Selections from NDL collections

Records of earthquake disasters in the NDL Digital Collections: Archiving earthquake disasters (1)

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1. Introduction

The Japanese people have lived with earthquakes for many centuries. In ancient times, earthquakes were called *nai*, and the expression *naifuru* meant "the earth is quaking." With the introduction of writing to Japan, people began recording the many earthquakes that took place, and one of the oldest of these occurred on August 23, 416, and was recorded in *Nihon shoki*, a book of classical Japanese history. In this article, we present some of the Japanese records of earthquake disasters available in the NDL Digital Collections.

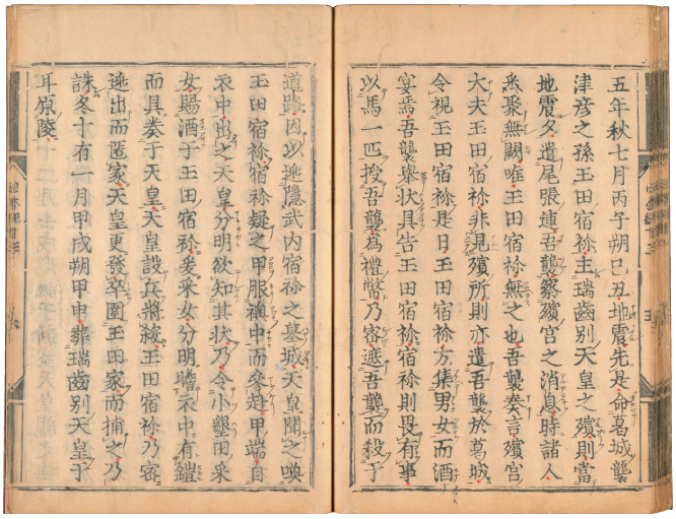


Image 1: *Nihon shoki* (volume 13) [NDL Call No. WA7-120]

Image 2: *Nihon Sandai Jitsuroku* (volume 16) [NDL Call No. ろ-20] A huge earthquake and giant tsunami hit Mutsu Province (the northern part of Japan) on the night of July 13, 869, caused great damage.

2. Earthquakes in the end of the Edo period and *Namazu-e*

Although there are many records of earthquakes in Japan since ancient times, it was quite a while before systematic scientific research began. Starting in the 17th century, the Japanese published any number of books which purported to explain earthquakes and their causes based on the classical Chinese theory of yin and yang or the

theories of Aristotle, which were introduced from Europe in the 16th century and later. The development of physics and chemistry in Europe led to new theories about the causes of earthquakes, including things that trigger explosions such as underground heat, electricity, or sulfur. These ideas reached Japan in the 19th century. Just as these new theories were becoming widely accepted, a great earthquake with its epicenter in the Edo area (present-day Tokyo) took place on the night of November 11, 1855. It was called the *Ansei Edo Jishin* (*jishin* means “earthquake” in Japanese) and had a Richter magnitude of approximately 7.0. Following on the heels of the *Ansei Tokai Jishin* and the *Ansei Nankai Jishin*, both of which were M8.4 and had taken place the previous year, the *Ansei Edo Jishin* prompted interest in earthquakes and was the impetus for a variety of theories on earthquakes and disaster prevention countermeasures.

In Japanese, the word *namazu* means catfish. *Namazu-e* are woodprints on single sheets of paper that were popular in the aftermath of the *Ansei Edo Jishin*. They illustrated the superstition held by many people of that time that earthquakes were caused by a huge catfish thrashing about underground. Even though the *Ansei Edo Jishin* was a tragic disaster that resulted in the deaths of nearly 7,000 people and the destruction of some 14,000 homes, these huge catfish were often humorously depicted as a penalty promulgated by the gods on the people in order to reform society. Collections of *namazu-e* such as the *Ansei Daijishin-e* and the *Edo Daijishin no ezu* are available in the NDL Digital Collections.

Image 3: *Namazu Taiji* included in *Ansei Daijishin-e* [NDL Call No. 寄別 2-9-1-13]
Earthquake victims are punishing a catfish laid on a cutting board with knives and mallets in their hands.

