

Tsunami Devastates Japanese Coast

On June 15, 1896, a *tsunami* (a seismic sea wave) caused by an undersea earthquake crashed against the shores of Sanriku, Japan, killing about more than 27,000 people. At first a tsunami moves quickly in the open ocean, with wave heights or amplitudes often no more than 91 cm (36 in) high. The wave grows in height as the ocean depth decreases near the shoreline, creating waves as high as 20m (50 ft), like some of those that struck Sanriku. [In this article from the September 1896 issue of *National Geographic*, the author details the destruction caused by the tsunami along with the stories of those fortunate enough to survive it.](#)

The Recent Earthquake Wave on the Coast of Japan

By Eliza Ruhamah Scidmore

On the evening of June 15, 1896, the northeast coast of Hondo, the main island of Japan, was struck by a great earthquake wave (*tsunami*), which was more destructive of life and property than any earthquake convulsion of this century in that empire. The whole coastline of the San-Riku, the three provinces of Rikuzen, Rikuchu, and Rikuoka, from the island of Kinkwazan, 38° 20' north, northward for 175 miles, was laid waste by a great wave moving from the east and south, that varied in recorded height from 10 to 50 feet. A few survivors, who saw it advancing in the darkness, report its height as 80 to 100 feet. With a difference of but thirty minutes in time between the southern and northern points, it struck the San-Riku coast and in a trice obliterated towns and villages, killed 26,975 people out of the original population, and grievously wounded the 5,390 survivors. It washed away and wrecked 9,313 houses, stranded some 300 larger craft—steamers, schooners, and junks—and crushed or carried away 10,000 fishing boats, destroying property to the value of six million yen. Thousands of acres of arable land were turned to wastes, projecting rocks offshore were broken, overturned, or moved hundreds of yards, shallows and bars were formed, and in some localities the entire shoreline was changed.

They were all seafaring communities along this coast strip and the fisheries were the chief industry. The shipment of sea products to the great ports was the main connection with the outer world. A high mountain range bars communication with the trunk railway line of the island, and this picturesque, fiord-cut coast is so remote and so isolated that only two foreigners had been seen in the region in ten years, with the exception of the French mission priest, Father Raspail, who lost his life in the flood. With telegraph offices, instruments, and operators carried away, word came slowly to Tokyo, and with 50 to 100 miles of mountain roads between the nearest railway station and the seacoast aid was long in reaching the wretched survivors. When adequate idea of the calamity reached the capital and the cities, men-of-war, soldiers, sappers, surgeons, and nurses were quickly dispatched, and public sympathy found expression in contributions through the different newspapers, amounting to more than 250,000 yen, for the relief of the injured. The Japanese journalist and photographer were quickly on their way, and the vernacular press

soon fed the public full of horrors, yet the first to reach the scene of the disaster was an American missionary, the Rev. Rothesay Miller, who made the usual three days' trip over the mountains in less than a day and a half on his American bicycle.

There were old traditions of such earthquake waves on this coast, one of two centuries ago doing some damage, and a *tsunami* of forty years ago and a lesser one of 1892 flooding the streets of Kamaishi and driving people to upper floors and the roofs of their houses. The barometer gave no warning, no indication of any unusual conditions on June 15, and the occurrence of thirteen light earthquake shocks during the day excited no comment. Rain had fallen in the morning and afternoon, and with a temperature of 80° to 90° the damp atmosphere was very oppressive. The villagers on that remote coast adhered to the old calendar in observing their local fetes and holidays, and on that fifth day of the fifth moon had been celebrating the Girls' Festival. Rain had driven them indoors with the darkness, and nearly all were in their houses at eight o'clock, when, with a rumbling as of heavy cannonading out at sea, a roar, and the crash and crackling of timbers, they were suddenly engulfed in the swirling waters. Only a few survivors on all that length of coast saw the advancing wave, one of them telling that the water first receded some 600 yards from ghastly white sands and then the Wave stood like a black wall 80 feet in height, with phosphorescent lights gleaming along its crest. Others, hearing a distant roar, saw a dark shadow seaward and ran to high ground, crying '*Tsunami! Tsunami!*' Some who ran to the upper stories of their houses for safety were drowned, crushed, or imprisoned there, only a few breaking through the roofs or escaping after the water subsided.

Shallow water and outlying islands broke the force of the wave in some places, and in long, narrow inlets or fiords the giant roller was broken into two, three, and even six waves, that crashed upon the shore in succession. Ships and junks were carried one and two miles inland, left on hilltops, treetops, and in the midst of fields uninjured or mixed up with the ruins of houses, the rest engulfed or swept seaward. Where the wave entered a fiord or bay it bore everything along to the head of the ravine or valley and left the mass of debris in a heap at the end. Where the coast was low and faced the open ocean the wave washed in and, retreating, carried everything back with it. Many survivors, swept away by the waters, were cast ashore on outlying islands, or seized bits of wreckage and kept afloat. On the open coast the wave came and withdrew within five minutes, while in long inlets the waters boiled and surged for nearly a half hour before subsiding. The best swimmers were helpless in the first swirl of water, and nearly all the bodies recovered were frightfully battered and mutilated, rolled over and driven against rocks, struck by and crushed between timbers. The force of the wave cut down groves of large pine trees to short stumps, snapped thick granite posts of temple gates and carried the stone cross-beams 300 yards away. Many people were lost through running back to save others or to save their valuables.

