TIFFANY'S MASTERY OF MOKUME
PARIS 1889
by Margery Masinter

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I. Introduction

"The most remarkable triumph of Tiffany & Co., is perhaps their laminated vase," proclaimed the press about
the Tiffany silver exhibition at the Universal Exposition at
Paris in 1889.¹ Exposition showpieces were designed to be
extolled in superlatives, and this vase qualified, not for the
originality of its shape or its applied decoration, but for its
masterly use of mokume, a Japanese metalwork technique which
imitates wood grain.² Edward Chandler Moore (1827-
1891), Tiffany's chief designer, is credited for his bold
use of this technique to create the largest known object
ever made in mokume.

The vase pictured in publications in 1889³ (figure 1)
has a balaster-shaped body composed of a mixed-metal laminate
resembling tightly burled wood grain. Contemporary descriptions
detail the metallic colors of gold, copper, red, black and

¹"Hundreds of Thousands," The Jewelers' Weekly, Vol. VIII,
No. 6. (New York, June 6, 1889), p. 47.

²Mokume is the Japanese term (literally "wood aspect")
for lacquer or metalwork with the appearance of wood graining. The metals and techniques of mokume are explained later
in this paper.

³In its present form (figures 2-4), the vase is shorn
of its ornamental base and neck, having been demoted from the
status of art object to a lamp base, with a hole drilled through
the bottom for wiring. It is in the collection of the Cooper-
Hewitt Museum, a 1976 bequest of Alison Moore Coudert, a grand-
daughter of Edward C. Moore.
silver of the body, which was lined in silver. It had an ornamental rim of engraved and chased silver and an oxidized silver base, which was mounted on a block of golden ebony.

The vase was thirty-two inches high and priced at $5000.4

Technical innovation in the field of metallurgy in the second half of the nineteenth century was of enormous interest to a public who also enthusiastically embraced Japanese art and culture. Japanese objects incorporating colored metals were acclaimed for their technical artistry and they inspired Western designers to explore new ways of achieving similar effects. Tiffany's international reputation for extraordinary design was established at the Paris Exposition of 1878, primarily through its collection of luxurious functional objects for the home made of silver with mixed metals in the Japanese style.

By the Paris Exposition of 1889, both customer and press expected to be dazzled by the output of the prestigious house of Tiffany, and they were not disappointed by Moore’s tour de force in mokume. Even the Japanese were awed:


As late as 1987, the whereabouts of this vase was listed as "unknown" to Tiffany scholars. See Frances Safford and Ruth Caccavale, "Japanesque Silver by Tiffany and Company in the Metropolitan Museum of Art, Antiques (October 1987) p. 819.
They have very beautiful works of our mokume metal, . . . which is fruit of their hard study and work of many years. . . So I warn our manufacturers at home note these facts and in the future to be more studious and enterprising.

II. The Technique of Mokume in Japanese Metalwork

Mokume is created by welding together layers of metals of different compositions into a solid sheet which is then manipulated to create a pattern of wood grain or bark. In the fifteenth century, this "metal sandwich" was composed of layers of iron of various thicknesses which were twisted and otherwise worked to create a pattern of raised ridges resembling the three-dimensional aspect of the bark of a tree. By the mid-sixteenth century, the Japanese artisan was using the rough wood-like appearance of the metal as a foil against which decorative inlays of colored metals could be applied or inserted.

In the eighteenth century, non-ferrous or "soft" metals were often substituted for iron. These soft metals of silver, gold, copper and special Japanese alloys were used to create a polychrome surface (figure 5).

The pattern was accomplished by a process of cutting through or punching out the layers of metals and then compressing the layers into a plane (figure 6). The resulting colored metal plane was treated with an oxidizing process called

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5 Translation from a Japanese newspaper, 1889. No author. (Tiffany Archives, Parisippany, N.J.).

6 Alloys are varied combinations of metals which have their own color character and working quality.
"pickling" to give different colored patinas to each of the metals. The esthetic effect of the mokume was achieved by the contrast of colored metals in a wood-grained or marbleized pattern. There are different Japanese terms used for the various types of wood grain (figure 7). For the purposes of this paper, the term "mokume" is used for laminated-metal objects, those imitating wood grain as well as those with marbleized effects (miyu-nagoshi). The word "hada" means "skin" and mokume-hada literally means outerlayer of burl-wood grain.

See Oppi Untracht, Metal Techniques for Craftsmen (New York: Doubleday & Co., 1968) pp. 182-184, for a detailed explanation of this technique and its current usage. Untracht is a good reference for metals and their properties.

The Tiffany Archives has a pamphlet which belonged to Moore called The Colours of Metals and Alloys, A Lecture, by W. Chandler Roberts-Austen (London, 1887), which analyzes Japanese metallurgy in great detail. Figure 6 is a diagram from that pamphlet which illustrates the mokume technique. Herbert Maryon's Metalwork and Enameling (New York: Dover Publications Inc., 1971) analyzes this diagram:

The Japanese workman takes thin plates of various metals or alloys . . . and solders them together. In the thickish plate thus produced conical holes are bored, or groves cut, as shown at the right half of the diagram. These cuts penetrate the various layers and expose them in rings or bands. The plate is then turned face downwards on to a stake, and hammered until the depressions in the front surface are levelled out. . . . By another method a many-layered plate, prepared as before, is hammered or rolled out. It is then beated up irregularly from behind with repousse tools as shown at the left half of the diagram. The bumps in front are then filed flat and parts of the various layers of which the plate is composed become visible in front. The different strata exposed form an irregular marbled pattern (page 166).
The artistry of Japanese metalwork can be studied through the development of the tsuba, or Japanese swordguard (figure 8), treasured for its beauty of texture, color and surface decoration. By the eighteenth century, the making and decoration of swordguards had evolved into a serious industry, employing thousands of highly skilled craftsmen working in more than sixty esthetic schools, which became known for their distinctive artistry and "secret" formulas in working with metals.

