

#EXPLAINED

Atlantification of the Arctic

This Ocean invaded its neighbour earlier than anyone thought. A process called Atlantification is part of the reason the Arctic is warming faster than any other ocean.



Artic. Atlantic. Long ago, the two oceans existed in harmony, with warm and salty Atlantic waters gently flowing into the Arctic. The layered nature of the Arctic – sea ice on top, cool freshwater in the middle, and warm, salty water at the bottom – helped hold the boundary between the polar ocean and the warmer Atlantic.

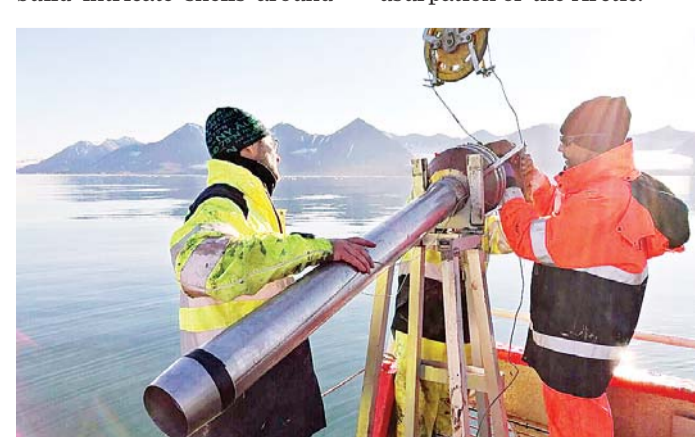
But everything changed when the larger ocean began flowing faster than the polar ocean could accommodate, weakening the distinction between the layers and transforming Arctic waters into something closer to the Atlantic. This process, called Atlantification, is part of the reason the Arctic is warming faster than any other ocean.

Satellites offer some of the clearest measurements of changes in the Arctic Ocean and sea ice. But their records only go back around 40 years, obscuring how the climate of the ocean may have changed in prior decades.

In a paper published Wednesday in the journal *Science Advances*, Tesi and colleagues were able to turn back time with yardlong sediment cores taken from the seafloor, which archived 800 years of historical changes in Arctic waters. Their analysis found Atlantification started at the beginning of the 20th century – decades before the process had been documented by satellite imagery. The Arctic has warmed by around 2 degrees Celsius since 1900. But this early Atlantification did not appear in existing historical climate models, a discrepancy the authors say may reveal gaps in those estimates.

Mohamed Ezat, a researcher at the Tromsø campus of the Arctic University of Norway and who was not involved with the research, called the findings "remarkable."

"Information on long-term past changes in Arctic Ocean hydrography are needed, and long overdue," Ezat wrote in an email.



In 2017, the researchers extracted a sediment core from the seafloor of Kongsfjorden, a glacial fjord in the east end of the Fram Strait, a gateway between the Norwegian archipelago Svalbard and Greenland, where Arctic and Atlantic waters mingle.

The researchers sliced up the core at regular intervals and dried those layers. Then came the painstaking process of sifting out and identifying the samples' foraminifera – single-celled organisms that build intricate shells around

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"O Shiva O Parvati O Durga
Though I have crossed the kala pani
And lost caste
Forgive me my trespass."

Aanchal Malhotra

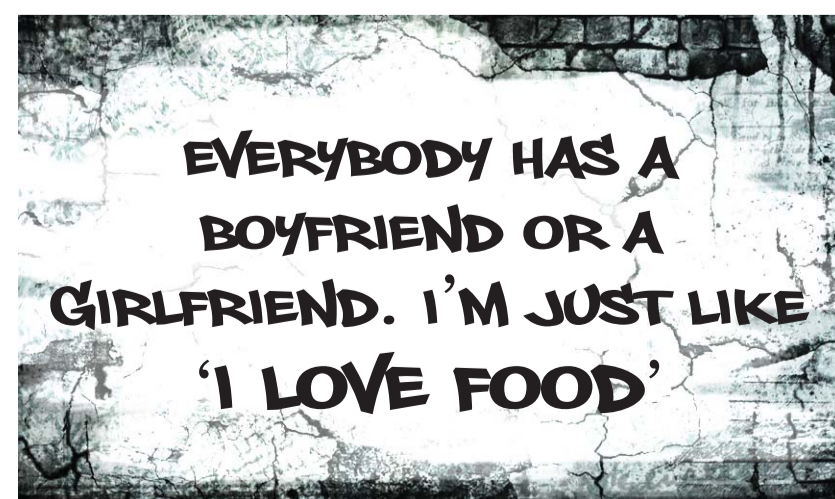
On May 15, 1879, Raj Pali and her husband, Badal Singh, disembarked the Leonidas and arrived at the foreign land that would serve as home for the rest of their lives. But they did not know this at the time. The couple, along with the 461 other passengers who had been brought across kala pani, or the black waters, from villages in Uttar Pradesh and Bihar to Fiji, were given the impression that they would serve out a five-year indentured labour contract.

