

Exploitation of the Earth

1. **ASHIO RAILWAY CONSTRUCTION.** A collection of manuscripts & printed documents, photographs, & orig. drawings concerning the construction of the Ashio Railway. [Japan]: ca. 1898-1912.

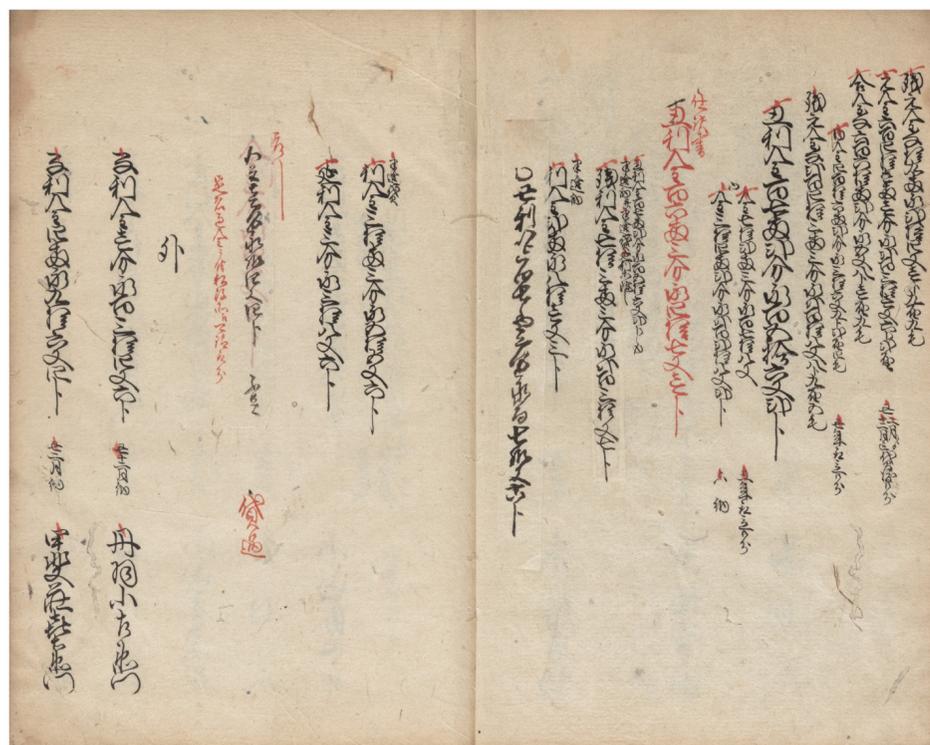
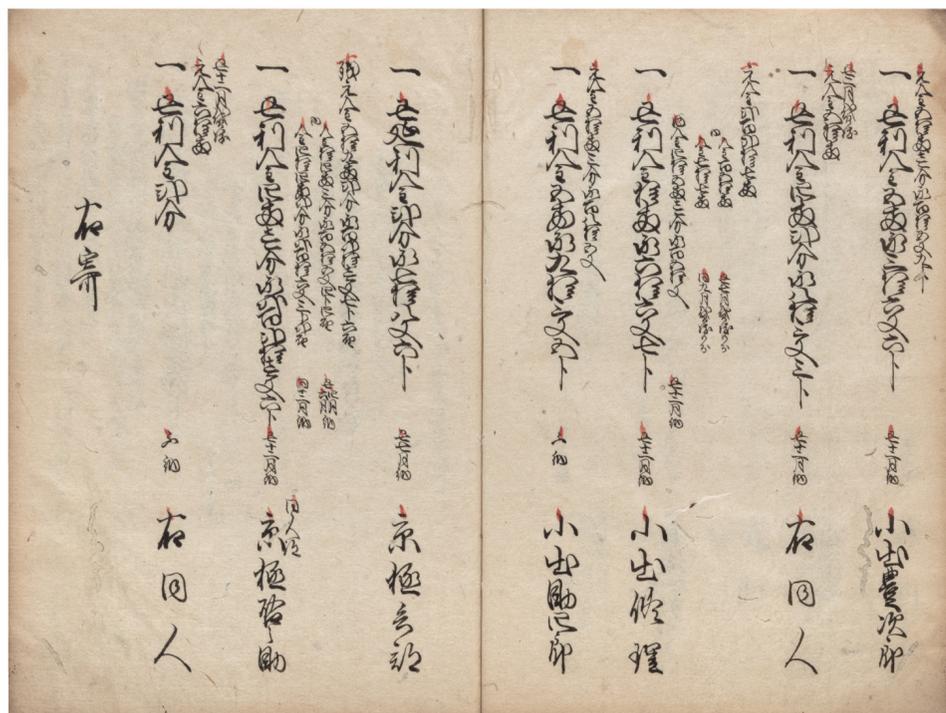
\$7500.00