As the working of metals to create pleasing effects in color developed into a specialized art as well as a lucrative industry, Japanese craftsmen discovered innumerable color variations made possible by copper-based alloys (figure 9). The most commonly used were shakudo, an alloy of copper with about four percent gold, giving a blue-black surface, and shibuichi, an alloy of one part silver and three parts copper, imparting a silver or brown-grey color. Color variations within these alloys depended upon the exact composition of metals, as well as the pickling solutions used for the final patina. 8

It is curious that while the abundance of tsubas for study attest to the multitude of techniques employed in their

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See also Roberts-Austen's The Colours of Metals for an analysis of the composition of various alloys and of pickling solutions.
decoration, examples of works in mokume are difficult to find. A rare example is a tsuba (figure 10), composed of silver, shakudo, and red copper, which closely resembles the tight burl of the 1889 vase. A late nineteenth-century vase (figure 11 b.c.), with a body of copper, shakudo, and silver, has a pattern so similar to Tiffany's vase, that it is possible that it might have been inspired by Moore's use of mokume, or by other interpretations of it in the West. The Japanese were so eager, especially in the early years of the Meiji Period (1868-1912), to please the Western customer that they rejected aspects of their traditional culture in favor of what they perceived to be foreign taste. 9

9See "The Meiji Period," Japanese Art and Design (London: Victoria & Albert Museum, 1968), pp. 180-204, for examples of Japanese emulation of Western taste. See also Uyeno Naoteru's Japanese Arts & Crafts in the Meiji Era (Tokyo: Pan Pacific Press, 1958), for the impact of the Meiji restoration of 1867 which abolished the feudal aristocracy and the bearing of swords. Up until this time, arms and armour were the most important decorative objects in metalwork, made to display the importance and wealth of the Shogunate and the feudal lords. With the disappearance of the traditional market for metalwork, artisans were employed in designing and manufacturing vases and other ornamental bronze work for foreign export. As a means of strengthening its finances, the Japanese government encouraged its own industries to gear its designs to Western tastes. In 1871 the word bijutsu began to be used to differentiate craft objects from functional works in an effort to produce ornamental "artistic" goods for export.
III. Transmission of the Japanese Esthetic to Tiffany & Co.

The celebrated opening of Japan to the West by Commodore Matthew C. Perry in 1854 is well documented. Not only were commercial ties established, but the communication of the Japanese esthetic had an enormous influence on Western culture.

The public was first introduced to Japanese arts and crafts at the London exposition of 1862, through the exhibition of the collection of Sir Rutherford Alcock, the first British Consul to Japan. Capitalizing on the West's enthusiasm for its culture, the Japanese government exhibited at the Paris exposition of 1867, and in years following embarked on an aggressive marketing campaign to supply eager markets. By the Centennial exposition of 1876 in Philadelphia, Japanese firms had successfully opened retail outlets in New York and in Europe.

New collectors avidly acquired Japanese objects (figures 8-11a) and became students of the Japanese esthetic. This enthusiasm was fanned by an outpouring of art books and periodicals covering all aspects of Japanese culture.10

10 See William Hosley, The Japan Idea (Wadsworth Atheneum, 1990), pp. 299-46, for an informative if somewhat breezy account of "selling Japan" to the West in which he states that the Japan "craze" would not have taken off without the support of the art book and periodical industry. A recent study accounted for almost 2900 "items of literature" on the Japanese style and art movement in the late nineteenth-century (p.45).

The massive collections of Japanese objects such as the tsuba formed at this time presented a new opportunity for research and scholarship on Japanese schools of art, styles, and techniques, with interest in this subject continuing into the twentieth century. See Joly and Tomita,
In the years following the Civil War, Tiffany's reputation had grown from its founding in 1837 as a shop for "fancy goods" to an international concern selling extravagant and highly creative jewelry, silver and miscellaneous objects to a rich and powerful clientele. Tiffany was able to satisfy every need for those whom money was no object and for whom the art of accumulation had become a passion. At the helm of the company was Charles Louis Tiffany (1812-1902), a master merchant and taste-maker who was well-known for his love and appreciation of beautiful things. Acknowledged as a designer, he brilliantly helped to shape and market various trends of fashion.  

By 1867, Edward C. Moore (figure 12) was artistic director of the silver workshops, and it was his genius that guided Tiffany in the creation of the innovative silver which enriched its reputation and its coffers. Trained by his father, silversmith John C. Moore, Moore and his father worked for Tiffany exclusively beginning in 1851, building a staff of over five hundred designers and silversmiths by 1860. In 1868, in recognition of both his artistic and managerial talent Moore was made head of the silver department and an officer of the company. Moore's skills were a perfect match with


12Unfortunately, there is little direct information on Moore. The Tiffany Archives do not own any of his treatises on design or any letters about or by him. In his lifetime, it was Charles Tiffany who commanded the spotlight, although
Charles Tiffany's talent for marketing, and both understood the importance of winning medals at international exhibitions to ensure the continuing prosperity of the House of Tiffany.

The Paris Exposition of 1867, the year of Tiffany's first participation in an international exposition, offered Moore an opportunity to study Japanese metalworking techniques firsthand, and probably inspired him to begin his own collection of Japanese arts and crafts. The depth of his appreciation of Oriental culture is documented by his collection (figure 13) and library of art books and periodicals which he made available to Tiffany's designers and silversmiths for use in instruction and training.\[1\]

Moore was publicly acclaimed by the press for his award-winning silver designs and the activity of his silver workshops. It is from his obituaries and the bequest of his collection to the Metropolitan Museum of Art that one learns posthumously about him in some detail. Reportedly there are papers about or by Moore in the possession of his family, which are still private. His son, Edward C. Moore, Jr., was also a benefactor of the Metropolitan Museum.

\[1\] At the Tiffany Archives there is a list of 908 books collected by Moore, concerned primarily with metallurgy and design, used by the silver workshop for reference. Moore's personal collection of over five hundred books was bequeathed to the Metropolitan Museum of Art and is in the process of being annotated by Kenneth Dinin. These are concerned with fine and decorative art history, and according to Mr. Dinin, do not contain any personal notations. Moore's art object collection is discussed later in this paper.
At the 1876 Centennial International Exhibition at Philadelphia, the Japanese pavillions were of major importance as they introduced many Americans to aspects of Japanese art and architecture. Thousands of Japanese art objects were housed in two elaborate buildings constructed in Japanese style by native artisans.\(^{14}\) Journalists recorded that "the Japanese display surpasses anything that has ever been shown by a single country at any previous exhibition"\(^{15}\) and that the Japanese metalworker was "unsurpassed by any people in the world for originality of design and skill in execution."\(^{16}\)

Tiffany's award-winning exhibition in 1876 reinforced its reputation as the leading silversmith in America. At this time, also, two events acted as catalysts to direct Tiffany's experiments in innovative metalwork. The first was Moore's opportunity to study an enormous number of Japanese objects at their pavillions and perhaps communicate with native artisans. The second was the establishment of a relationship with the Scottish designer and lecturer Christopher Dresser (1834-1904). Moore was no doubt familiar with Dresser's two well-known books on design, *The Art of Decorative Design* (1862) and


\(^{15}\) *Masterpieces of the Centennial Exhibition* (Philadelphia: Gebbie and Barrio, 1876), p.clxxx.

