

# Report on a Special Investigation of the Shosoin Treasures — Identification of Animal Hairs

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This report concerns a special investigation of the Shosoin Treasures, which was conducted in the Shosoin from 2009 to 2012 and focused on the study of animal hairs used in the treasures. The treasures investigated are those in which animal hairs are partly used in the construction, such as writing brushes, *gigaku* masks, and *shubi* (Buddhist implement), and those in which fiber material itself forms the structure, such as felt rugs. Morphological characteristics of the fibers were examined under a microscope and scanning electron microscope to identify them from a scientific point of view. With the felt rugs, the fiber thickness was additionally determined by touch, and felt samples were also made using different types of wool for comparison.

In the investigation on the 18 writing brushes, including the writing brush, “*Tenpyō Treasure*”, animal hairs used for making their tips were studied. Although some were already researched in the 1950s, most of them have remained unstudied. The conical shape of the brush tip is created by winding animal hair with paper strip - one to three layers around the core of a bundle of hairs; and finally covering the outermost completely with animal hair. The analysis showed that in each writing brush, either horse hair, deer hair, raccoon dog hair, or rabbit hair is used, and that a same type of hair tends to be employed among the layers.

For the investigation of the *gigaku* masks, 36 carved wood masks and 10 *kanshitsu* (dry lacquer work) masks were selected. These masks show adhered or rooted hairs as head hair, brow, mustache, beard and/or whisker, but their identification has barely been conducted. It was found that horse hair is commonly used on most of the masks, as well as wild-boar hair in some cases.

Animal hair and leather are also partly used for the *shubi*, *tomo* (archer’s wrist protector) and *shitagura* (saddle pad for horse riding). The fiber materials of these objects were investigated, and new understanding was also obtained: for example, the hairs attached to the *shubi* were previously considered as the baleen of fin whale, but are found to be wild-boar hair.

Felt rugs including 23 of them with floral designs, 14 monochrome ones and one undyed piece, as well as some felt pieces used as a padding of covers were examined. A previous investigation suggested a possible use of hair from an old species of goat that is similar to current cashmere. However, the morphology and quality of the fibers observed at this time point to sheep’s wool to be used. It was also found that the fiber characteristics are similar to wools from the sheep still domesticated in central Asia and Mongolia. The techniques of creating floral designs on the felt rugs were also studied, and similar methods to the traditional techniques around the world are found to be applied.

# Swing of the Broom for the *Ne-no-hi* Ceremony

Hiromu Abe

Two brooms used for a ritual in the Nara Period are preserved in the Shosoin. Associated with these artifacts, there is a cover made of sheer green silk gauze with an inscription written. The inscription reads “*Ne-no-hi-no-metogi-no-hōki* (broom for the *ne-no-hi* ceremony)” and that both brooms and cover were used in the ritual on the Day of Rat (*ne-no-hi*) during the New Year of Tenpyo Hoji 2 (758).

The *ne-no-hi* ritual is performed by Empress at the beginning of the year, in which her Majesty sweeps silkworm stable with a broom to pray for productive silkworm farming. This ritual originated in China and was adopted in Japan during the Nara Period.

The brooms preserved in the Shosoin are made of stalks of *kōyabōki* (*Pertya scandens*) bundled together with a purple leather strip and gold thread. A number of small glass beads are threaded into the ends of the twigs, and therefore also called “*Tama-bōki* (beaded broom)”. Unfortunately, many of the beads had been lost over time, and only a few remains today.

In the volume 20 of the *Man'yōshū* (万葉集, the oldest collection of Japanese poetry), there is a *waka* poem about the ritual in Tenpyo Hoji 2 when these brooms were actually used. The poem was composed by Otomo no Yakamochi 大伴家持, and depicts a scene of the Empress picking up the broom. It reads “the beads swing as the *Tama-bōki* being held”. This phrase has been interpreted by scholars of Japanese classical poetry as —“the attached glass beads produce a pleasant sound while the broom is handled”— by associating the *waka* with the appearance of the brooms.

However, it seems unlikely that the brooms did produce a sound. The twigs of *Pertya scandens* are so thin that they can swing by exerting little force. Possibly, many twig ends with the glass beads did quiver; but not as much as the beads themselves hitting each other to produce a sound. The author thinks that Yakamochi intended to express such gentle movement of the beads in the poem, rather than the sound unlikely to be produced.

To support the author’s opinion, a publication entitled *Kanko-zaccho* written by Tadatomo Hoida 穂井田忠友 in Tenpo 12 (1841) can be pointed. He actually had examined the Shosoin treasures at the end of the Edo period, and included a detailed record of the brooms with a drawing in the publication. He describes there that the blue beads swung as the broom was handled, but not about any sound.