Copper mining at Ashio in Tochigi Prefecture began about 1600 and production continued until 1973; in the late 19th century, it produced 39 percent of Japan's copper output. At the end of that century, it was decided to build a railway connecting the mine to major rail lines to facilitate transportation of the outbound copper ore and inbound supplies (horses had carried or pulled everything before). The engineering problems were considerable: the line runs along the Watarase River through a deep valley subject to frequent flooding. The railway was finished in 1911-12.

The collection contains a series of letters containing reports on design and construction, printed documents regarding the stock company formed to finance the building of the railway ("Ashio Tetsudo Kabushikigaisha"), reports from engineers regarding preparations, further reports regarding expected capacity needs for the railroad line, six photographs of the construction, and a very fine and large (1820 x 760 mm.) manuscript diagram on four joined sheets of tissue paper showing the route through the valley and elevations. This large diagram has been heightened in color (green, blue, red, and brown).

In fine condition.





Loans to Money-Losing Mines

2. **IKUNO & ASE SILVER MINES**, Hyogo Prefecture. Manuscript on paper, entitled on label on upper cover “Ginzan Kashitsuke kiroku” [“Loan Records of the Silver Mines”], signed by Chudayu (or Chiwaki) Shiraishi. 33 folding leaves. 8vo (235 x 168 mm.), orig. blue semi-stiff wrappers, modern stitching. [Japan]: 1853-54.

\$2500.00

Silver was mined at the Ikuno Ginzan (Ikuno Silver Mine) **from the 9th century until 1973** and was an important source of income for the central government. Lead, copper, zinc, and gold were extracted along with silver. There were a number of entrances to the mine, and more than 20,000 local residents were in some way involved in the mining industry.

In the 19th century, the mines were running deficits as they were not producing enough silver. This is a fascinating official record maintained by Chudayu (or Chiwaki) Shiraishi (1817-87), of the loans made by the bakufu to the Ikuno and nearby Ase silver mines to improve their efficiency and production levels. Shiraishi was at this time working for the bakufu, employed as deputy officer of the two silver mines, overseeing their operations and finances. Later, during the Meiji Restoration, Shiraishi became well known as a scholar of Wagaku (Japanese studies) and as a journalist.

This manuscript, written in a very beautiful hand, contains **detailed accounts of the series of loans made by individual members of the bakufu to each mine**, with names of lenders, size of loans, interest rates, purpose of the loans (apparently most of the money went to pay the salaries of the miners), etc. The signature of Shiraishi appears on the first and final leaves.

In fine condition; some well-repaired worming touching text. Preserved in a chitsu. Stamp (with release stamp) of the Nagoya Eirin Kyoku (the Forest Management Division of the Nagoya City government).

Searching for Gold in the Interior of Africa;
King Manuel of Portugal's Copy

3. **JOBSON, Richard.** *The Golden Trade: or, A Discovery of the River Gambia, and the Golden Trade of the Aethiopians. Also, the Commerce with a great blacke Merchant, called Buckor Sano, and his report of the houses covered with Gold, and other strange observations for the good of our owne countrey; set downe as they were collected in travelling, part of the yeares, 1620. and 1621.* 3 p.l. (lacking the first leaf, a blank; title a little soiled), 143, 152-66 pp. Small 4to, cont. English limp vellum. London: N. Okes for N. Bourne, 1623.

\$45,000.00

First edition of **one of the great early English accounts of the exploration of the interior of Africa** and the first to be published separately (others appear in collections); it is a classic account of the search for gold.

Ghana, the earliest known empire of the western Sudan, first entered the historical consciousness of North Africa near the end of the eighth century but probably originated long before. Famous to North Africans as the “Land of Gold,” Ghana (which, apart from its name, has no historical connection with modern-day Ghana) was said to possess sophisticated methods of administration and taxation, large armies, and a monopoly over the notoriously well-concealed gold mines. Ghana was the main supplier of gold in the trans-Saharan trade, which linked the Mediterranean economies that demanded gold — and could supply salt — to the sub-Saharan economies, where gold was abundant.