The Principles of Decorative Design (1873).

An outspoken promoter of Japonism in Great Britain both artistically and commercially, Dresser became art adviser to the British Londros & Company in 1873, importers of Japanese goods, and a possible source for Moore's personal collection as well as Tiffany and Company's oriental merchandise.

Although there is no evidence that Dresser and Moore ever met, it is possible that they did so in Philadelphia in 1876 when Dresser visited the Centennial Exhibition en route to Japan. Dresser delivered a series of lectures on "Art Industries," "Art Museums," and "Art Schools" at the newly founded Pennsylvania Museum and School of Industrial Art. Widmar Halen suggests that Charles Tiffany and his son Louis Comfort Tiffany were befriended by Dresser at this time. They may have attended his lecture on art museums that bemoaned the fact that the South Kensington Museum had stopped purchasing the oriental art that was so important to British designers and manufacturers. This may have provided the impetus for Tiffany to commission Dresser to purchase objects for Tiffany and Company.17

In any event, at this time Dresser was commissioned by Tiffany and Company to acquire "any objects that I [Dresser] think

17See Widmar Halen, Christopher Dresser (Oxford: Phaidon-Christies Limited, 1990), pp 41-45. This important monograph provides substantial information on Dresser's long career and his major influence on international design.
calculated to aid in the development of their silversmith business."\textsuperscript{18}

Dresser spent four months in Japan in early 1877 acting as an artistic advisor to the Japanese government in the commercial development of Japanese ceramic, textile and metalwork industries and their marketing efforts in the West. He visited scores of manufacturers, private collections and local shops and was able to purchase examples of historic and modern metalwork. Profoundly impressed by the artistic use of colored metals within an object, he later wrote:

No people but the Japanese have understood the value of color in metal composition . . . we have never fully realized the fact that by producing metallic alloys, and combining these with pure metals, a world of colour is open to us.\textsuperscript{19}

Dresser also recorded his firsthand observation of the mokume technique:

\textsuperscript{18}Christopher Dresser, Japan: Its Architecture, Art, and Art Manufactures (London and New York, 1882), p. 221. Dresser also records here that Tiffany later advertised receiving Japanese saki from Dr. Dresser as well as art objects. Although Dresser denies this, he admits that there might have been "a few bottles" slipped in with the collection -- evidence of Charles Tiffany's flair for publicity and his cordial relationship with Dresser (p. 221).

This journal was published in 1882, but it should be noted that Dresser earlier reported his findings in the Journal of the Society of Arts, Vol. XXVI, 1877-78, in an article titled "The Art Manufactures of Japan from Personal Observation."

\textsuperscript{19}Ibid., pp. 425-428.
I have also seen curious convoluted surfaces formed by a number of thin layers of various metals brazed together till a thick sheet has been formed. Then by the irregular hammering and bulging of this sheet, and its subsequent grinding down, all the metals of the compound appear in the surface in waved lines.²⁰

Dresser brought back eight thousand objects for Tiffany, including ceramics, textiles, jewelry and metalwork²¹, many of which were retained by Tiffany for study examples in the silver workshops. It is conceivable that Moore also acquired from Dresser information on making mokume as well as on other techniques of forming alloys and designing in colored metals.²²

In June 1877 Tiffany held a major auction of 1902 items from the Dresser Collection. The catalog (figures 15 and 16)

²⁰ Dresser, p. 425.

²¹ Halen, p. 44. This number seems extraordinarily high. Perhaps another source was also buying from Dresser.

²² British Assay Laws forbade the mixture of silver or gold with base metals, thus preventing Dresser from promoting in England the elaborate surface effects he so admired. Historian Shirley Bury comments that "this was ironic, for it was the collection of articles which Dresser had made for Tiffany's on his visit to Japan that had helped the firm to reach a successful conclusion with their experiments." See Shirley Bury, "The Silver Designs of Dr. Christopher Dresser," Apollo, December 1962, p. 768. Dresser's influence on Tiffany's subsequent use of mixed metal is also acknowledged in the catalog entitled In Pursuit of Beauty: Americans and the Aesthetic Movement (New York: Metropolitan Museum of Art, 1986), p. 256: "Dresser's role in the evolution of the company's involvement with the Japanese style is apparent in the extensive collection he established for them."

(I find it curious that Dresser did not sell to Tiffany or to Moore an object in true mokume [tight burl] such as the tsuba from the Hawkshaw collection in Figure 10. The inro in marblized bronze [figure 19] most closely approximates the mokume technique.)

Dresser designed designed inlaid metalwork for Benham and Froud Ltd. (figure 14) using a combination of brass, copper, lead and electroplate rather than gold or silver.
gives only brief descriptions of the objects, making it difficult to determine specific metalwork techniques or dates of manufacture. Although the sale was not financially successful, the wide publicity it received generated further interest in the Japanese objects sold at Tiffany and Company, as well as providing additional impetus to continue to create its own silver in the Japanesque style.

Organization of the silver workshop on Prince Street in New York City (figure 17) developed into what became has become to be known as the "Tiffany School." In the absence of institutions in this country which offered technical training or schools of art and design, Moore provided both, modeling this education on European examples, especially on training programs he had seen in Paris. Moore was aware of the emphasis on industrial design education in Europe, and early in the 1860's he "set to work to establish a system of instruction and training in his Prince Street Works that soon developed into the most thorough and complete

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24 Carpenter, p.31.
school of its kind in existence.” He filled his design rooms (figure 18) with cases of decorative art objects, casts, models, sketches and books to be used for study resources and inspiration. Although there are no photographs in the Tiffany Archives of the rooms used for metalwork experiments, Moore was praised for making:

... many of the most important improvements in manufacturing processes, and by constant study, observation and travel [he] became an acknowledged artist, his productions always giving evidence of progress and refinement.