Image 4: *Ebisuten Moushiwake no ki* included in *Edo Daijishin no ezu* [NDL Call No. 寄別 2-9-1-13]
Traditionally, the 10th month of the lunar calendar is when Japanese gods leave their shrines to congregate at Izumo Taisha Shrine. This picture shows *Ebisu*, a Japanese god who stays at his shrine during the 10th month, visiting *Kashima Daimyojin* with a catfish, thereby explaining how the quake occurred.

Image 5: *Zokugo no tane* part 1-4 [Call No. 849-55]
This is the picture of the fire broke out after the *Zenkoji Jishin* on May 8, 1847.

3. Establishment of the Seismological Society of Japan and the spread of seismological observation networks

The Seismological Society of Japan was founded in the aftermath of the *Yokohama Jishin*, which took place in February, 1880. Foreign teachers and engineers stationed in Tokyo, such as G. F. Verbeck (1830-1898), John Milne (1850-1913), J. A. Ewing (1855-1935) and T. Gray (1850-1908), were instrumental in establishing the Society. Geological research on the internal structure of the Earth using seismic data was already being conducted at that time in Europe. In Japan, where earthquakes were common, research focused on the natural phenomenon of the earthquake itself, and the foreign experts hired to conduct these studies created the rudiments of seismology, which includes the discovery of the two kinds of seismic waves, known nowadays as Primary waves and Secondary waves, as well as the development of high-precision seismometers.

1875 saw the establishment of the Home Ministry's Tokyo Meteorological Observatory, predecessor of Japan's present-day Meteorological Agency, and in 1887 was renamed the Central Meteorological Observatory. About this time, the Government began to install seismometers at meteorological stations across Japan to ensure continuous observation of data that would be useful in the scientific study of earthquakes. This seismographic network eventually spread all over Japan and has since contributed greatly to seismological research in Japan.

At the same time, after returning to England, John Milne formed a network for collecting and analyzing earthquake observation data, which led to the foundation of the International Seismological Summary in 1918.

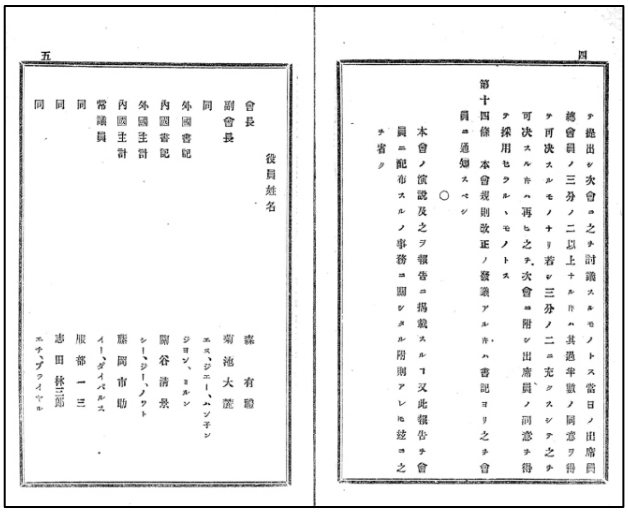


Image 6: *Nihon jishin gakkai kisoku: Fu kaiin seimei shukusho.* June 1886, Nihon Jishin Gakkai [1886] [NDL Call No. 特 46-384] A member list of the Seismological Society of Japan six years after its founding. The names of many of the non-Japanese living in Japan at this time can be found on this list.

