, formed the ‘American Ice Committee’ in 1836. This committee proposed the enlargement of the existing ice house in Calcutta because, ‘...without this be done, there can be no certainty of a uniform supply of throughout the year.’²⁴ The government provided land near the Ganges River to facilitate the construction of an ice house, and the people of Calcutta showed their enthusiasm for the project by donating a substantial amount of Rs. 25,000/-.²⁵ In 1837, July the committee requested the government for the remission of port duties to increase the supply of Tudor ice in Calcutta.²⁶ The removal of port charges served as a significant incentive for Tudor’s ice trade venture. The following table show the amount of this concession-



Source: David G Dickason, “The Nineteenth-Century Indo-American Ice Trade: An Hyperborean Epic”, <https://www.researchgate.net/publication/231852343> , p.65.

Calcutta became the largest importer of Boston ice. Import of ice ranged from 3000-3500 tons per year. The following table show the sale and shrinkage of Tudor ice in Calcutta from 1833-1850-

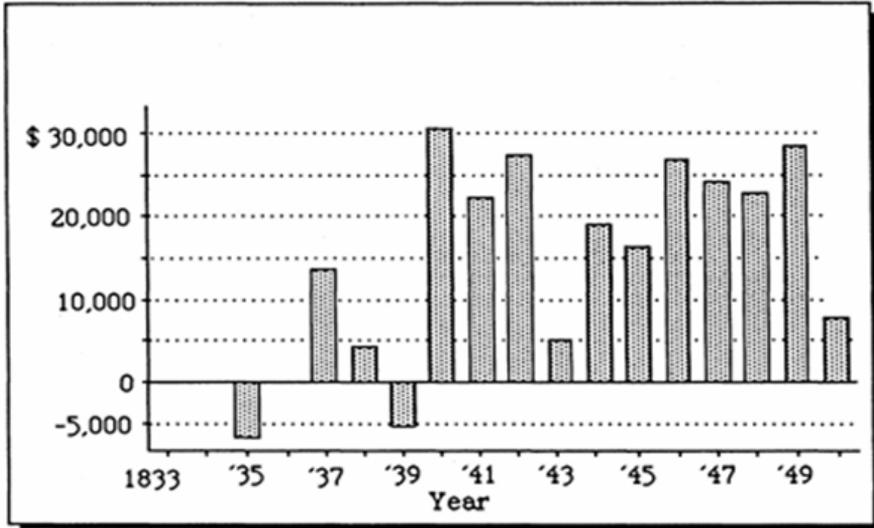
Year	Tons Shipped	Tons Landed	Tons Sold
1833	201	82	30
1834	-----	-----	-----
1835	354	62	16

1836	671	369	118
1837	910	557	297
1838	613	298	143
1839	2,536	1,257	347
1840	1,885	935	420
1841	3,203	1,687	475
1842	2,063	1,073	438
1843	1,620	797	327
1844	3,320	1,524	635
1845	2,331	1,168	697
1846	3,079	1,578	766
1847	2,883	1,463	775
1848	3,266	1,661	828
1849	3,434	1,917	806
1850	3,107	1,641	1,161

Source: Linda H. Kistler, Clairmont P. Carter, Brackston Hinchey, "Planning and control in the 19th century ice trade", *Accounting Historians Journal*, Vol. 11, Issue. 2, Spring 1984, p. 26.

After the successful venture of sending ice on Tuscany, Tudor was eager to send three more cargoes to Calcutta. But his partner Samuel Austin was not agreed with the terms and condition of the business. In December 1834, he decided to send ice on 'Apthorp' and send Marcus Bacon as his new agent, as he had already broken his ties with Roger and Austin. He wrote a letter to Governor-General Bentinck, informed him that he would like to continue the ice trade by himself as he thought, 'to conduct it, as I originally planned it, and India may have a delicious and high luxury, at a price little above the lowest necessaries of life.'²⁷ In middle of March 1835 Apthorp reached at Calcutta with 150 ton ice and Bentinck acknowledged Tudor as the sole provider of ice to Calcutta. Apthorp sailed for 163 days and when it reached at Calcutta only two tons of ice survived. In the meantime, Tudor had a loss in coffee trade but he managed a profit of \$ 40,000 from his trade in Havana, Charleston and New Orleans. But Tudor acknowledged Calcutta as his most profitable marker from where he managed to earn more than \$ 220,000 by 1850.²⁸ The following table

show the net profit gained by Tudor from Calcutta ice trade in between 1833-1849-



Source: David G Dickason, "The Nineteenth-Century Indo-American Ice Trade: An Hyperborean Epic", <https://www.researchgate.net/publication/231852343>, p-79.

