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Meteorites in Japan

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An overview of meteorite falls in Japan is provided, and a few specific meteorites are highlighted.

1 Introduction

All known meteorite falls in Japan are listed in Table 1, grouped in stony, iron, and stony iron meteorites.

Some interesting meteorite falls are discussed in more detail next, in chronological order.

2 Noogata meteorite (fall 861 May 9)

Found on the day after the fall day, the meteorite was put into a paulownia box and has been stored in a Shinto shrine as a sacred object. This stone meteorite is an L6 chondrite (Figure 1).

In 1981, a radio talk about this legend was a trigger to focus public interests on this meteorite. A meteor scientist proved it to be the oldest meteorite found in the world of which the fall was witnessed.

Nowadays, a meteorite parade is held around this shrine every five year, in fall.



Figure 1 – Noogata meteorite (fall 861 May 9).

3 Shirahagi meteorite (found 1890)

This meteorite was found by a person living in the area. The meteorite had been used as the weight of a Japanese pickle press or *tsukemonoki*. After several years, it was bought by Takeaki Enomoto, who was the agriculture and commerce minister at that time. Fascinated by this “iron from the stars”, he commissioned a sword smith to make four swords from circa 4 kg of iron cut off the meteorite. The longest sword one was presented to the

Crown Prince of Japan. Unfortunately, The meteorite was too soft to make a real Japanese sword.

Another partial piece of this meteorite was found in 1890, a few kilometer from where the first fragment was found. This iron meteorite is a fine octahedrite of group IVA (Figure 2).



Figure 2 – Shirahagi meteorite (fall unknown and found 1890).

4 Kuga (found 1938 Jan 10)

The Kuga meteorite was found by farmers in a rice field on a mountainside. Initially, they misunderstood its nature and thought it was a platinum nugget. Soon, however, it was identified an iron meteorite. They hoped to sell the meteorite and use the money earned to build a solid bridge on the only road from their quite small village to the nearest town.

In 1963, the National Science Museum decided to buy this medium octahedrite of group IIIB rather than mammoth bones from the former Soviet Union. Finally, the farmers’ dream came true, 25 years after that the meteorite was found.

5 Mihogaseki (fall 1992 Dec 20)

This meteorite fell on a home and pierced the roof and two floors. The day after the fall, it was found and a mineralogical analysis was possible just hours after its fall. The local government used the meteorite as a valuable source of sightseeing of this region, as a mascot for toys and “meteorite sweets”, etc. There are also a dance and a song.

The value of this meteorite was estimated to be about 3 million Euro! This stone meteorite is an L6 chondrite (Figure 3).

Table 1 – List of meteorites in Japan (stone)