Girmitiya is how they came to be known over time – the name derived from the term Girmit, a corruption of the English word, agreement. This indentured emigration began in the 19th century to meet the shortage of labour supply caused by the abolition of slavery in the British Empire in 1833. In the 37 years spanning 1879-1916, nearly 60,500 labourers from various religions and castes would be transported to Fiji islands on 42 ships making nearly 87 trips. These migrants were themselves a part of the colonial project as they travelled to the colonies in the Indian and Atlantic oceans.

Acquired by the British Crown in 1874, the colony of Fiji was expected to show economic develop-



THE WALL

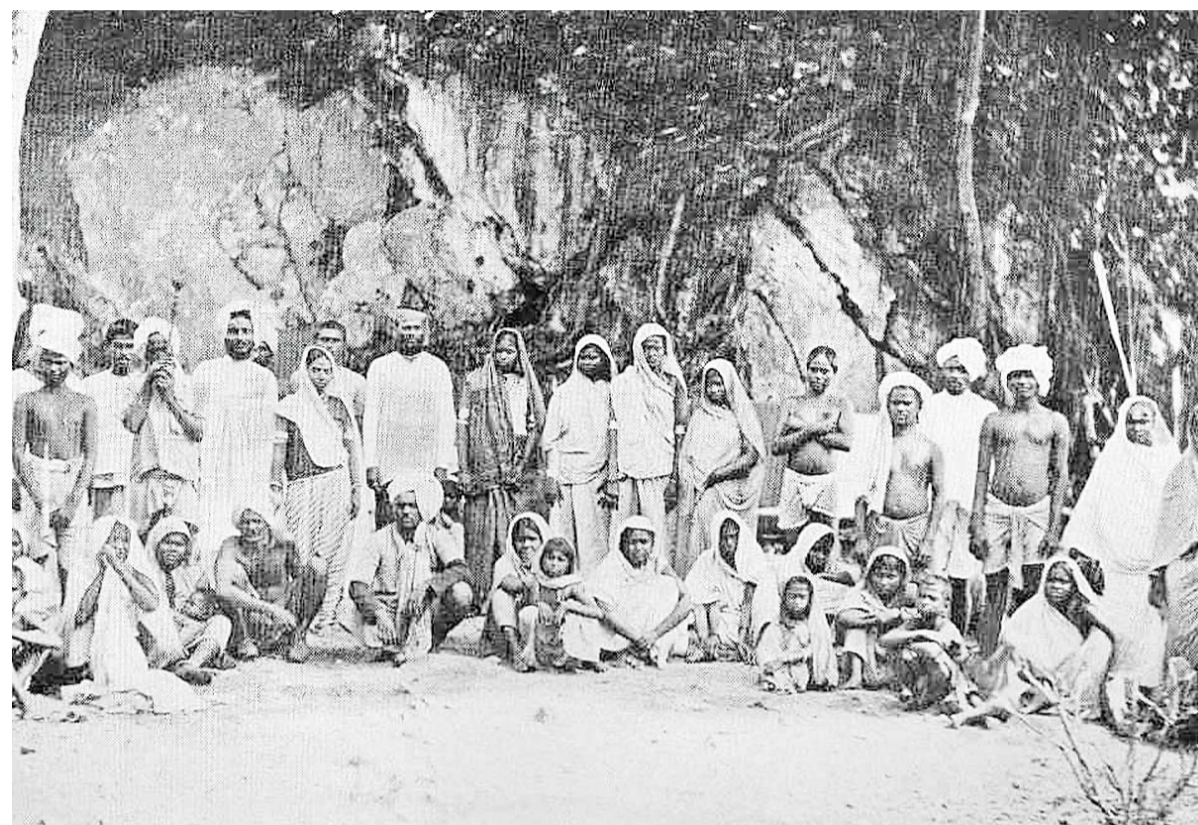


#HOME

ment and growth. But neither capital nor labour was readily available. Sir Arthur Gordon, the first substantive Governor of the island, invited the Colonial Sugar Refining Company of Australia to extend its operations to Fiji. For workforce, he turned to India, which already supplied indentured labour to other British colonies. And so it came to be that Raj Pali and her family, originally farmers in a village on the Uttar Pradesh-Nepal border, left their homes and identities in India for a life far, far away.

Over a century, more than a million Indians were shipped to British colonies, including Trinidad, to work as indentured labour. Pali's family was lured by an offer of a "better life" and a "chance to own fertile lands". Many Girmitiyas, like them, were seeking better opportunities, some were escaping from the droughts that had killed their crops, some were fleeing the unemployment resulting from their lands being snatched away, and some were kidnapped and recruited. Yet all of them knew, writes scholar Brij V Lal, "that they were going to some place they had never heard of before, but they would be back one day, long before their absence was noticed in the village."

The 'Indians' Of Fiji With Identity Crisis



The names of the ships that transported them were derived either from classical mythology, like Leonidas, Syria or Pericles, or from rivers, such as Ganges, Indus, Danube and Rhine – all especially fitted to carry human cargo over long distances. For most passengers, seeing a ship, let alone traveling on one for weeks on end, was displacing and disturbing, both to their physical and mental well-being. Oral history accounts record emigrants likening conditions on the ship to being treated like machli – fish packed tightly like sardines.

Fit to Emigrate

