

## The Louis XVI Period

The Louis XVI Period was a time of enormous creativity in French horology. New influences, constant demand, a well-established system of production, advancements in horology and new designs fostered an enormously prolific period of quality pieces in seemingly endless varieties.

By the time Louis XVI gained power in 1774; the style which bears his name was already relatively developed. The Louis XVI or 'Louis Seize' period was part of the larger neoclassical movement that began in the mid-18th century and ended about 1830. The context is important because styles do not suddenly transform with the rise and fall of the crown, and a clock made outside the actual dates of the monarchy could still be considered Louis XVI style if it reflects the prevailing stylistic attributes of the period.

The Neoclassical period was the revival of styles popular during the Classical Period and a reaction to the earlier Rococo style. In 1748 excavations began in Pompeii prompting a renewed interest in Greco-Roman art. Fostered by aristocrats taking the Grand Tour and influenced by Johann Joachim Winkelmann's two books, 'Thoughts on the Imitation of Greek Works in Painting and Sculpture (1755) and 'History of Ancient Art' (1764), these works were the first to distinguish between ancient Greek and Roman art and actually define the periods within them. Winkelmann was the first to advocate that the principles found in Greek Art including clarity, harmony and symmetry be introduced into contemporary art. While the earliest expression of the neoclassical period, the Gout Grec, was based in the Greek designs the later period, the Gout Etrusque, looked to the Roman era and tended to be more grotesque and mythical.

Leading architects and designers including Jean Francois Forty, Jean-Charles Delafosse and J D Dugourc produced design books adopting the new style and were supported by influential aristocrats and connoisseurs such as Mme. Du Barry, Marie Antoinette and Augustin Blondel de Gagny. The new style quickly gained popularity as lesser aristocrats and merchants keen to cement their social status eagerly placed their orders.

The forms became less curvilinear and many of the extraneous decorations like c-scrolls and volutes were eliminated. Rosettes, acanthus leaves, Greek keys and urns were some of the new decorative elements introduced. The castings became more refined and the appliqués became somewhat more flat. While the overall designs became more symmetrical, the figural groups are never static. More refined modeling, an emphasis on space and the elimination of excessive decorations still conveyed movement while eliminating the weightiness of earlier periods.

### **Guilds, Le Louvre and the Marchand-Mercier**

The usual assumption about early clocks is that they are the product of a single craftsman toiling away at his bench. During this period, however, there was a great subdivision of labor and the final product was the result of a well-coordinated effort between many skilled craftsmen that included the cabinetmaker, sculptor, caster, chaser, bell-founder, engraver, enameller, porcelain maker and marble worker. If done well, it produced a decorative object that was both aesthetically pleasing and kept accurate time.

There were three main groups that were responsible for the production of clocks.

- Craftsmen - They were the workers who specialized in a particular skill and were required to be attached to their respective guilds. Since the guilds were not national, each major city would have had their own selection of guilds with their own rules, but the main purposes would have remained the same - to ensure the overall quality of the work and also protect the individual artists. There were strict rules governing the scope of work for each guild and also the number of years apprentices and journeyman must serve, the requirements to become a master including any fees and test of skill, the number of masters, apprentices and journeyman that could exist at any one time, any family privileges and the penalties for breaking any of the rules. Since the guilds were generally very conservative individual brilliance and innovation would have been marginalized, but the overall product quality was kept very high and the member's livelihood remained safe.
- Le Louvre – These were a special group of masters bestowed royal patronage, housed at the Louvre and free of the rules of the guilds. This meant they were not restricted by the number of journeymen and apprentices they could have and they could also work in other disciplines. The clockmakers were given the title 'Horologer du Roi' and included many respected makers including Robin, Lepine and LeRoy. Unbound by convention, these makers designed and produced some of the most beautiful pieces, both technically and aesthetically, of the period.

It should be mentioned that Louis XVI supposedly had an appreciation for horology and was persuaded by the clockmakers to create a school of clock making in 1786 that lasted until the Revolution.

- Marchand-Mercier - Working outside the guilds and often at odds with the clockmakers were the marchand-mercier which translates to 'merchant of merchandise', but during the 18th century took the connotation of merchant of 'objects d'art'. They were carefully constrained by the regulations of a 'corporation' under rules codified in 1613 and had their own criteria for full membership. Once a full member, they were not only allowed to buy and sell from each guild, but served as interior designers and decorators. They were allowed to create pieces by combining the products of several guilds as best illustrated by ormolu mounted porcelain urns which became popular during the 18th century. Consequently, they not only provided an outlets for the craftsmen, but also took an active role in design and actually influence the evolution of the style.