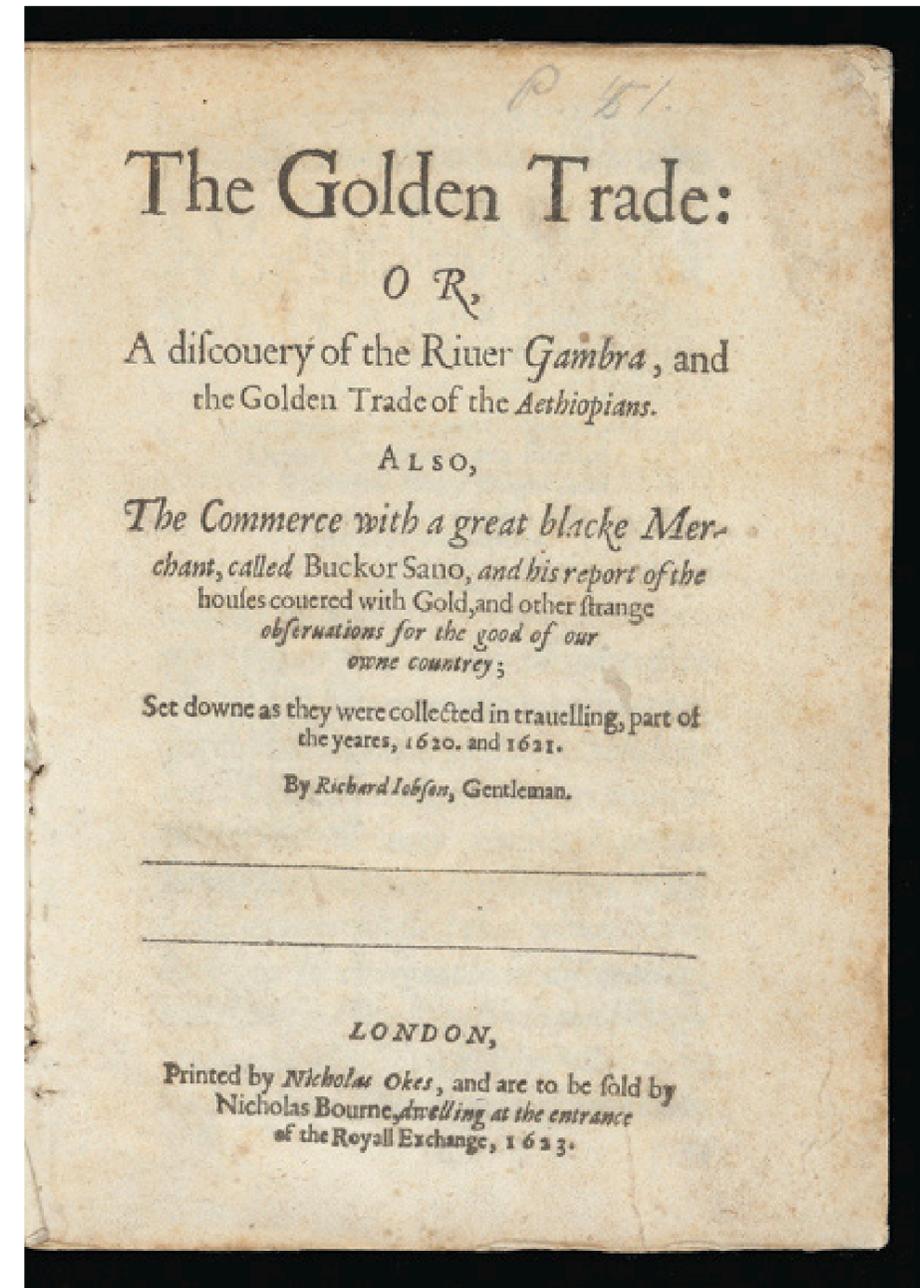
In 1620, “Jobson (fl. 1620–23), merchant and travel writer... was sent as one of the supercargoes on the third of a series of expeditions up the Gambia River undertaken by a group of London entrepreneurs who had in 1619 been granted a crown patent to trade in west Africa. Although the area was already frequented by English traders, the first two expeditions to tap the age-old trans-Saharan gold trade, still known in Europe only from its terminus in the Moorish states of north Africa, had failed. Jobson and his companions reached the Gambia in November 1620, established a base near the mouth, and then sailed some 200 miles up the river until it became too shallow to continue. Jobson, with nine of the crew and some African guides, then went on in an open rowing boat to Tenda (in modern Senegal), where, he had been told, he would find an itinerant gold trader, Buckor Sano. Sano was delighted to meet him. He had no gold then available but promised that if they returned he could easily supply it in exchange for imported trade goods. After ten days Jobson and his party returned, rejoined the ship, and left the Gambia in June 1621...