Hemanshi Kumar, a high-school senior and the great-granddaughter of Raj Pali, is a first-generation Indo-Fijian Australian. Four generations of her ancestors worked on sugarcane plantations in Fiji. Over Skype from Sydney, she recounts the family's expectations before moving from India 139 years ago. "It wasn't meant to be permanent, my great-grandparents were assured that they could come back," she stressed. "Each labourer was made to sign a contract, upon which an Emigration Pass would be issued."

After they had spent several years on plantations, Girmitiyas were rewarded with shillings, if they clocked in many hours or impressed the officers. This pass listed details like their name, names of father and spouse, age, caste, height, village, bodily marks and measurements, and previous occupation in India. It required the migrant's fingerprints and specified the date and ship they were to board. It verified that "the above-named individual were fit to emigrate, free from all bodily and mental disease". The very bottom of the pass bore the signature of the Surgeon Superintendent and Depot Surgeon of the particular ship.

The contract of the labourer, publicly available on Girmit.org (a resource on the history of Girmitiyas), was for a stipulated time period of five years, and subsequently extendable. If one completed the contract terms, they



could return to India after five years at their expense, or at the expense of the colonial government after 10 years. The contract also included hours and days to be worked (nine hours on every day of the week, excluding Sunday), wages paid every Saturday (adult males would be paid not less than one shilling and adult females not less than nine pence; children aged below 15 would get wages proportionate to the amount of work done), and details of food rations, dwellings and medical supplies.

Working Conditions

"But very soon," Kumar said, based on the stories she had heard, "the labourers realised that they had been brought to the colony under deception, for many facets of the contract were not upheld. For instance, my family, which was first sent to the plantations in Suva and then in Labasa, was hardly paid in the beginning and it became difficult to save and survive. Conditions were harsh. Days were long, beginning at 4 am or 5 am, [and spent] working mostly on the fields. The first generation of emigrants barely had any time for themselves."

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Kumar says their children used to be taken away and looked after by native Fijians, and their houses were inhumane dwellings called Coolie Lines. Kumar tells me that her grandmother, Prabhau Wati, used to show her – just as her grandmother, Raj Pali, had once shown her – where they would be whipped on their hands if they didn't make enough in a day.