## **Styles of Clocks**

During the Louis XVI period clockmakers were creating movements that ranged from simple timepieces to extraordinary pieces used for astronomical observations. These esteemed clockmakers were experimenting with wheel layouts, creating new escapements, experimenting in metallurgy, etc. and included such renowned men as LePaute, Berthoud, Robin, Lepine, Janvier and Le Roy. Although they are greatly appreciated, their work is slightly outside the focus of this paper. Some of the information will certainly be pertinent, but the main focus will be more general and will leave the discussion of complicated horological theories to the professionals.

I spent a great deal of time trying to figure out the best way to organize the different types of clocks and decided to go with the most common labels which were usually based on the most recognizable feature. There are other permutations, but there always seem to be obvious exceptions such as The Temple d'Amour clock. It is figural, a skeleton and has an annular dial. It became clear that my inability to define them more precisely was not a lack of logic, but a demonstration of the extraordinary variety present during the period.

I decided to give a brief overview of each style and then offer a more in depth description of the various parts thus reducing the necessity for repetition.

**Floor Standing and Mantle Regulators** – The floor standing regulators evolved from earlier periods. They generally have exceptional movements and often complications. The case style transformed from lyre-shaped ormolu mounted forms veneered in fancy decorative woods to a more rectilinear design veneered with mahogany with simpler and fewer ormolu mounts. The mantle regulators are housed in decorative architectural ormolu cases and then much like the floor standing clocks in simpler mahogany cases. These case styles became very popular during the Empire Period and demonstrate how influential the earlier makers could be.

**Mantle Clocks** - The overwhelming majority of Louis XVI clocks are mantle clocks with case styles ranging from elaborate figural pieces to simple architectural examples with the most popular styles listed below.

**Figural** – Figural clocks are clocks in which the figures are the main decorative elements. They vary widely in subject and theme, but generally fall into one or more of the following categories:

- Classical – These depict events popular in Greek and Roman mythology
- Allegorical – Classical figures and decorations are used to communicate some of the popular ideas and concepts of the period including wisdom and eternal love.
- Historical – The forms represent popular events in secular history and include 'The Deserter', which features a scene from the popular opera 'Le Deserteur' by Michel-Jean Sedaine which premiered in 1769, and clocks shaped as hot air balloons commemorating the Mongolfier Brothers' historical flight in 1783.

**Obelisk** – Almost always include trophies of arms in their decoration and were inspired by the monuments raised in public places to celebrate great victories or important events.

**Portico** – The clockwork is supported by two or more columns. Although the form are inspired by the classical triumphant arch, there was a wide range of decorative elements incorporated into the clocks.

**Lyre** – The lyre clock, obviously named after its shape, was another form that basically originated during this period and continued to be popular into the 20th century. There are two basic versions:

1. The movement is suspended from the top of the case and serves as the pendulum bob.
2. The movement is stationary and the ring(s) that encircle the dial serve as part of the pendulum. While on later pieces the rings are often a paste-stone imitating diamonds, the earlier pieces frequently have decorative ormolu rings.

**Annular** - The annular dial clock or 'pendule cercle tournant' has a horizontally rotating dial with a stationary hand or pointer. Sometimes referred to as 'band clocks' they took many forms from elaborate

figural pieces to simple architectural examples. They also incorporate multiple materials and complications often including calendar mechanisms in the bases of the urn forms. Unlike later pieces they almost always have the movement in the base and, if cartouche plaques are used, they are pinned to the brass dial wheel instead of using bent tabs. Temple d'amour clocks are tributes to love and one of the most popular annular forms of the period.

'Pendule Cage' - These range from simple rectangular cases glazed on all four sides to elaborately cast and chased examples with porcelain panels. Although most pieces from this period evolved from earlier examples this style originated during this period and was so popular it continued to develop late into the Victorian era.

Animal Clocks – Originally created during the Louis XVI period they incorporate patinated animals supporting the clock on their back. In the Louis XVI versions the animals have traded their rockwork bases for more architectural ones.

Skeleton Clocks – Skeleton clocks emphasize the exceptional workmanship of the clockmakers. The movements range from simple time pieces to exceptionally complicated mechanisms and are paired with case styles that range from brass frames to clocks adorned with elaborately decorated enamel plaques.

Travel Clocks - These clocks are the predecessors of the modern carriage clock. The Pendule d'Officier was the most popular variation and generally include complicated striking mechanisms.

## **Wall Clocks**

Cartel Clocks - They became extremely popular during the second half of the period. The symmetrical designs perfectly suited the room designs of the period.

## **Case Materials and Construction**

Materials popular during the Louis XV period continued to be used as new materials were introduced.

**Bronze:** During the Louis XVI period gold plated bronze or ormolu was the predominant material used in the decorative arts. The process by which bronze, an alloy of brass, tin, zinc and copper, was turned into a beautiful gilt mount or statue was a multi-stepped process that required the skill of several craftsmen thus highlighting the division of labor even within one specialty.