The Moore Collection bequeathed to the Metropolitan Museum on his death in 1891 provides a visual catalog of resources he made available for appreciation and study (figure 20). The collection of almost nine hundred objects included:

... beautiful little objects of Japanese metalwork, such as inros, tsubes, and swords. Like a true lover of art, Mr. Moore made up his collections to please himself and for his own cultivation and improvement. As a silversmith devoted to his craft, he studied constantly and intelligently the beauties of this little private museum, and it might not be difficult to discover

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See Carpenter, pp.226-242, for detailed information on the Prince Street silver workshops and silversmithing processes there employed. See also "Tiffany's: The World's Greatest Jewelry Store, from Cellar to Garret," The Jewellers' Weekly, October 5, 1887. an article celebrating Tiffany's golden anniversary with a lively tour through the workrooms. (Tiffany Archives)

26 E. Moore Obituary, Newport Observer, Thursday, August 6, 1891. (Tiffany Archives)
in this fact the secret of many of the artistic triumphs of the great house of the Tiffany Company.²⁷

Although there are no objects of mokume in the burled-wood pattern in the Moore Collection, catalog descriptions detail vases with inlays of different colored metals and enamels, of "different colored bronzes hammered together" (91.1.500), and of "marbled brown bronze" (91.1.475). The tsuba catalog entries (numbers 91.1.750-888) provide information about the carving, incrustations and surface designs, and various metals and alloys employed, primarily on iron bases. These objects (figures 13 and 19) enforce Moore's fascination with technique and simple, elegant form, and if he did, indeed, own objects made in the mokume pattern, they were not included in this collection.²⁸

²⁷Montezuma, "My Notebook," The Art Amateur (April 1892). (Tiffany Archives)

An ancillary issue to Moore's bequest is the role of a museum in providing education in industrial art design. Moore participated in the activities of the Metropolitan Museum, where a special committee was formed to deal with industrial art activities, following the example of the South Kensington Museum in providing a education in art industry. See Jay Cantor, "Art and Industry: Reflections on the Role of the American Museum in Encouraging Innovation in the Decorative Arts." 1973 Winterthur Conference.

²⁸The inro on the far right in figure 19 is labeled "marbleized bronze" by the Metropolitan Museum and and mokume by Stafford and Caccavale. It does not have the same color contrast or depth of pattering as seen in figure 10, or in the objects designed by Moore after 1877.
IV. Tiffany's Innovations in Mixed Metalwork: 1878–1889

By 1878, Tiffany's silvershops were not only designing objects inspired by the Japanese esthetic in design and in the technique of incorporating inlaid colored metals and alloys, but were also utilizing both elements in their products with new developments in electrometallurgy. Various techniques were incorporated in single pieces, such as the mixed-metal vase, pattern number 5008 (figures 21 and 22), which appears to have been made in the latter part of 1877. The drawing denotes "M.Metal" for the inset in the central neck of the vase. This inset is made of laminated metals which appear to include copper alloys in a marbleized pattern, and quite different from the one-colored "green gold," "yellow gold," etc., specified for the waiter in figure 24.

Subsequent illustrations (figures 29–32) substantiate the conclusion that the term "M.Metal" was used for both a marbled metal and a mokume effect.²⁹

²⁹ Tiffany hollow ware pattern numbers issued for the years 1877 through 1889:
1877: No. 4620 1883: No. 7300
1878: No. 5050 1884: No. 7840
1879: No. 5370 1885: No. 8340
1880: No. 5910 1886: No. 8800
1881: No. 6260 1887: No. 9260
1882: No. 6760 1888: No. 9660
1889: No. 10120

Charles H. Carpenter, Tiffany Silver. (New York: Dodd, Mead & Co., 1978), p. 260–261. Carpenter emphasizes that "these numbers are approximations based on available records and a study of dated pieces."

³⁰ See also footnote 34. The word "mokamea" is used in 1878 for Tiffany’s metalwork imitating wood grain.
The use of colored golds and other metals is illustrated in the hammered-silver waiter decorated with three exquisite butterflies from this same period (figure 23). The butterfly motif was used on a variety of objects, and drawings for similar figures (figure 24) specify the use of four different colors of gold, as well as copper, a "red metal" (alloy of copper) and platinum, which were to be applied by electro-deposition, or, as noted, "inlaid by battery." Tiffany's Japanesque production seemed to exemplify what W. Chandler Roberts-Austen promoted as an ideal union of art and science, whereby:

All the beautiful bronzes and alloys of the Japanese can be obtained by galvanic energy; and further, by suitable admixtures of gold, silver, and copper, red-gold, rose-coloured gold, or green gold may be deposited, so that the electro-metallurgist has at his command the varied palette of the decorative artist.31

Tiffany's exhibition at the 1878 Paris Exposition was a huge success. The firm was awarded the Grand Prize for silverware, Moore was given a gold medal for design, and the Tiffany pavilion was shopped by "a long list of royal, noble and critical purchasers from all parts of the earth, as well as by museums, art galleries, and prominent silversmiths world-

Tiffany made a wise decision in choosing to exhibit a number of extraordinary pieces which were not for sale, such as the magnificent Mackay silver service, alongside its new silver designs in the Japanese style.

The mixed-metal vase seen in a photograph (figure 25) of Japanese-inspired objects, showcased Tiffany's work in mokume. It was a technological feat that did not go unnoticed:

Tiffany & Co., it seems, with their superior mechanical appliances have carried the manufacture beyond the power or even the conception of its Asiatic inventors... seen in the mokume or metal work made in imitation of the grain of wood. The decorative coloring is also derived from Japanese Art, but has been so developed by Tiffany & Co., through the aid of chemistry and machinery, that they now possess a greater variety, and, in some instances, finer quality than the Japanese. It is reasonable to assume that Tiffany's publicist Edwin C. Taylor provided technical facts to the press as so many of the articles in the Tiffany Archives paraphrase the same information. Taylor insists that while Tiffany's use of

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33 See Carpenter, pp. 56-67, for the history and creation of the famous 1,250-piece Mackay dinner and dessert service for twenty-four people, the result of prospector John W. Mackay's silver discovery of the Comstock Lode in Nevada.

34 Richard Whiteing, "American Goods in Paris," The World. New York. July 11, 1878. This is the first press mention that I have seen of the word mokume [sic].