The ice trade in Calcutta indeed benefited not only the Yankees but also local merchants. Local Bengali banians, like, Ramdulal De, Ramdhan Ghosh, Ramchandra Mitter, Asutosh De, Pramathanath De, Rajindra Datta, Kalidas Datta, Rajkrishna and Radhakrishna Mitra were collaborated with the early American traders in Calcutta.²⁹

Tudor extended the ice trade to Bombay and Madras. Boston Connection with Bombay took a new shape in 1840s. The Parsis were very much involved with this trade from the beginning. The first ice cargo 'Carvo', reached at Bombay around 1834 which was consigned to Jehangir Nusserwanji. But this cargo was not sent by Tudor. The first ice house in Bombay was built in 1843, from funds raised within the resident community, including several Parsis in the Fort districts, between the Scottish Church (Calvin Smith's neighbor) and Hornby House on the lower end of Marine Street opposite the government dockyard.³⁰ This ice house was rented for three decades to Tudor for a nominal rent. In 1846 after the Bombay ice house was established, Tudor send three cargoes from Boston, namely, Amity, the Woodside and another ship, the Chicora which carried respectively around 494 tons, 584 tons and 316 tons of ice

as well as barrels of cheese and apples, a box of butter. As in Calcutta there was high demand of ice among the elites of Bombay. Jamsetji Jijibhoy was the first to serve ice cream at a dinner party, as reported in Bombay Samachar. A report of an event at Manockji Cursetji Shroff's residence in 1864 mentioned the consumption of ice by the Parsi elite.³¹ Madras ice house was built in 1841 and American ship New Orleans from Boston carried ice which was sold at Rs. 1,50,000/-.³² But landing of ice in Madras was difficult as there was no harbor.

Tudor's ice became essential in Indian cities like Calcutta, Bombay and Madras, serving dual purposes- everyday comfort and medical care. J.R Martin wrote a letter to L. Clarke, the Chairman of Calcutta Ice committee on 1st August, 1837,

"...I beg to state, that ice is of the highest utility in the ordinary gastric... remittent fever of Bengal. It is also beneficially used in many forms of dyspepsia common to our climate, and, altogether, I think the regular and ample supply of ice a matter of first-rate importance to public health."³³

H.H. Goodeve wrote a letter to L. Clarke, the Chairman of Calcutta Ice committee on 20th July, 1837, where he mentioned the efficacy of the use of ice on different diseases. He wrote,

"The advantages we have enjoyed in Calcutta, by obtaining ice at all seasons of the year, must be obvious to every medical practitioner...It is unnecessary to detail the particular instances wherein ice is valuable in medical treatment, but I have no hesitation in saying, that in fever, in various forms of inflammation, in many cases of external injuries, and in the practice of midwifery, there are numerous instances, in which the life of the patient may depend upon the internal administration, other external application of this substance. In cases of impaired digestive powers also, I believe it to be highly useful, as a stomachic tonic.... I consider it to be the duty of every medical practitioner, to use all his endeavours to ensure a never-failing supply of ice in this city."³⁴

The Bombay Witness for March 19, 1846, informed 'the great benefit of ice.' It was decided that ice should be vended only for medical emergency even in Sunday.³⁵ So, ice was regarded as palliative for those suffering from fevers or stomach disorders. Therefore, it was a matter of grave concern of the authorities if the American ships failed to arrive in regular intervals. The resident, Montague Massey remembered in his Recollections of Calcutta (1918),

"... it occasionally happened that the vessels bringing the ice, owing to contrary winds or some other cause, were delayed, and then the stock ran low and we were put on short commons; if as in some cases the delay became very protracted the quantity allowed to each individual was gradually reduced to one seer per diem, and if anyone wanted more he had to produce a doctor's certificate because it was of course imperatively

necessary that sufficient should be kept in reserve for the use of the various hospitals. When the long-delayed vessel's arrival was telegraphed from Saugor [sic], great was the rejoicing of the inhabitants."³⁶