One loyal schoolmaster carried the emperor's portrait to a place of safety before seeking out his own family. A half-demented soldier, retired since the late war and continually brooding on a possible attack by the enemy, became convinced that the first cannonading sound was from a hostile fleet, and, seizing his sword, ran down to the bench to meet the foe. One village officer, mistaking the sound of crashing timbers for crackling flames, ran to high ground to see where the fire was, and thus saved his life. Another village officer, living on the edge of a hill, heard the crash and slid his screens open to look upon foaming waters nearly level with his veranda. In a moment the waters disappeared, leaving a black, empty level where the populous village had been a few minutes before. Four women clung to one man, seeking to

escape to high ground, and their combined weight resisting the force of the receding wave they were all saved. The only survivors of another village were eight men who had been playing the game of 'go' in a hillside temple. Eight children floated away and left on high ground were believed to be the only survivors of one village, until one hundred people were found who had been borne across and stranded on the opposite shores of their bay. One hundred and fifty people were found cast away on one island offshore. From two large villages on one bay only thirty young men survived, hardy, muscular young fishermen and powerful swimmers, yet in other places the strongest perished, and the aged and infirm, cripples, and tiny children were miraculously preserved. The wave flooded the cells of Okachi prison and the jailers broke the bolts and let the 195 convicts free. Only two convicts attempted to escape, the others waiting in good order until marched to the high ground by their keepers. The good Père Raspail had just reached Kamaishi from his all-day walk of 50 miles over the mountains and entered his inn, when his assistant called to him from the street. The priest came to the veranda, but in an instant the water was upon him. He was seen later, swimming, but evidently was struck by timbers or swept out to sea, as his body has not been recovered. Japanese men-of-war cruised for a week off Kamaishi, recovering bodies daily. The Japanese system of census enumeration is so complete and minute that the name of every person who lost his life was soon known, and the *Official Gazette* was able to state that out of a population of 6,529 at Kamaishi 4,985 were lost and 500 injured, while 953 dwellings and 867 warehouses and other structures were destroyed or carried away, and 176 ships carried inland or swept out and lost.

The survivors were so stunned with the appalling disaster that few could do anything for themselves or others. With houses, nets, and fishing-boats carried away and the fish retreating to further and deeper waters, starvation faced them, and, the great heat continuing while so many bodies were strewn along shore and imprisoned in ruins, the atmosphere fast became poisonous. The north-coast people are opposed to cremation and insisted on earth burial, which delayed the disposal of the dead and augmented the danger of pestilence. Disinfectants were sent in quantity, and the work of recovery and burial was so pressing that soldiers were put to it after all available coolies had been impressed. The Red Cross Society, with its hospitals and nurses, had difficulty in caring for all the wounded, the greater number of whom, besides requiring surgical aid, were suffering from pneumonia and internal inflammations consequent upon their long exposure in wet clothing without shelter and from the brine, fish oil, and sand breathed in and swallowed while in the first tumult of waters. Besides the generous relief fund subscribed by the people, the government has made large assignments from its available funds and sent stores of provisions, clothing, tools, etc., to the 60,000 homeless, ruined, bereaved, and starving people of the San-Riku coast.

The wave was plainly felt two hours later on the shores of the island of Yesso, 200 miles north of the center of disturbance on the San-Riku coast, the water advancing 80 feet beyond high-tide mark on the beach at Hakodate. Eight hours later there was a great disturbance of the waters on the shores of the Bonin islands, more than 700 miles southward, the water rising three or four feet and retreating violently. Six hours later, on the shores of Kauai, the most northern of the Hawaiian islands, distant 3,390 miles, the waters receded violently and washed on shore in a wave some inches above the normal height.

The plainest inference has been that the great wave was the result of an eruption, explosion, or other disturbance in the bed of the sea, 500 or 600 miles off the San-Riku coast. The most popular theory is that it resulted from the caving-in of some

part of the wall or bed of the great 'Tuscarora Deep,' one of the greatest depressions of the ocean bed in the world, discovered in 1874 by the present Rear-Admiral Belknap. U. S. N., while in command of the U. S. S. *Tuscarora*, engaged in deep-sea surveys.

The 'Tuscarora Deep' is nearly five and one-third statute miles in depth, being exceeded, so far as known, only by the still more profound depths discovered last year in the South Pacific by Commander A. F. Balfour, of the British Navy.

That disturbances were taking place in this tremendous abyss was again suggested at six o'clock on the morning of July 4, when the Canadian Pacific Railway Company's mail steamer *Empress of Japan*, sailing directly over it in a smooth sea, was shaken as if a propeller blade had been lost or the ship had struck an obstruction. Every one was roused by the peculiar shock, but no visible explanation was furnished. The destructive wave and this incident together should stimulate further investigation of this dangerous, bottomless pit of the Pacific ocean, which owes its discovery to United States explorers by deep-sea soundings.

Source: Scidmore, Eliza Ruhamah. "The Recent Earthquake Wave on the Coast of Japan." *National Geographic*, September 1896.