35 Tiffany archivist Ruth Caccavale confirms that Taylor was an employee of Tiffany. It is interesting that he also wrote editorial copy about the firm for the press. See footnote 36 below.
mixed metals "may have been suggested by examples of Japanese decoration", the work "so far surpassed any previous efforts" that specimens were purchased by "the clever Japanese themselves" for their government."36 Tiffany's catalog, the cover of which pictured figures representing Art and Industry, underscored the "American" quality of their designs and production, which was publicized as a successful union of art and technology inspired by Japanese culture to bring about an "American renaissance":

. . . America, the youngest of the great nations has wedded her art to that of the ancient East, and the offspring--an American renaissance--is the new school of Japanese-American design.37

The simplicity of the mokume vase banded with silver (figure 26) offered a welcome and original contrast to many clients tired of the ornate historicist styles prevalent at the time in Europe and America. The emphasis on form was a dramatic departure from the applied and inlaid decoration in other Japanesque works as well as on revival pieces. A study of its body pattern compared with the body pattern on the 1889 Tiffany vase reveals a close similarity. An archival drawing of the same style (figure 27)


The vase pictured in figures 11b,c., with its marbled body, may have been influenced by Tiffany's use of large areas of mokume pattern in an attempt to appeal to the Western taste.

37 Ibid.
shows a different composition of laminated mixed metals. 38 It should be noted that Japanese terms such as mokume or shakudo are not part of the silver designer's vocabulary. It may be conjectured that the same metals and alloys used by the Japanese assumed English names. Tiffany's formulas for "Black & White," "Black & Yellow," and "Red & White" were probably variations on the Japanese shakudo and shibuichi alloys combined with silver and gold, for by this time, Western metallurgists had unravelled the Japanese color codes. In the 1880's, The South Kensington Museum had a series of fifty-seven sample plates of various metals and alloys used by the Japanese, all treated with the "pickling solutions" which produced so many color variations. 39

Although other silver manufacturers in America as well as in Europe were designing Japanese-inspired silver, it does not appear that any were producing objects in laminated metals. 40 The veines de bois objects designed by Christofle & Cie. (figure 29) show a remarkable likeness to natural woodgraining, and, in its mass use of this effect, resembles the work of Tiffany. But the objective of these pieces was to project a textured surface pattern which did include the use of colored metals. Although the theme of

38 The whereabouts of the vases in figures 26 and 27 are unknown.
40 Safford and Caccavale, p. 816.
returning to nature had been recurrent in European and American society for over a century, stylized forms from nature were also inherent in Japanese decorative art, and wood-graining was a pleasing motif.

Examples of mokume in Tiffany's work are rarely found, indicating that the complexity of this hand-crafted technique was too time-consuming, even for Tiffany's silver workshops, or that there was little demand from the Tiffany customer. Most pieces utilizing mokume were probably unique designs commissioned for a particular occasion or client. The bowl (figure 29), cigarette case, matchbox (figure 30) and tea caddy (figure 31) display a variety of metal combinations, utilizing silver, gold, copper, shakudo, shibuichi, and perhaps others. The simple, unornamented form of each allows the technique of mokume to become the most important artistic element. Designs (figures 32 and 33) from this period, 1878 to 1881, specify the same lavish use of laminated metals to adorn the objects.

Wood graining was also achieved by other means than mokume. The ornamental wood-grain effect designed for the inside rim of tea caddy No. 6020 (figure 32) would be accomplished by what appears to be a metal inlay. This effect is exaggerated in a silver caster (figure 33) decorated

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4 Examples of Japanese mokume are also rare, as commented upon by Roberts-Austen: "I have only seen six examples, and only possess a single specimen of native work." The Colours of Metals and Alloys, p. 19.
with shaped panels of colored metals. This pattern of free-form bands of color inlaid into a textured silver object creates an effect of abstract or, possibly, faux mokume.

The issue of originality in Tiffany's mixed metalwork has been a subject for discussion ever since objects first utilizing colored metals appeared. As early as 1878, the suggestion that Japanese craftsmen worked for Tiffany was denied by Tiffany and by other journalists to whom Tiffany supplied information:

In spite of prevailing belief that they employed foreign artisans . . . their best, finest and most artistic wares are designed, constructed, and finished by American born workmen . . . the majority of whom have been at Tiffany since childhood. 42

In Paris, L. Falize's 1883 article "L'Art Japonaise" in Revue des arts Decoratifs reporting foreign craftsman at Tiffany may have been prompted by a national jealously, but it was widely thought to have credence. This was followed by Siegfried Bing's pronouncement:

... Japan had yielded [to Tiffany silverworkers] her marvelous secret of producing metals in all the colors of the palette. Moore had invited teams of Japanese craftsmen to America, under whose guidance tonalities of every kind were mixed with silver. 43

Tiffany vigorously denied this claim in both English and French in its 1889 Blue Book (figure 34):

It is with not a little national pride that Tiffany & Co., state that the designers and makers

43S. Bing, p. 156.
of these, its best productions shown in this exhibition, are Americans whose education and training in their several branches have been entirely accomplished in the house.

No evidence of Japanese artisans' work at the firm has been found either in employee rolls or on artistic drawings, but it is possible, even probable, that knowledge of certain techniques and formulas was communicated directly to Moore or a member of his large staff. Christopher Dresser might have provided firsthand information on aspects of colored metalwork following his visit to Japan in 1877. With his enthusiasm for the Japanese esthetic, he may have encouraged Tiffany to pursue a direction that was not legally permitted in England (see page 13, footnote 22). It has been suggested that Dresser may have "directly or indirectly recruited workers" from Japan to come to Tiffany.

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44 Janet Zapata, Archivist, and Ruth Caccavale, Assistant Archivist, have studied the designs and records from this period in Tiffany's history, and have found no evidence implicating Japanese participation in Tiffany's work.