“On his return Jobson published an account of the expedition, hoping to persuade the ‘gentlemen adventurers’ to send out another. But none was sent. His book, however, entitled *The Golden Trade*... (1623; reprinted 1904), the first account of the area in English, attracted interest. **It is a garrulous, disorganized production, but full of detailed accounts of the country — the geography, the customs he observed among the inhabitants, and the flora and fauna.**”—ODNB. There is also much about the

mining of gold.

A delicious copy of a book of considerable rarity. With a modern note stating this copy comes from the library of the great collector King Manuel of Portugal. Preserved in a box.

§ NTSC 14623.



4. **JOHNSTONE, John.** *An Account of the most Approved Mode of Draining Land; according to the System practised by Mr. Joseph Elkington...with an Appendix, containing Hints for the farther Improvement of Bogs and other Marshy Ground, after Draining; together with Observations on Hollow and Surface Draining in General...Drawn up for the Consideration of the Board of Agriculture and Internal Improvement...* 16 engraved plates (2 folding). xv, 182 pp., one leaf of "Conclusion." Large 4to, orig. paper-backed boards (spine expertly rebaked to match, some worming in upper margins), uncut. Edinburgh: G. Nicol et al., 1797.

\$1500.00

First edition. Johnstone (d. 1838), an Edinburgh surveyor, was promised a grant of £1000 by the recently formed Board of Agriculture to provide a detailed and accurate account of the system of land drainage developed by Joseph Elkington (d. 1806), a farmer in Warwickshire and designer of land drainage systems. Elkington was known to be in poor health, and it was feared that knowledge of his innovations might perish with him.

"About 1763 Elkington inherited a farm at Princethorpe, where some years later he discovered, at Long Harold Pits along a geological fault, the method of land drainage for which he is remembered. He discovered by accident, after losing more than 800 sheep to liver rot, how some strata were porous and pervious to water while others were not, and that he could locate the former with the auger used in exploring for marl and coal."—ODNB.

Many of the attractive plates depict geological strata.

Elkington's methods were brought to the attention of the Board of Agriculture by the antiquary Charles Towneley and Sir Joseph Banks.

Very good uncut copy. Two of the plates have transparent ink spots touching the images. Faint stamp of the Lawes Agricultural Trust on front paste-down.

§ Fussell, III, pp. 25-26.

5. **JOHNSTONE, John.** *An Account of the Mode of Draining Land, according to the System practised by Mr. Joseph Elkington...Drawn up for the Consideration of the Board of Agriculture...* Folding engraved frontis. & 18 folding engraved plates. [iii]-xvi, [one leaf of ads], 211, [1] pp. 8vo, mid-19th-cent. half-olive sheep & cloth, upper cover stamped in blind "Carolus Porcher de Clyffe" with his arms, binder's ticket "Bound by S. Mephram, Dorchester," spine gilt, red leather lettering piece on spine. London: R. Phillips, 1808.

\$1650.00

"Third edition, corrected and enlarged." Fine copy, lacking half-title. Armorial bookplate of Charles Porcher. Faint stamp of the Lawes Agricultural Trust on front paste-down.

§ Fussell, III, pp. 25-26.

6. **MITSUMURA, Toshimo, photographer.** A concertina album of 32 original albumen photographs (each 100 x 140 mm.) of the famous Besshi Copper mining works, each mounted on thick board. Ob-long thick 8vo, orig. padded silk cloth binding. [Japan]: 1898.