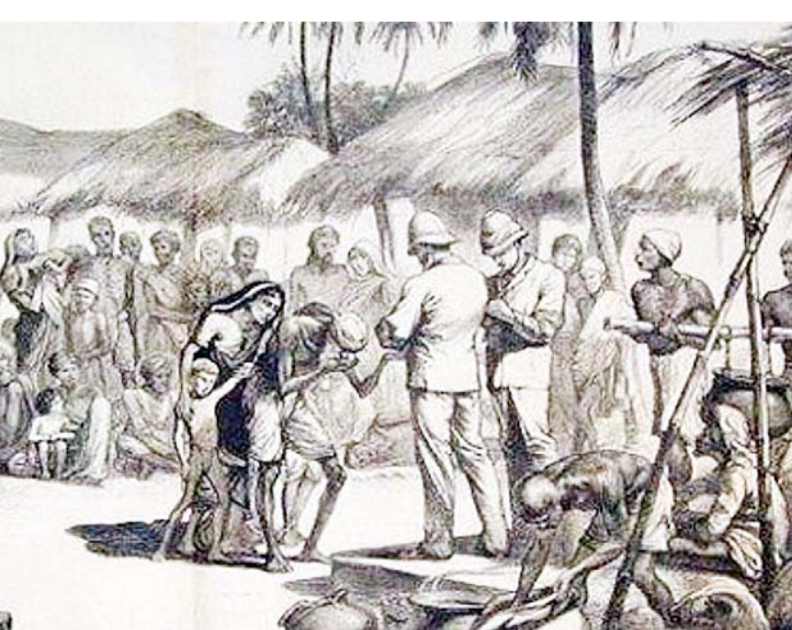


were inhumane dwellings called Coolie Lines. Kumar tells me that her grandmother, Prabhau Wati, used to show her – just as her grandmother, Raj Pali, had once shown her – where they would be whipped on their hands if they didn't make enough in a day. For the labourers, home had become a term to which there remained no assigned image. "The India they left behind was retained in the few things they could bring with them."

She shows me an aged and torn photograph of Raj Pali and tells me that it's likely it was taken at the time of the contract being issued. She extracts two necklaces, a mangalsutra, and a black thread through which is strung a gold mohur. And finally, she shows me silver shillings bearing the face of King George V. In Chalo Jahaji: On a journey through indenture in Fiji by Brij V Lal, there's a photograph of Girmitiya women in traditional finery and around their necks are similar necklaces of mohurs.

Hemanshi Kumar still possesses a mangalsutra and necklace worn by her great-grandmother Raj Pali. Some of these objects possessed by Kumar were brought with Raj Pali on her journey to Fiji, but the shillings, Kumar claims, were collected over a long period on the island. And though she is wary of the oral testimony behind these shillings, she tells me what her Aji remembers of them: "After they had been on the plantations for years, they would be rewarded from time to time, based on a certain number of hours or if they really impressed the officers. Life was often full of sadness and uncertainty on the plantations and so sometimes, women would get together and string these shillings into a necklace."

Badal Singh, Kumar's great-grandfather, was a Brahmin and when displaced from India, found the religious dislocation most traumatic. Like him, many other men carried religious scriptures like the Ramayana and the teachings of Tulsi Das. Much of the Indo-Fijian diaspora is fervently religious even today, since faith was one of the few ways in which their forebears were able to reclaim identity. Somehow, despite being what could be seen as slave labour, they were free to practice their religions on the island. Many would even get together and sing bhajans, or devotional songs, not from books, but from memory.



Sea Animals

Scientists estimate that about one million species of animals live in the ocean. But most of them – 95 percent – are invertebrates, animals that don't have a backbone, such as jellyfish and shrimp. The most common vertebrate (an animal with a backbone) on Earth is the brittle starfish, a tiny ocean fish that glows in the dark and has needlelike fangs. Some of the smallest animals on Earth can be found in the ocean. Sea animals like zooplankton are so small you can see them only with a microscope.

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When you are dislocated and have been so far removed from your people, you find refuge and solace in anything that makes it feel closer. Sometimes, when Aji braids my hair, she tells me the stories she has heard from her Aji about a land that I will never know, the India they left behind. And perhaps even that image is a dream-image, passed down and transformed by each generation who further dreams it.

An idea of Mome

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My existence is a product of colonialism," Kumar concluded, confessing that there is still much about it that she is yet to learn. "The history of the Girmitiya is silenced through the larger history of India and that is unfortunate. Our ancestors have become footnotes, reduced to mere statistics. For their descendants, home is still a complex term, fraught with identity crisis. But no forms of remembrance remain for the women and men and children who crossed the oceans to this island, unknowingly leaving behind all sense of belonging, only to retire into permanent displacement."