45 Henry H. Hawley, "Tiffany's Silver in the Japanese Taste," The Bulletin of the Cleveland Museum of Art, October 1976, pp. 236-245. Hawley has studied the same sources (La Falize and Bing) cited above. There seems to be no factual evidence, only assumptions, leading Hawley to conclude that while Dresser may have recruited Japanese workers for Tiffany and may have suggested to Tiffany & Co. that "they employ Japanese decorative techniques for metalwork," . . . "There is, however, nothing to indicate that Dresser himself made any direct contribution to the design of particular pieces of Tiffany silver in the Japanese taste" (p. 241).
The changes in the Japanese metalwork industry after the Meiji Restoration offered an opportunity to learn directly from the Japanese artisan who could no longer follow his traditional occupation. Pursuing efforts to industrialize Japan with modern production methods, the Japanese government sent artisans to the West, some of whom may have stayed and found employment. Certainly there were teams of Japanese craftsmen and artisans who came to work at the 1876 Centennial Exhibition (see page 10 and footnote 14), which presents another possible source.

Tiffany’s designs in this idiom are original interpretations, not literal translations of Japanese art objects. The Japanese sensibility would find Tiffany’s use of mokume too assertive. The Japanese would use this technique sparingly, to enhance an object, not to engulf it. Prior to the Meiji Restoration, mokume was used only for small objects such as the tsuba. It seems logical, though, that there would have been an exchange of information on metal chemistry and techniques of metalworking — especially the technique of mokume — which would not have appeared on Tiffany’s design drawings or have been kept in company records.

V. Tiffany’s Vase in Mokume

The atmosphere at the 1889 Universal Exposition in Paris was charged with the expectation of seeing new forms and ideas made possible by modern technology. Perhaps the greatest symbol of a new age in metalwork design was the Eiffel Tower. Tiffany’s
pavilion featured an opulent display of a variety of silver techniques and decorative styles exuding "originality, elegance, and expensiveness." In particular, Tiffany's mokume vase was hailed for its technical mastery. Never before had so large a piece of mokume been seen. One might conjecture that the vase was made earlier, an elaboration on the production of mokume objects in the early 1880's, but that is not relevant to its impact as a unique exposition showpiece in 1889.

The press was fascinated with how it was made, and described the process in great detail (with information supplied by Tiffany's publicists, evidenced by repetitive phrasing in contemporary newspapers and journals):

The body is composed of fine gold, fine silver shakado, sedo [red copper], and shi-bui-chi, the three latter being Japanese alloys, all folded together in twenty-four layers and backed with sterling silver.

The difficult process of folding, hammering and rolling can only be accomplished by the greatest care, it being necessary that each metal should stretch and flow alike. The sheet of metal having been prepared, the slow and laborious process follows of hammering it into form, during which the metals must be kept compact and connected in

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46 Jeweler's Weekly, p. 33.

47 Many objects displayed by Tiffany in Paris in 1878 were private commissions (including the famous Mackay service) made prior to the exposition and not for sale, and it is possible that many pieces exhibited in 1889 were not specifically made for the exposition.
one piece. The base and neck of silver are added last. This piece of various colored metals is believed to be the largest ever made.48

The Paris Herald supplied additional information about the block of twenty-four layers, which was "then twisted and rolled out under the pressure of a two hundred ton roller" before the large piece was backed with silver.49

A description of the base, end, and stand was recorded in the Art Journal: "Both ends of the vase are richly engraved, chased and oxidized. It is mounted on a block of golden ebony forming a pleasing contrast to the body of the vase proper."50 With so much emphasis placed on the "American-ness" of the Tiffany exhibition, the "golden ebony" described could have been the American Ebony, Diospyros, characterized

Roberts-Austen jealously admired the vase and the fact that "Messrs. Tiffany have even produced the celebrated Japanese 'lobster red' [sedo] which has quite alluded my efforts to secure."
"The Use of Alloys in Art Metal Work," p. 28.

49. Paris Herald, September 30, 1889. No author. Tiffany Archives. With so many repetitive explanations of Tiffany's methods of making its vase, it is interesting to discover this publication describing a two-ton roller, which was not mentioned elsewhere.

50. p. xlii.
by a black heart and irregular yellowish sapwood which
"makes a striking contrast for decorative work."  

Forming the Vase

A note found in Moore's files explained how metal mixtures were made. Although this reference does not specifically refer to the vase of 1889, it is invaluable information about Moore's technique. It certainly seems more logical to arrive at thirty layers (a multiple of the five metal layers in the laminate) than the twenty-four layers described by the press in 1889. The note is as follows:

It consists of Fine Gold, Fine Silver, Pure Copper, Shakudo (copper and gold) Shibu-ichi (copper and silver).

These five layers of metal are soldered together making a block about three-quarters of an inch thick. This is beaten and rolled out making it thinner. When it is reduced to about one-fourth of an inch in thickness, it is folded together, three parts making fifteen layers. This again is reduced and again folded double, making thirty layers. A sterling backing is now added and the process or variegation begins by cutting figures and spots through the outer metals and then by beating and forcing the under metals through and up to the surface. This goes on until the desired fineness, effect and thinness is produced.

It is now ready to be hammered into the shape desired, then smoothed and the colors of all the metals developed by chemicals producing the patina of each.  

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51 Thomas Corkhill, The Complete Dictionary of Wood (New York: Stein and Day, 1980), p. 166. The whereabouts of the base is unknown. Presumably it was destroyed in the conversion of the vase to a lamp base.

52 Carpenter, p. 240. Recent research outdates some of the information found in Carpenter's 1977 book on Tiffany & Co. Some of his facts are confusing to the student, as when he says Moore's metal mixtures were not alloys, and that Moore's work with these metals took place in the 1880's (p. 240).
A silversmith currently working in the Tiffany silvershop in Parsippany, New Jersey, concurs with the methods described above of fabricating the mokume. This is the same process he learned as an apprentice. He elaborated on the tremendous effort of forming the seamless vase, which had to have been raised by hand, using wooden forms. Because of the size, shape and patterning (figures 2-4), he speculates that the vase might have been raised up from the neck. The fragile process of raising the vase was complicated by its size, and annealing was a crucial process to hold the composite metal sheet intact, while at the same time strengthening it and keeping it flexible enough to be worked. After the piece was raised, the hammering process with shaping tools would begin. According to this silversmith, it could have taken at least two silversmiths three to four hundred hours to hammer the vase into its final shape.

Upon completion of the vase, one pickle bath would have been used to bring out all the colors of the different metals used in the mokume. A pickling solution was also used on the base (figure 4), to give it a bronze appearance. A study of the base reveals two different tones of bronze, which must have resulted from two different immersion times in the solution.
The silversmith concludes admiringly: "It was quite a feat to get something like that up that clean and precise!"  