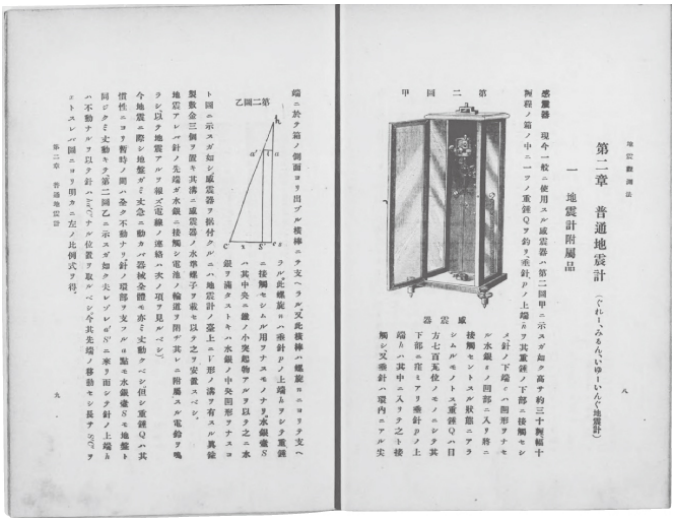
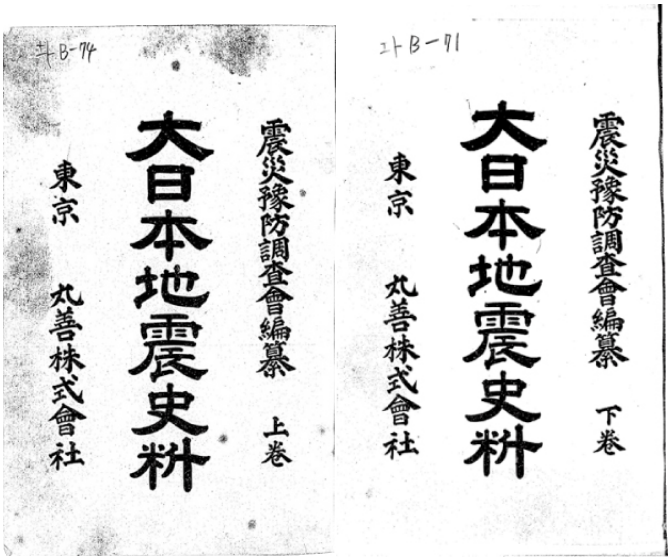


Image 7: *Jishin kansokuho*, Edited and published by Chuo Kishodai, 1915 [NDL Call No. 351-100]

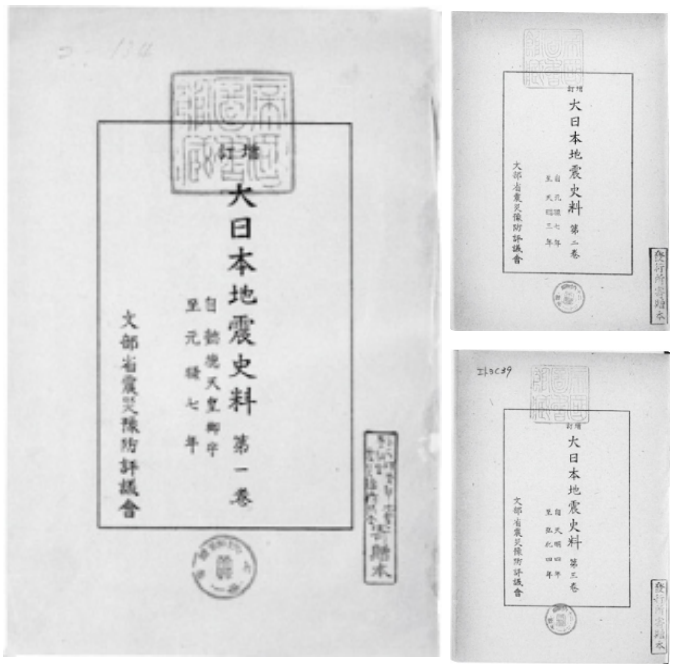
4. Nobi Jishin and establishment of the Earthquake Investigation Committee

In October, 1891, a powerful earthquake of Richter magnitude 8.0 struck the Nobi region, causing severe damage. Bunjiro Koto (1856-1935), who investigated the Neodani Fault, which appeared on the surface of the earth after the quake, published a pioneering thesis on fault-triggered earthquakes based on the theories of an Australian geologist, who considered landslides to be one cause of earthquakes.