\$12,500.00

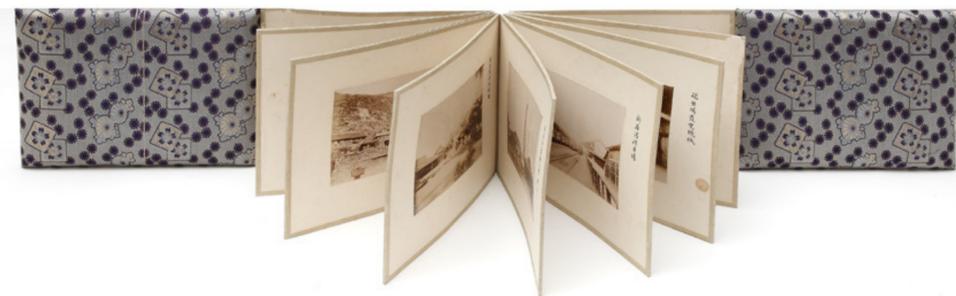
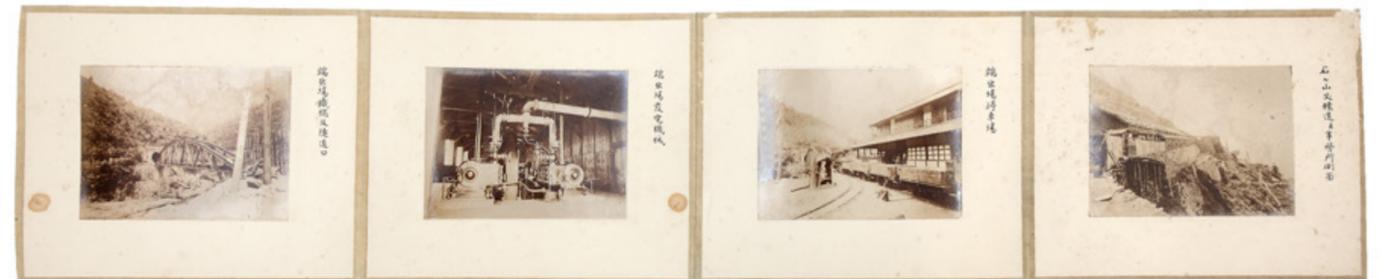
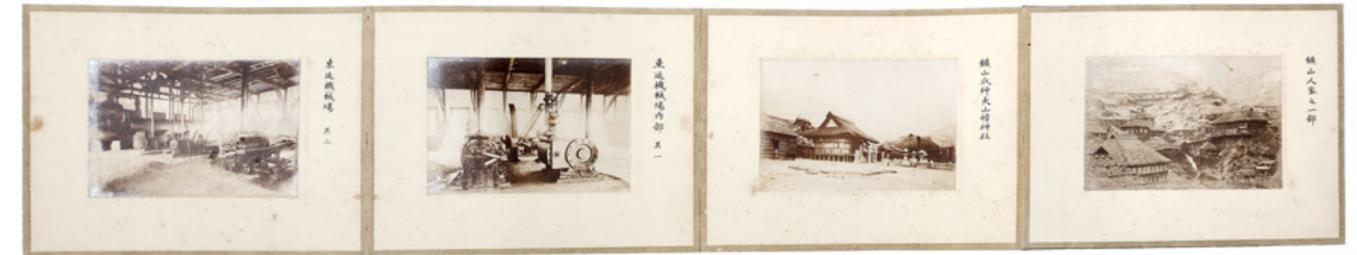
A rare collection of 32 albumen photographs taken by Toshimo Mitsumura (1877-1955), the famous commercial photographer and printing entrepreneur; **one of the greatest industrialists of the Meiji period, he is also highly esteemed today as a photographer.** These photographs represent some of his earliest efforts. Mitsumura's photographs are held in the permanent collections of the Museum of Fine Arts, Boston, and the Victoria and Albert Museum in London.

A native of Kobe, Mitsumura purchased his first camera at the age of 14 and quickly became an accomplished photographer. In 1893 he enrolled in college at Tokyo's Keio University where he continued his photographic pursuits. By the time of his graduation Mitsumura had become a professional photographer and his first major commission came in 1898 when he was hired to photograph the Besshi Copper Mine. This firmly established Mitsumura as a commercial photographer and in 1900 he attended the Exposition Universelle in Paris where he was awarded a gold medal for photography. He was commissioned by the Japanese government to document the Russo-Japan War; this elevated Mitsumura's company to become one of the leading printing and photographic firms in the Kansai region. In 1918, he moved his company to Tokyo where it continues to flourish today. Mitsumura was also a major collector of Japanese sword fittings, now at the Nezu Museum in Tokyo.