The Indian ice trade reached its climax in between 1840-1870, though a little disruption during 1857. Frederic Tudor became the 'Ice King' as he shipped at least 70,000 tons of ice around the globe. Post-civil war in 1860s-1870s nearly average 12,000 tons of ice shipped per year. The trade declined sharply in 1880s. Competition from other sources disturbed the smooth-running ice trade of Tudor. Italian entrepreneurs attempted to sell Alpine glacial ice in Calcutta. To reduce competition, Tudor cut the price of ice by 50%, which likely impacted his profit margin.³⁷ The following table show the comparative analysis of Tudor's ice sell in Calcutta during 1848-50, when it faced certain challenges -

Regular Sales At Similar Periods Previous (No Competition)			Sales During Opposition (Competition Period)		
Month/Year	Tons of Ice Sold	Rupees Received for Ice	Month/Year	Tons of Ice Sold	Rupees Received for Ice
1848 5th to 30th November	43	5146.8	1849 5th to 30th November	55	1726.14
December	35	4225.0	December	39	1235.10
1849 January	28	328.0	1850 January	41	1238.6
February	30	3558.0	February	46	1447.4
March	66	4752.0	March	93	2908.13
7 to 31 July	73	8770.9	7 to 31 July	121	3792.6
August	101	10345.4	August	143	4495.14
September	87	10724.8	September	139	4345.5
October	83	10327.12	October	114	3441.0
1850 November	51	6185.0	1850 November	79	2586.2
December	35	4225.0	December	58	1822.12
Total	632	74249.9	Total	928	29085.6

Source: Linda H. Kistler, Clairmont P. Carter, Brackston Hinchey, "Planning and control in the 19th century ice trade", *Accounting Historians Journal*, Vol-11, Issue-2, Spring 1984, p. 28

So, the supply of ice increased 47% but the profit reduced to 60% during 1848-1850 due to competition in Calcutta ice market. Tudor still manage to handle the situation in 1850s.

But from 1870s American ice trade melted rapidly and became an obscure episode of Indian history after the death of Frederic Tudor. There were many factors responsible for the end of a flourishing trade. Ecological factors significantly contributed to the decline of Tudor's ice trade. Warmer winters in Massachusetts, caused by increased fossil fuel use due to urbanization, reduced ice availability. Additionally, pollution degraded Boston's surface water quality, affecting ice harvesting, and lakes like Wenham Lake were converted into urban water reservoirs, further impacting ice production. These changes increased challenges and costs, ultimately contributing to the decline of Tudor's ice trade.³⁸

Boston's decline as a commercial hub impacted the ice trade. As New York succeeded Boston, the city's ice industry lost transportation advantages. Boston's ice now had to pay full freight rates, significantly reducing profits. This shift in commercial prominence likely contributed to the decline of the ice trade in Boston.³⁹

The advent of artificial refrigeration technology delivered a significant blow to Tudor's ice trade. Manufactured ice offered a regular supply at a lower cost, giving it cost advantage over natural ice. This technological shift likely made Tudor's model obsolete, ultimately leading to the decline of the natural ice trade. In 1878 the first ice making factory Bengal Ice Company formed under the George Henderson & Co. It was followed by Crystal Ice Company (1882) formed by Balmer Lawrie & Co. Both these company fought for cutting down the cost of ice. Later they amalgamated in Calcutta Ice Association Ltd. They became the main distributor of ice in Calcutta.⁴⁰ Manufactural ice factories established throughout India and spread every corner of India through railways.

So, Frederic Tudor's pioneering venture in the ice trade exemplifies a remarkable instance of globalization *avant la lettre*. By establishing a vast network that connected New England's frozen lakes to the sweltering cities colonial India, Tudor effectively bridged geographical and climatic divides.

More than half a century before the term 'Globalization' gained currency, Tudor's enterprise demonstrated the potential for international trade to transcend local limitations and cater to diverse markets. His innovative approach and perseverance not only created a new industry but also showcased the power of global commerce in shaping economics and cultures. Tudor's legacy serves as a testament to the enduring impact of visionary entrepreneurship on global trade and cultural exchange.

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