VI. Conclusion

By 1889, American materials and motifs had blended with the Japanese sensibility toward artistic workmanship. Ornament was derived from studies of American flowers, animals and other native forms. The etched and enameled "Orchid Vase" (figure 35) represented as "the largest and also handsomest piece of enameled silver ever produced," was Saracenic in style and featured an elaborate American orchid motif. Its base and stand appear very similar to that of the mokume vase. Both vases were characterized as "a scholarly combination, almost unconscious, of all that Mr. Moore learned from us, or from the Japanese, from the Indians, or from themselves in the past thirty years."

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54 One notes that the Japanese term "mokume" was never used in Tiffany publications, or, by 1889, by the American press. The English Art Journal used the term mokume in its review of the Tiffany vase, defining it as "a laminated or mixed metal of which the component parts long remained a secret known only to the Japanese", p. xlii. And L. Falize wrote about "le grand vase... entièrement fait en "mokoume", un resultat tout à fait extraordinaire et admirable," Orfevrerie, Gazette des Beaux Arts (Paris, 1889), p. 220.

55 Jewelers' Weekly, p. 50.

56 L. Falize. Translation by L. Barre. Tiffany Archives.
Reinforcing that notion of "scholarly combination" is the Bear and Bee Vinagrette (figure 36) of smoky crystal from North Carolina, mounted in colored gold, shakudo, and other Japanese metals.

By 1889, silver and jewelry were created, praised, and intended to be appreciated as works of art, — American art — and Moore's tour de force in mokume represented a luxuriously crafted ornament raised to the status of art object on a stand.

Although by 1889 the luster of Japan's exotic appeal had dimmed as the result of its drive for modernization based on Western methods, the Western connoisseur of Japanese culture did not abandon his study. He continued to collect exquisite examples of Japanese arts and crafts which bore little resemblance to the mass-produced decorative artworks which were flooding Western markets. An understanding of the Japanese attitude toward craftsmanship inspired a new appreciation of material and color. When Edward Moore died in 1891, S. Bing eulogized him as:

one of the first to comprehend the real value of the art treasures just emerging from the Orient . . .

and although death put:

disciples who continued the work he had begun, seeking the practical application of art in a multiplicity of new forms.  

Moore’s pioneer work in artistic silverware established an international reputation for Tiffany and Company and a leadership role in creating precious objects for the home. The legacy of Moore’s masterpiece in mokume was to provide the stimulus to pursue new esthetics in color and form in metalwork.

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58 Bing, pp.121-123. Bing does not specifically name anyone designer. One questions why Paulding Farnham’s name is seldom seen in print as he was a senior assistant to Moore as well as a disciple. (See Zapata’s article, footnote 57).

On the subject of Louis Comfort Tiffany’s relationship with Moore and with Tiffany and Company, see Henry Hawley’s Tiffany’s Silver in the Japanese Taste (Bulletin of the Cleveland Museum of Art, October 1976), p. 243. Mr. Hawley acknowledges, as do other sources, the likelihood of Moore’s strong influence on L.C.Tiffany, as well as the possibility of Tiffany’s influence on Moore, but concludes that there is no evidence presently available which can provide definitive information.

59 Moore was highly esteemed by his European contemporaries, as exampled not only by Bing’s praise but by Adolf Loos, who called him “the greatest goldsmith of this century” and the House of Tiffany, reigning “with sovereign greatness” over “the whole art of gold- and silverwork worldwide.” Adolf Loos, ”Review of the Arts and Crafts, II, Die Wage, November 26,1898. Published in Adolf Loos, Spoken Into the Void, trans. by Jane O. Newman and John H. Smith (Cambridge, Mass: MIT Press,1982)p.136.
TIFFANY'S MASTERY OF MOKUME
PARIS 1889

Bibliography


Falize, Lucien. "Orfèvrerie," *Gazette des Beaux Arts* (Paris, 1889) p. 220. A translation of this article was made by L. Barre for Tiffany and Company, entitled "The Exhibit of Silverware at the Paris Exhibition." (Tiffany Archives)


Heydt, George Frederic. "A Prince of Silversmiths," The Illustrated American, August 29, 1891. One of many obituaries praising E.C. Moore. (Tiffany Archives)
Heydt was a publicist employed by Tiffany and Company, and author of Charles L. Tiffany and the House of Tiffany & Co. (New York, 1893).


"Hundreds of Thousands," The Jewelers' Weekly, Vol. VIII, No. 6 (June 6, 1889), p. 47. (Tiffany Archives)


Perspective on Meiji emphasis on development of export market, and redeployment of traditional craft artisans into industry producing Western-style objects.


From the library of E.C. Moore, this pamphlet was reprinted from a lecture delivered to English silversmiths on Japanese metalwork techniques. It goes into detail on the composition of colored metals, oxidising solutions used to patina them, and techniques of working with metals, including mokume. Roberts-Austen acknowledges Tiffany's accomplishments in the field.

------. "The Use of Alloys in Art Metal Work," *American Architect and Building News,* 1890. Reprint of a paper delivered by Roberts-Austen is concerned specifically with color and texture of metals, and extolls the Tiffany vase in mokume from the 1889 exhibition as "one of the greatest triumphs of manipulative skill." His allusion to the vase pictured in figure 11b.c. of this paper leads one to believe it, or one very similar to it, was made prior to 1890 (page 28).

Provides history of Japanese sword furniture, development of decorative techniques, periods of manufacture, and important artistic families.


Tribute to Tiffany's accomplishments at the 1878 Paris exposition by the company's employed publicist.

Tiffany Archives, Tiffany and Company, Parsippany, New Jersey.
A meticulously compiled record of published articles primarily from the last quarter of the nineteenth century; catalogued boxes of designs and drawings; period photographs; record and account books, and more.

Complete reference with basic information on metals and decorative techniques, including mokume.


Figure 1. Mokume vase. Tiffany and Company, 1889. h. 32 in. Illustrated in The Jewelers' Weekly (New York: June 6, 1889), p. 47.
Figures 3-4. Details of mokume (gold, silver, copper, shakudo, and shibuichi); neck and base (silver: engraved, chased and oxidized).
Figure 5. Sword furniture in mokume: (a)tsubas; (b)kozuka [knife handle]; and (c)kojiri [butt]. Late eighteenth-nineteenth century. Illustrated in Henri Joly and Kumakku Tomita, *Japanese Art and Handicraft* (Rutland, VT: Charles E. Tuttle, 1975 reprint of 1915 edition), Plates CLIV-CLV.