No.	Name	Date	Location	Latitude	Longitude	Mass	Pieces	Note
Stone meteorites								
1.	Noogata	861 May 19	Fukuoka	33°44' N	130°45' E	0.472 kg	1	Fall
2.	Minamino	1632 Sep 27	Nagoya	35°05' N	136°56' E	1.04 kg	1	Fall
3.	Sasagase	1688 Feb 13	Shizuoka	34°43' N	137°47' E	0.695 kg	1	Fall
4.	Ogi	1741 Jul 08	Saga	33°18' N	130°12' E	14.36 kg	4	Fall
5.	Hachi-ohji	1817 Dec 29	Tokyo	35°39' N	139°20' E	Unknown	Many	Fall
6.	Yonouzu	1837 Jul 13	Niigata	37°41' N	138°54' E	31.65 kg	1	Fall
7.	Kesen	1850 Jun 12	Iwate	38°59' N	141°37' E	135 kg	1	Fall
8.	Sone	1866 Jun 07	Kyoto	35°10' N	135°20' E	17.1 kg	1	Fall
9.	Ohtomi	1867 May 24	Yamagata	38°24' N	140°21' E	6.51 kg	1	Fall
10.	Takeuchi	1880 Feb 18	Hyogo	35°23' N	134°54' E	0.72 kg	1	Fall
11.	Fukutomi	1882 Mar 19	Saga	33°11' N	130°12' E	16.75 kg	3	Fall
12.	Satsuma	1886 Oct 26	Kagoshima	32°05' N	130°34' E	> 46.5 kg	>10	Fall
13.	Niho	1897 Aug 08	Yamaguchi	34°12' N	131°34' E	0.467 kg	3	Fall
14.	Higashikooen	1897 Aug 11	Fukuoka	33°36' N	130°26' E	0.75 kg	1	Fall
15.	Sen-hoku	Before 1900	Akita	39°26' N	140°31' E	0.866 kg	1	Found
16.	Kan-zaki	Before 1905	Saga	33°18' N	130°22' E	0.124 kg	1	Found
17.	Kijima	1906 Jun 15	Nagano	36°51' N	138°23' E	0.331 kg	2	Fall
18.	Mino	1909 Jul 24	Gifu	35°32' N	136°53' E	14.29 kg	29	Fall
19.	Hashima	Circa 1910	Gifu	35°18' N	136°62' E	1.11 kg	1	Found
20.	Jindaimi	Circa 1915	Ibaragi	36°03' N	139°57' E	0.488 kg	1	Found
21.	Tomita	1916 Apr 13	Okayama	34°34' E	133°40' E	0.60 kg	1	Fall
22.	Tane	1918 Jan 25	Shiga	35°25' N	136°18' E	0.906 kg	2	Fall
23.	Kushi-ike	1920 Sep 16	Niigata	37°03' N	138°23' E	4.50 kg	1	Fall
24.	Shiraiwa	1920	Akita	39°35' N	140°37' E	0.95 kg	1	Found
25.	Kami-oka	1921–1949	Akita	39°31' N	140°22' E	0.03 kg	1	Found
26.	Nagai	1922 May 30	Yamagata	38°07' N	140°04' E	1.81 kg	1	Fall
27.	Numagai	1925 Sep 04	Hokkaido	43°17' N	141°51' E	0.363 kg	1	Fall
28.	Kasamatsu	1938 Mar 31	Gifu	35°22' N	136°46' E	0.71 kg	1	Fall
29.	Okabe	1958 Nov 26	Saitama	36°11' N	139°13' E	0.194 kg	1	Fall
30.	Shibayama	1969	Chiba	35°46' N	140°25' E	0.235 kg	1	Found
31.	Aomori	1984 Jun 30	Aomori	40°49' N	140°47' E	> 0.320 kg	1	Fall
32.	Tomiya	1984 Aug 22	Miyagi	38°22' N	140°52' E	0.0275 kg	2	Fall
33.	Sayama	1986 Apr 29?	Saitama	35°52' N	139°24' E	0.43 kg	1	Found
34.	Kokubunji	1986 Jun 29	Kagawa	34°18' N	133°57' E	11.51 kg	13	Fall
35.	Tawara	1991 Mar 26	Aichi	34°43' N	137°18' E	> 10 kg	1	Found
36.	Mihonoseki	1992 Dec 20	Shimane	35°34' N	133°13' E	6.385 kg	1	Found
37.	Neagari	1995 Feb 18	Ishikawa	36°27' N	136°28' E	> 0.42 kg	2	Fall
38.	Tsukuba	1996 Jan 07	Ibaragi	36°04' N	140°09' E	0.8 kg	23	Fall
39.	Towada	1997	Aomori	40°33' N	141°14' E	0.0535 kg	1	Found
40.	Kobe	1999 Sep 26	Hyogo	34°44' N	135°10' E	0.135 kg	1	Found
41.	Hiroshima	2003 Feb 01–03	Hiroshima	34°27' N	132°23' E	0.414 kg	1	Found
Iron meteorites								
1.	Fukue	1849 Jan fall?	Nagasaki	32°40' N	128°50' E	0.008 kg	1	Found
2.	Tanakami	1885	Shiga	34°55' N	135°58' E	174 kg	1	Found
3.	Shirahagi	1890	Toyama	36°40' N	137°26' E	33.61 kg	2	Found
4.	Okano	1904 Apr 07	Hyogo	35°05' N	135°12' E	4.74 kg	1	Fall
5.	Tendoh	1910	Yamagata	38°21' N	140°24' E	> 10.1 kg	1	Found
6.	Sakauchi	1913	Gifu	35°38' N	136°23' E	4.18 kg	1	Found
7.	Komagome	1926 Apr 18	Tokyo	35°44' N	139°45' E	0.238 kg	1	Found
8.	Kuga	1938 Jan 10	Yamaguchi	34°06' N	132°02' E	5.6 kg	1	Found
Stony iron meteorites								
1.	Zaisho	1898 Feb 01	Kohchi	33°42' N	133°48' E	0.33 kg	1	Found

6 Tsukuba (fall 1996 Jan 7)

Many witnesses reported the event over the Kanto area. Many people rushed to search pieces of the meteorite.

Already the next day, the meteorite was found, and analyzed mineralogically just 9 hours after its fall. It was probably the fastest handling of a hot sample. This stone meteorite is an H5-6 chondrite (Figure 3).



Figure 3 – Mihogaseki (fall 1992 Dec 20 and found Dec 21).

7 Conclusions

1. Japanese people tend to preserve meteorites found as a sign or symbol of heavenly things according to the animist culture and keep them as a valuable, e.g., in a paulownia box;
2. In the past, (iron) meteorites that were found were sometimes handled destructively;
3. Keeping a meteorite in a Shinto shrine or in a Buddhism temple is like preserving it in a time capsule, in some cases for centuries.

Preliminary version