With the blossoming of the cherry trees (sakura) comes the blossoming of the tourist season, and Kyoto is swollen with visitors from all over Japan as well as abroad. A favorite activity for the locals is the holding of flower-viewing parties (o-hanami). People stake claim to a prime spot under the sakura and wait for days in anticipation of the opening of the buds and the arrival of friends and colleagues. Often, o-hanami is about enjoying sake as much as the sakura. For a culture that is typically restrained in public displays of emotion, o-hanami is a chance to cut loose, resulting in frequent spontaneous singing and dancing. For everyone's well being, I saved my singing debut for the confines of a private karaoke room (one of the favorite pastimes of young people in Japan) on the day of our o-hanami party.

Along with the ephemeral sakura, springtime in Japan also means the arrival of particular seasonal foods such as sansho (a Japanese spice related to the Szechuan pepper), sawara (Spanish mackerel), and especially takenoko (bamboo shoots). Many stalls in food markets, such as Nishiki Market in Kyoto, have large displays of beautiful, freshly cut bamboo shoots. These can be used as an ingredient in countless recipes, but when fresh they are best enjoyed as an individual dish, such as boiled tender and covered with fresh sansho leaf and miso sauce (takenoko no kinome ae).

The Wada Mineral Collection and Ikuno Ginzan

In the early to mid-twentieth century four major mineral collections were assembled that today are considered to be the preeminent collections of Japanese minerals in Japan. These are the Wada (later to become part of the Mitsubishi collection), the Sakurai, the Ko, and the Wakabayashi collections.

In late March I visited the Ikuno Mine and Mineral Museum where the Wada collection is displayed (33-5 Aza-Otani-Suji, Ono, Ikuno-Cho, Asago-Shi, Hyogo-Ken, 679-3324, Japan). The Ikuno silver mine was first opened in 807, but large-scale operations did not begin until 1542, after the discovery of a particularly rich vein of silver. During the Meiji restoration in the mid-nineteenth century the Japanese government decided to learn and adopt Western mining technologies by bringing Western engineers and scientists to Japan. In 1868 François M. Coignet, a French mining engineer, was given the task of modernizing the operations...
at the Ikuno mine. In 1896 the newly mechanized mine was sold to the Mitsubishi mining company and became one of the pillars of what was to become the Mitsubishi Zaibatsu (mega-conglomerate, or literally translated “financial clique”). It was operated by Mitsubishi, as one of the country’s major metal mines, until its closure in 1973, ending a roughly twelve-hundred-year history of silver production. Today, the mine is preserved as a museum that includes the Ikuno Mineral Museum; every year it draws about two hundred thousand visitors. There are also several halls that exhibit mining memorabilia, artifacts and pictures from the Ikuno mine, and a life-sized diorama exhibiting the steps involved in the refining of silver ores. A large portion of the mine itself is also open to visitors, and many underground exhibits showcase mining techniques, tools, and history (fig. 4). The countryside around the mine is very scenic, even boasting two waterfalls directly at the mine entrance (fig. 5). After visiting the museums and underground tunnels, a hike around the area is a pleasant way to end what can easily be a full day in Ikuno.

The highlight of the trip was the Mineral Museum, which displays much of the Mitsubishi mineral collection. The former collection of Tsunashiro Wada comprises the majority of this (with twelve hundred of Wada’s specimens on display), and what a fantastic collection! It is by far the finest assortment of Japanese minerals that I have seen and is similarly regarded by most mineral collectors and mineralogists in Japan. I am particularly impressed by the quality (in terms of aesthetics and crystal perfection) of the specimens.

Ikuno is about ninety minutes by car from Kyoto. There is also a Japan Railways (JR) station in the town. If going by train, first go to the JR Himeji station, which is serviced by the Shinkansen (bullet train) from most major cities on Honsha. Next, transfer to the JR Bantan Line and get off at Ikuno station. From there it is about 5 kilometers to the mine, but a local bus line will take you to the Kono bus stop; then it is

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*Figure 2. Stibnite, Ichinokawa mine, Ehime Prefecture. Mitsubishi mineral collection, Ikuno Mineral Museum. Estimated specimen size 32 x 28 cm.*

*Figure 3. Partial view of the main display room, Ikuno Mineral Museum.*

*Figure 4. Underground display, Ikuno mine.*

*Figure 5. Main entrance to the Ikuno mine.*
only a five-minute walk. It is well worth the effort to get to Ikuno, for it showcases many of the best mineral specimens that Japan has produced. The many excellent, huge stibnites from the Ichinokawa mine are alone worth the trip. Even after three hours of viewing the specimens, I wanted several hours more. Highlights of the collection are many, but some of the strengths are, as mentioned, the numerous large, fine stibnites, not only from the Ichinokawa mine but also from the Nakase mine in Hyogo Prefecture, which are reminiscent of samples from Felsőbanya, Siebenbürgen, Romania; large Japan-law twinned quartz crystals, many of which are on
Figure 10. Iridescent andradite, Kouse mine, Kitozumi, Tenkawa, Yoshino, Nara Prefecture. Shinichi Kato specimens and photos. Top specimen 2 cm tall; bottom specimen 1.2 cm across.

matrix; tridymite crystals to 1 cm across on matrix; large, sharp feldspar crystals, many of which are twinned and in combination with smoky quartz; rhodochrosites in both sharp rhombohedral crystals and botryoidal masses; large, gemmy topaz crystals, axinites, and some surprises such as amethyst crystals from Ohara, Shiraishi, that resemble those from Guerrero, Mexico; linarite crystals to 5 cm in length from the Arakawa mine; sharp, lustrous hematites that appear identical to those from Elba, Italy, and many others.