A major copper deposit was discovered in Besshi, near Niihama City in Ehime Prefecture in 1690. Copper production started in 1691 and continued to 1973, operated by Sumitomo.

The album contains 32 photographs, each mounted on thick board and all with manuscript captions. The inside front cover has written (in trans.): "September 1898. Toshimo Mitsumura took these pictures." A facsimile edition of this was published in 2011.

Fine condition and a remarkable discovery. Preserved in the slightly damaged original wooden box.



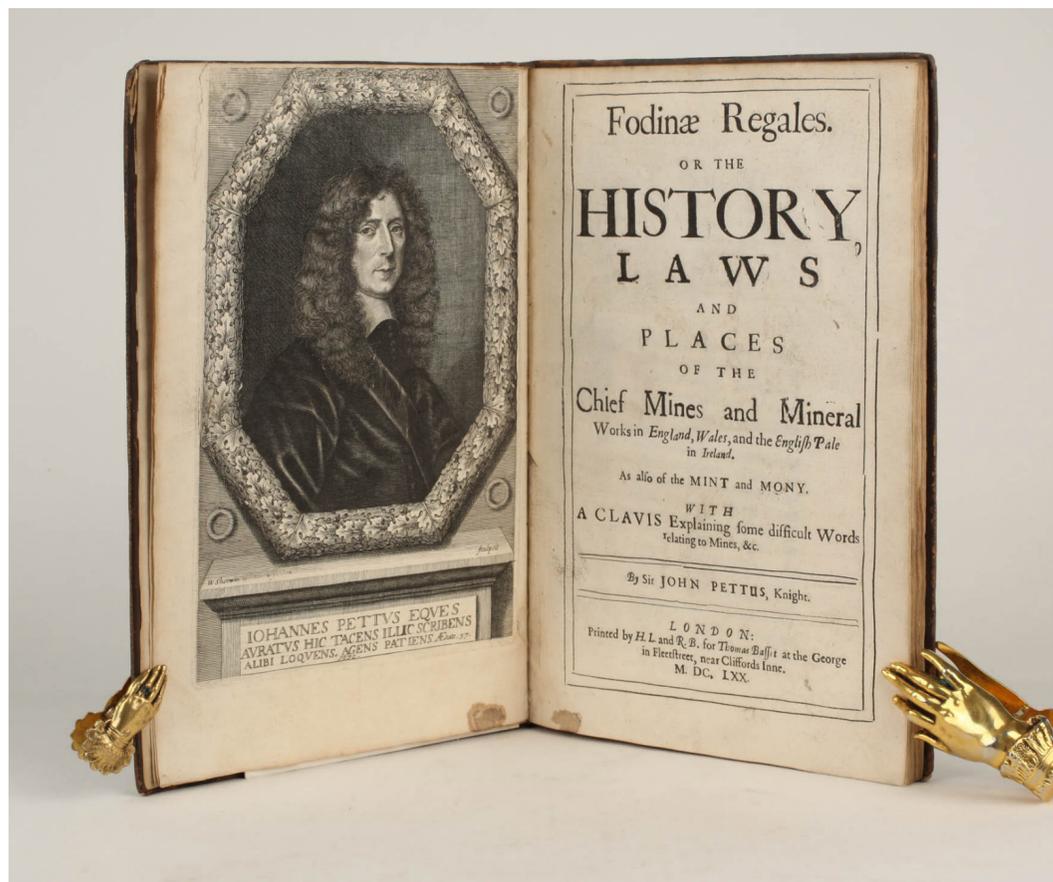
A Classic of English Mining

7. **PETTUS, Sir John.** *Fodinae Regales. Or the History, Laws and Places of the Chief Mines and Mineral Works in England, Wales, and the English Pale in Ireland. As also of the Mint and Mony. With a Clavis Explaining some difficult Words relating to Mines, &c.* Finely engraved frontis. port., two engraved plates, & two engravings in the text. Title within ruled borders. 7 p.l., 108, [7] pp. Small folio, cont. blind-ruled calf (neat repairs to ends of spine, faint dampstaining towards end), spine ruled in gilt, red morocco label on spine. London: Printed by H.L. & R.B. for T. Basset, 1670.