- Itame-hada: Wood grain; divided by size into 3-itame-hada (large wood grain) and ko-itame-hada (small wood grain).
- ko-itame-hada
- Masame-hada: Straight grain.
- Nashi-ji-hada: Pear skin.
- Ayasugi-hada: Concentrically curved grain.
- Matsukawa-hada: Lit. pine tree bark; steel with abundant chikei.
- Muji: No steel texture but clear and plain or mirror-like.
- Mokume-hada: Burl grain.

Figure 7. Wood-grain patterns, illustrated in Nippon-To: Art Swords of Japan. The Walter A. Compton Collection, (New York: Japan House Gallery, 1976) p. 69.
Figure 9. (a) Tsuba, Japanese, nineteenth century. Shibui ichi inlaid with silver, gilt and shakudo. (b) Tsuba, Japanese, nineteenth century. Shakudo decorated with copper, gilt and silver. (c) Tsuba, Japanese, seventeenth century. Inlaid copper, decorated with shakudo and gilt. Roy G. Cole Collection.

Figure 10. Tsuba, Japanese, late eighteenth or early nineteenth century, mokume (silver, shakudo and red copper). Joly and Tomita, Plote CLV.
Figure 11. (a) Vase, Japanese, ca. 1875-1890, alloyed metal with gold and silver. A typical object made to appeal to Western Taste. "The Japan Idea" exhibition, Wadsworth Atheneum, Hartford, October-December, 1990.
Figure 11 b.c. Vase, Japanese, c. 1890. Marbled copper, shakudo and silver body, with inlays and other decoration. (b) In the collection of the Victoria & Albert Museum, this vase was acquired in 1892 from S. Bing, and is described as a demonstration piece showing different Japanese decorative techniques. See The Toshiba Gallery: Japanese Art and Design, ed. by Joe Earle (London: Victoria and Albert Museum, 1986), Fig. 198.

(c) This is a twin to the vase described above. The body pattern closely resembles the Tiffany vase of 1889, and may have been influenced by the widely publicized Tiffany technique. Mokume was traditionally used sparingly. Naga Antiques, New York.
Figure 12. Photograph of portrait of Edward C. Moore (1827-1891). Tiffany and Company, Parsippany, N.J.

Figure 13. Right: Vase, Japanese, nineteenth century, decorated with inlays of different colored metals. Silver, h. 9 in. Left: Vase, Japanese nineteenth century, spotted with gold. Bronze, h. 8 in. The Metropolitan Museum of Art, Edward C. Moore Collection, Bequest of Edward C. Moore, 1891 (91.1.483, 485)
Figure 14. Brass and copper, trays and kettles, English, Benham & Froud, c. 1882-1885, brass, copper, lead and electroplate, designed by Christopher Dresser. Widmar Halen, Christopher Dresser (Oxford: Phaidon-Christies, Ltd, 1990) plate 192.
Figures 15-16. Catalog cover and page from Dresser Collection for Tiffany & Co. Public Sale, Monday, June 18, 1877, of 1902 objects of metalwork, carved jades, pottery, textiles, wicker, and lacquer. (Tiffany Archives)
Figure 17. Prince Street Silver Shop, Tiffany & Co., New York. Illustrated in "Tiffany's: The World's Greatest Jewelry Store" (The Jewellers' Weekly, October 5, 1887) Tiffany Archives.

Figure 18. Design Room, Prince Street Silver Shop, Tiffany & Co., New York, c. 1880-1890. Archival photograph.
Figure 19. Inro, Japanese, nineteenth century (far right), marbleized bronze decorated with lacquered medallions. The Metropolitan Museum of Art, E.C. Moore Collection, Bequest of E.C. Moore, 1891 (91.1.1062)

Figure 20. Photograph of The Edward C. Moore Collection, exhibition opening at The Metropolitan Museum of Art. (New York: Harper's Weekly, November 10, 1894. Tiffany Archives.)
Figure 21. Vase, Tiffany & Co., ca. 1878. Hammered silver with panels of patinated alloys and applied decoration, 9 5/8" h. Christie’s New York: January 19, 1990, p. 52. An applied (battery inlaid?) mokume panel is in center.
Figure 22. Hammering and mounting design for Vase No. 5008. Tiffany & Co. Pen and ink on paper. Tiffany Archives. Note central rectangular panel is designated "M. Metal."
Figure 23. Waiter, Tiffany & Co., ca. 1880. Hammered silver inlaid with three butterflies of copper, gold, platinum and brass, 11". Christie's New York: January 26, 1991,
Figure 24. Drawings detailing metal composition and design for butterflies, used in waiter (figure 23) and other objects. Tiffany Archives.
Figure 25. Pitcher, Vase, Coffee and Tea Service, 1878. Silver and mixed metals. Tiffany & Co. Archival photograph.
Figure 26. Vase, Tiffany & Co., 1878. Silver and mokume. Archival photograph.

Figure 27. Mixed metal design for Vase No. 5134, Tiffany & Co., 1880. Ink on paper, with colored pencil notations. Tiffany Archives.
Figure 29. Mokume dish, Tiffany & Co., ca. 1880. Silver, brass and patinated copper alloys, h. 1 1/2 in., diam. 4 1/2 in. Christie's (New York: January 19, 1990), p. 43.

Figure 30. (a) Tea caddy, Tiffany & Co., c. 1880. Silver, red copper, shakudo, and ivory, h. 4 1/2 in. New York Historical Society.

Figure 31. Mixed metal design for Bowl No. 5985, Tiffany & Co., ca. 1880. Tiffany Archives.

Figure 32. Mixed metal design for Tea Caddy No. 6020, Tiffany & Co., 1880. Tiffany Archives.
It is with not a little national pride that Tiffany & Co. state that the designers and makers of these, its best productions shown in this exhibition, are Americans whose education and training in their several branches have been entirely accomplished in the house.

Figure 34. Front cover and page from Tiffany & Co.'s guide to the 1889 Exposition Universelle, Paris.

Figure 36. Vinagrette, Tiffany & Co., 1889. Smoky crystal mounted in colored gold, shakudo, and other Japanese metals. Tiffany Archives.