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(This article first appeared in Scroll.in)

#STATS

Earlier this year, Merriam-Webster added to its online entry for "vaccine" to cover all the talk of mRNA vaccines, or messenger vaccines such as those for COVID-19 developed by Pfizer-BioNTech and Moderna.

Merriam-Webster just announced its Word of the Year. For some, it is a symbol of hope and health. For others, it's a representation of a politicized issue.

But as everyone can agree, the word is everywhere and it's controversial.

"Vaccine" is Merriam-Webster's Word of the Year. The word was selected based on lookup data, notable spikes, and year-over-year increases in searches.

"This is a word that has kind of two parallel but intersecting stories: one is a medical story and one is a political story or a cultural story," said Peter Sokolowski, Merriam-Webster's editor-at-large.

This selection comes after "nomad" was chosen in 2020, which informed top searches on the site and reshaped daily language, according to the company. The Oxford English Dictionary selected "vax" as their word of the year.



"Vaccine" was selected, according to Merriam-Webster, because it is a promising medical solution which became a major source of political division. New research into vaccines led the company to revise and expand its entry for "vaccine" in May. An entry for "immune response," in which cells behave as though a disease is present to train the body to fight it, was added separate from "immunity."

"The 'messenger RNA vaccine' was new to me. I had never heard of it, and unless you were a research scientist, you probably haven't," Sokolowski said. "Therefore, the dictionary didn't even cover a definition."

On the site, lookups for "vaccine" shot up 601% over 2020, especially toward the latter part of the year when the first US shot was administered in December.

There was a 1,049% increase in site lookups this year compared to 2019. This August, lookups of "vaccine" jumped 535% due to widespread distribution in parts of the world and major stories about policy, approval and

Word of the Year 2021



vaccination rates. In August, the Pfizer vaccine received full FDA approval.

It was also the time when New York and California instituted vaccine mandates for healthcare workers, as well as national announcements about booster shots for the general public, which led to debates about inequities in vaccine distribution.

And searches have remained stable through late fall, especially with talk about the Omicron variant and the efficacy of vaccines in stopping it.

The Word 'Vaccine'

The word "vaccine" wasn't birthed in a day, or due to a single pandemic. The first known use stretches back to 1882 but refer-

ences pop up earlier related to fluid from cowpox pustules used in inoculations, Sokolowski said. It was borrowed from the New Latin "vaccina," which goes back to Latin's feminine "vaccinus," meaning "of or from a cow." The Latin for cow is "vacca," a word that might be akin to the Sanskrit "vaca," according to Merriam-Webster.

Sokolowski believes people will continue to look up the word in high numbers for perhaps years to come, as the term "vaccine" becomes a more regular feature of daily life.

Inoculation, on the other hand, dates to 1714, in one sense referring to the act of injecting an "inoculum."

INSURRECTION: Interest was driven by the deadly Jan. 6 siege on the U.S. Capitol. Arrests continue, as do congressional hearings over the attack by supporters of President Donald Trump. Some of Trump's allies have resisted subpoenas, including Steve Bannon.

INFRASTRUCTURE: President Joe Biden was able to deliver what Trump often spoke of but never achieved: A bipartisan infrastructure bill signed into law. When Biden proposed help with broadband access, eldercare and preschool, conversation changed from not only roads and bridges but "figurative infrastructure," Sokolowski said.

NOVAD: The word had its moment with the 2020 release of the film *Nomadland*. It went on to win three Oscars in April 2021, including best picture, director (Chloé Zhao) and actress (Frances McDormand). Zhao became the first woman of colour to win best director.

Other words in Merriam-Webster's Top 10: Cicada (we had an invasion), guardian (the Cleveland Indians became the Cleveland Guardians), meta (the lofty new name of Facebook's parent company), cisgender (a gender identity that corresponds to one's sex assigned at birth), woke (charged with politics and political correctness) and murraya (a tropical tree and the word that won the 2021 Scripps National Spelling Bee for 14-year-old Zaila Avant-garde).

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By Rick Kirkman & Jerry Scott

BABY BLUES



ZITS



By Jerry Scott & Jim Borgman