\$3750.00

First edition and a fine and large copy of the standard 17th-century English work on mining, valuable for giving an account of the state of mining in England during the period. The glossary at the end is the first attempt in English at a dictionary of mining terms. The fine portrait, here in the second state (signed “W. Sherwin sculpsit”), shows Pettus aged 57.

Pettus (1613-90), was the deputy governor of the royal mines in England and Wales.
§ Duveen, p. 468. Hoover 634.



The Island of Gold

8. **SADO ISLAND GOLD, SILVER & COPPER MINING SCROLLS (KINGINZAN EMAKI).** Three finely illustrated manuscript scrolls, scroll I: 9720 x 260 mm., scroll II: 8420 x 260 mm.; scroll III: 6600 x 260 mm., on fine thin paper & later backed with mica-embossed paper, with numerous explanatory captions, blue silk brocade endpapers at beginning of each scroll, wooden rollers, preserved in an old wooden box. [Japan: 1816 or after].

\$27,500.00

A fine, complete, and uncommonly well-illustrated set of scrolls concerning the famous gold, silver, and copper mine on Sado Island, **illustrating all the steps from mining to refining to minting, along with the administrative and commercial activities associated with the mines.** We have had several sets of “Sado Island Scrolls” and this is by far the finest in terms of the quality of the illustration, completeness, and richness of detail. **The skilled artist of these scrolls has provided an enormous amount of valuable factual content by labeling each depicted person’s role in the production of gold, silver, and copper.**

For a really excellent account of the history of mining on Sado Island and the scrolls produced there,



see Hamish Todd, “The British Library’s Sado Mining Scrolls” in *The British Library Journal*, Vol. 24, No. 1 (Spring 1998), pp. 130-43. Our description is largely based on this wonderful and beautifully researched article.

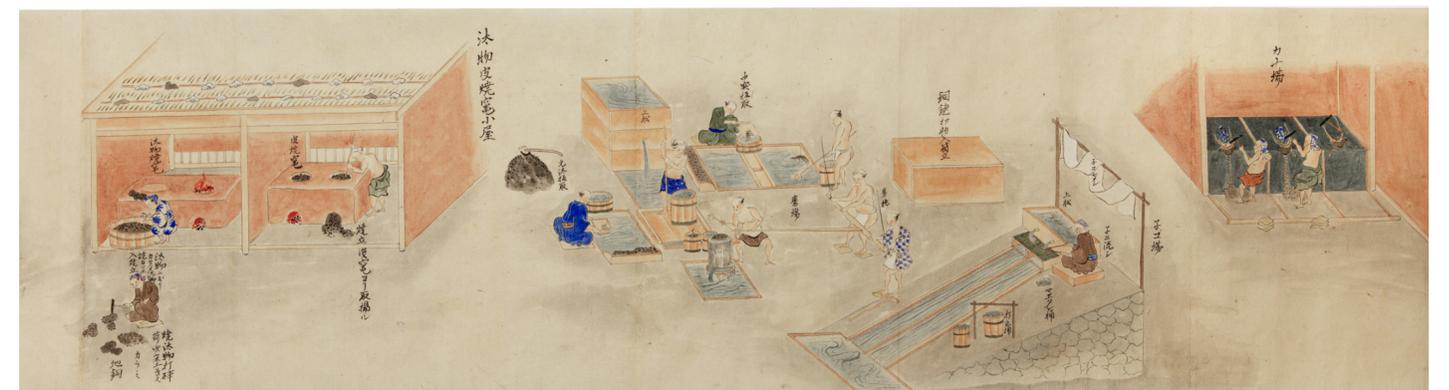
Gold, silver, and copper mining on Sado Island, just off the coast of Niigata Prefecture, had its beginnings in ancient times. With the discovery in 1601 of the rich Aikawa gold and silver mine, Sado experienced an economic boom. The Edo shogunate assembled miners and slave laborers (mostly the homeless) from throughout Japan and sent them to Sado to exploit the Aikawa mine and three other principal mines. It **soon became the largest gold and silver mine in Japan**, attracting a population of 200,000 and, to a very large degree, financed the Edo shogunate for several hundred years. A series of unique mining, smelting, and minting technologies developed at Sado were disseminated to other mines within Japan. Today, the Sado complex of mines is on the “Tentative List” of Unesco World Heritage Sites.