Meanwhile, as a result of the significant damage caused by the *Nobi Jishin*, the Japanese government organized the Earthquake Investigation Committee in 1892 on the basis of a proposal by Dairoku Kikuchi (1855-1917), a member of the Seismological Society of Japan as well as President of the College of Science, Imperial University at the time. In addition to Kiyokage Sekiya (1855-1896), Bunjiro Koto, Hantaro Nagaoka (1865-1950), and Aikitsu Tanakadate (1856-1952), those who had already contributed to seismology, Kingo Tatsuno (1854-1919), an archeologist, and others were joined to conduct seismic historical and statistical research, aseismic structure research and so on. Around this same time, the Seismological Society of Japan gradually lost its initial momentum due to the departure from Japan of many of its foreign members, and was eventually dissolved as the Earhquake Investigation Committee came to dominate.



Images 8 and 9: *Dai nihon jishin shiryo*
Edited by Shinsai Yobo Chosakai, Maruzen, 1904 [NDL Call No. 453.2-Si498d] This is a collective record of the earthquakes and the tsunamis in Japan from 416 to 1865, which has been utilized to study temporal and geographical distributions since before World War II.
*Available on the Internet:



Images 10, 11 and 12: Volume 1 to 3 of *Dai nihon jishin shiryo: Zotei*, an enlarged edition of *Dai nihon jishin shiryo* edited by Kinkichi Musha (1891-1962) during the Showa Era, is also available in the NDL Digital Collections. [NDL Call No. 14.4-115 イ]
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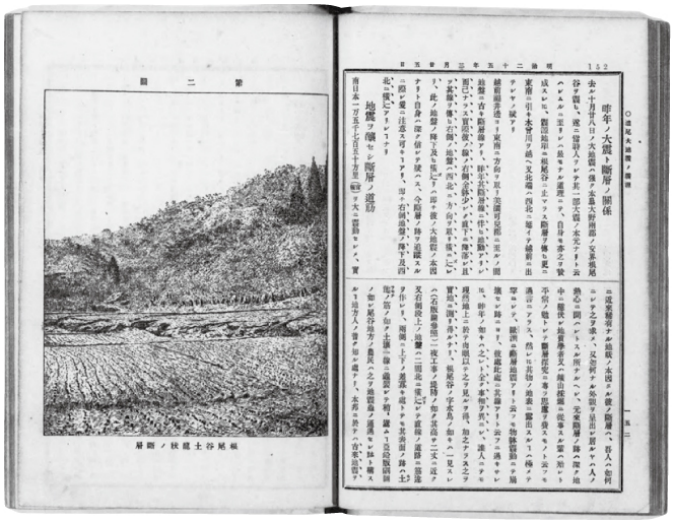

Image 13: *Nobi Daijishin no Shingen* Bunjiro Koto [NDL Call No. 雑 55-24] pp.147-158, vol.9, no. 126 (1892.3) *Toyo gakugei zasshi*
*Available only at the NDL

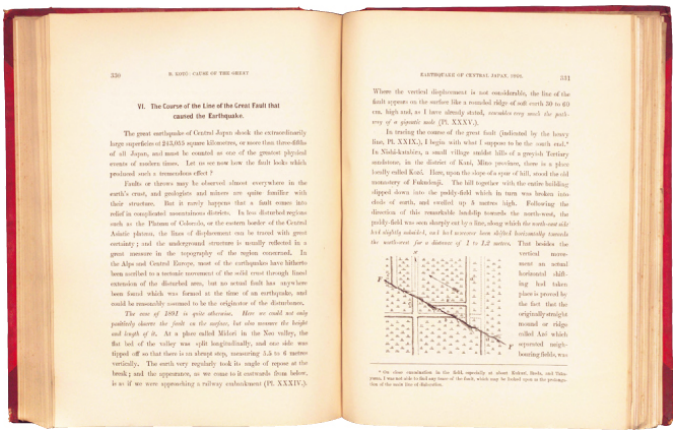

Image 14: Koto, B. “On the cause of the great earthquake in central Japan,” 1891. *The Journal of the College of Science*, Imperial University, Japan, vol.5 (1893), pp.295-353 [NDL Call No. 衆 0563-0008]
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