Tsunashiro Wada (1856–1920), after whom the mineral wadalite is named, is considered the father of modern mineralogy in Japan. He was the first Western-trained mineralogist, the first Japanese professor of mineralogy at Tokyo University, and the first director of the Geological Survey of Japan; he also held many other seminal positions in the development of the mineralogical and geological sciences in Japan, and he wrote the first book on Japanese minerals to be translated into English (Wada 1904). After his death his collection of more than thirty-seven hundred specimens (representing 196 different species) was acquired by Mitsubishi Mining Corporation. An excellent source of information about Wada, the history of mineralogy in Japan, and especially Japanese minerals can be found in Nambu (1970).

Also part of the Mitsubishi mineral collection are several dozen specimens from the collection of Shigesato Kinouchi (1724–1808). This is the oldest-known collection of minerals in Japan, having been compiled more than two hundred years ago. Kinouchi traveled all over Japan and amassed in excess of two thousand mineral, rock, and fossil specimens, many of which were obviously chosen for crystal perfection and aesthetics. He wrote the first book on Japanese minerals, Unkonshi, a pictorial catalogue of his findings with extensive text. Unfortunately, most of the Kinouchi collection was lost after his death, but a small part made it into the hands of Wada and has thus been preserved in the Ikuno Mineral Museum.

A Web site for the mine and museum is at http://www.ikuno-ginzan.co.jp/. Although it is in Japanese the maps and figures are useful, and some good information can be found through the use of the Google translator (do a Google search on the URL, and choose “translate this page”).

Japanese Rainbow Garnets

As was pointed out to me by U.S. collector/dealer Alfredo Petrov, it is not often that a new mineral find in Japan produces enough material to saturate the local market and “leak” to collectors abroad (the henmilites found a couple of years ago being the most recent example). During summer 2003 there was a discovery of iridescent andradite garnets in the Kouse mine, Kitozumi, Tenkawa, Yoshino, Nara Prefecture. Iridescent garnets have been recovered in only a few places including the Adelaide mining district in Nevada, the Sierra Madre Mountains, and Sonora, Mexico. The Japanese “rainbow” garnets are found in an abandoned and overgrown skarn-hosted magnetite mine. Crystals are well-formed dodecahedra {110} that exhibit varying degrees of iridescence both on their growth surfaces and internally (fig. 10). On 9 April of this year the Japan Geological Studies Club (Chigakukenyu-ka) and the Masutomi Mineral Museum hosted a trip to the deposit (fig. 11) and collected numerous samples. Assessment of future specimen production is very good, and we should see these on the international market for some time to come.

Prof. Norimasa Shimobayashi of Kyoto University and his colleagues have been investigating the origin of the iridescence (Ohtaki et al. 2005), and a journal article of their results is forthcoming. To summarize, they have found that the garnets (which are close to end-member andradite: andradite96.0grossular3.3spessartine0.7) exhibit fine-scale compositional layers that are oriented parallel to {110}. Two different groups of layers based on thickness are observed by
transmission electron microscopy (TEM), one with widths between 100 and 300 nanometers and the other with widths around 20 nanometers. Diffraction of visible light off of these layers is thought to cause the iridescent play of colors. The origin of the layers is hypothesized to be due to either growth-related oscillatory zoning or exsolution after growth.

Mineral Dealers in Japan

A rough estimate of the number of established mineral/gem/fossil dealerships in Japan is fifty to seventy, only fifteen to twenty of which specialize in mineral specimens.
Many of these restrict their business to Japan, and the best place to catch up with them is at the larger mineral shows, such as those in Osaka and Tokyo or at their local shops (see News from Japan, part 1, for locations in Kyoto). Two dealerships that are probably best known in the American and European mineral collecting communities are Key’s Minerals (Kiyoshi and Eriko Kiikuni) and Hori Mineralogy, Ltd. (Dr. Hidemichi Hori). Keys Minerals is located just west of Osaka (12-24 Iwazono-cho, Ashiya-shi, Hyogo 659-0013, Japan; phone +81-0797-35-0102, fax +81-797-35-0228; Web site http://www.keysminerals.com), and Hori Mineralogy is located in downtown Tokyo about a twelve-minute walk from Nerima station (4-13-18 Toyotamanaka, Nerima, Tokyo, Japan 176-0013; Web site http://www.hori.co.jp/hori/top.htm).

Coming Next
To Westerners, Mount Fuji is one of the symbols most associated with Japan. Several icons of Japan within the country are the cherry blossom, the pine tree (matsu), and the melodic bush warbler (uguisu). We have become very familiar with the latter and its beautiful song, which it stridently projects, especially around 4:30 in the morning. Thanks to our little friend, I have no fear that we will oversleep and miss the mineral shows this season. At the end of April and in early June are the two largest mineral shows in Japan. These are held in Osaka and Tokyo, respectively. In my next installment of News from Japan, I will be reporting on them as well as on a visit to Kyushu University to see the Ko collection and field trips to collect sakura ishi (see the last News from Japan) and rainbow garnets.

ACKNOWLEDGMENTS
I would like to thank Mr. Masakazu Kikuchi of the Ikuno Ginzan for supplying the photographs of minerals from the museum collection. Thanks also go to Shinichi Kato and Takashi Fujiwara for their photographs of the iridescent garnets and field site. I am grateful to Alfred Petrov and Kiyoshi Kiikuni for their helpful reviews and comments and to Prof. Osamu Tamada, Prof. Kazuhiko Ito, Keiko Kuzawa, Yukari Ito, Naoyuki Kawame, and Hideki Kanazawa for their immense help as guides and interpreters.

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