The Aikawa mine was one of the few mines at the time to be based on **kodobori (mine-digging)**. A series of pre-modern mine management systems and mining-related technologies ranging from mining to smelting were developed at Sado, including methods for extracting gold from silver, such as the Chinese haifuki cupellation method brought in from the Iwami Ginzan Silver Mine (Shimane Prefecture); the yakikin method; as well as manufacturing-based operational formats such as the yosseriba. It is particularly important to remember that the entire series of processes, from mining and smelting to ultimately the production of gold coinage, were carried out at this single mine and its environs.



The finely drawn scrolls **depict every process of extraction, refining, and minting**. Each scroll has a title on a label on the outside: “Sado kozan saikutsu jikkei” [“Actual View of Sado Mining”]. As we unroll the scroll, we find another title, “Sashu kingin saisei zenzu” [“Sado Gold & Silver Extracted & Processed, Illustrated”], and a grand index of the pictorial contents of the three scrolls.

The first scroll begins with a map showing the Aikawa mountain and the numerous entrances to the mining complex, with names and locations of refining buildings. This is followed by wonderful paintings of the main entrance to the mine and the surrounding buildings; miners entering and working in the shafts; the ladders made from logs into which steps have been cut; lamps made of iron dishes to hold oil and attached to long iron handles; buckets and pulleys to remove water; baskets to carry ore; government officials, the mine operator, and surveyors discussing the best location for a new tunnel; carpenters constructing support beams; etc. **Each person has a label, so we know his exact title and function.**





The remainder of the scroll takes place outside of the mine: blacksmiths making tools; women removing waste material from the ore and placing the ore in sieves to be washed, under the watchful eye of government supervisors; the administrative center for the mine where the ore is graded for sale to the smelters, with a bookkeeper recording all the transactions; a back office where managers, senior administrators of the mine, and accountants are meeting; a room where the ore is examined once again; the ore sewn into sacks and carried out to be loaded onto oxen to be transported to the smelting works; a storage area with big locks; another government office, where mine workers turned in their ID cards at the beginning of their shifts; the building known as Kanaba, where the ore was pulverized to win the precious metals; a horsetail sieve to separate the ore into various constituents; grinding of the ore using ishiusu (grindstones); the process of nekonagashi, which used cotton cloth in wooden troughs to extract the very smallest particles using the gravimetric principle, etc.

The second scroll depicts the smelters called fukidaiku, with men operating the bellows, all watched by a guard. The gold/silver/lead alloy was then taken to an area called the Haifukidoko, where the alloy was subjected to roasting in a cupel. The following scene shows the government office where the gold (sujimengane) and silver (yamabukigin) samples are examined.

Now we shift to the scenes showing the processing of copper. We see the pulverizing and winning of the copper using methods similar to those for gold and silver, with the addition of extensive smelting scenes employing large smelting furnaces (nibukidoko, mabukidoko, and nanbandoko). There are a number of processing scenes (including daifukisho), which are not present in the BL set of scrolls.

From the copper works we move to the coast of Sado, where we see the extraction of alluvial gold and silver from the sand of the beaches by means of a technique called sluicing or nekonagashi. An Archimedes screw is used to draw water up to form a flow that could be used for sluicing. The material is then taken to a building called the Hamanagashi no seriba for further processing.

The third scroll is devoted to minting in the Kobandokoro, where small coins called koban were produced. Using the cementation process called shioyaki, the partly refined gold is further refined. Above is a criss-cross construction of wooden planks known as a senryodana, designed to trap any gold dust mixed with smoke from the smelting. The workers are wearing only loin cloths to prevent theft. The powdered gold is then mixed with salt and shaped into cones. Then the cones are burned slowly for seven or eight hours. Further processing steps are shown, finally resulting in balls of gold called yosegane, suitable for minting.

Next, the silver by-product is shown being processed and refined in a series of scenes.

The following series of scenes show the gold being formed into metal strips called nobegane, which were then polished by salt before being sent to the office run by the Goto family (the Goto Yakusho). We see Sanemon Goto 2nd (d. 1845) in his office. He succeeded to running the Goto Yakusho in 1816 (and this is the basis for dating these scrolls). In this office, the strips were tested for purity before being cut into small sections.

In fine condition. There is minor marginal worming in the beginning of the second and third scrolls.