First the original 2D design, e.g. a design by Forty, was made into a terra-cotta model which was then molded in plaster. This plaster model was reworked until its surface and shapes were perfected and then a bronze cast was made which was known as the 'cast on plaster'. The bronze casting model was then reworked by the bronze chaser to smooth the surfaces and remove any imperfections in order to reduce the need for chasing on subsequent castings. Then it was returned to the bronze caster to make further copies.

There were two basic casting methods used. The first was sand casting where the model is pressed into a sandbox to make a negative impression. The bronze is then poured in to create the positive. This method was used mainly on flat pieces where detail is not that important. The second is the lost wax method

which was much more complicated but created casts with much greater detail. In this method a wax cast is produced with a core of solid material. It is worked until suitable then encased in a plaster mold and heated. As the plaster dries the wax melts and runs out. Once it reaches the proper temperature the bronze is poured and the final cast is formed. The new bronze cast is then sent back to the chaser who again reworks the surface and removes any imperfections and also creates textures on the surface to enhance the gold finish and breathe life into the piece.

It was then given to the mounter who examined and assembled the various components either by soldering or riveting by screws or dowels so all the pieces fit together properly.

The final process was either patination or gilding. The pieces were first cleaned in a weak sulfur solution. If they were to be gilded, an amalgam of mercury and gold was painted on and then the mercury was fired off. Several applications were used creating a deep luxurious finish. Each gilder had his own recipe for the amalgam so the color and depth of the finish differs slightly. They would also be able to treat the gold to achieve even greater variations such as a flat matte surface. Once this process was finished the large flat surfaces and the highlights were burnished with an agate pen to create highly polished areas that shimmered in the light.

Mercury vapors are extremely toxic and since the process was often done in the homes of the craftsmen often the entire family suffered from the effects of mercury poisoning. Even though there were several attempts to eliminate the danger, it was not until 1818 that a firing oven was developed that was capable of diverting the toxic fumes safely.

In the case of patination, the cleaned casting was bathed in the necessary chemical to achieve the proper finish and then it was waxed to give it a shine and preserve the finish.

#### Characteristics of Period Bronze

- The surface of the unburnished areas, especially on the figures, is not completely smooth, but slightly textured and patterned with swirls.
- Everything is cast, even including small chains, so have casting imperfections. The majority of these imperfections were eliminated by the chaser, but often the plugs are now slightly visible.
- Parts of the figures were cast separately and later assembled so the seams, i.e. where the arms were brazed, are slightly visible.
- Gold was only applied to the parts that were visible and there is a distinct line where the gold finish ends. Parts that were never to be seen, like the underside of an ormolu base, would be left unfinished.
- When mounts are affixed by a screw, it always steel and generally the head of the screw is rounded with a v-cut slot.
- The burnished areas are not completely flat like it was polished on a machine, but have a rippled pattern.
- The mounts usually have the pins hidden. If it is going onto wood or marble there is a spike threaded into the back side. If it is going through bronze then a threaded brass rod is used and the whole is affixed with a brass nut.
- Steel rods with brass nuts are used to secure the pieces to the base.

- The large architectural parts are left completely unfinished on the interiors. Sometimes, when the pieces were filed, the burr of the file is still present along the edge.
- The interior of the figures is hollow and often the steel rods, now rusted, used to pin parts together before finishing are present. There is also a white plaster substance still present from the original casting process.
- Occasionally the cases are actually signed and numbered – generally by the bronzer, but occasionally by the clockmaker.

In speaking of bronze one cannot overlook two great bronze workers of the late 18th century, Thomire (1751-1843) and Gouthière (1732-1813).

Pierre Gouthière was the most famous bronzer of the late 18th century. In 1767 he received the title of Doreur du roi (gilder of the king) from Louis XV and supplied works to many leading aristocrats and marchand-mercier. He invented a process that created a matte gilt finish and created all types of objects including the Avignon clock in 1771 that is now in the Wallace Collection.

Pierre-Philippe Thomire had trained in the workshops of Gouthière, established his own shop in 1775, and produced mounts for the Sevres Porcelain factory during the Revolution. His greatest achievements, however, happened after the Revolution under the Emperor Napoleon.

### **Wood**

Wood was generally used on precision pieces, but there are examples of bases made of ebony veneered oak that were early in the period and used to replicate black marble. Precision pieces, table and floor standing, had oak as the secondary wood and were veneered with more expensive varieties including kingwood, rosewood, tulipwood, satinwood and later on mahogany. Joints were typically either lap or mortise and tennon. A few of the most gifted cabinetmakers of clock cases were Petit, Martin Carlin and Lieutaud.

### **Marble**

If bronze was the predominant material used, marble was certainly the next most popular. White marble retained its popularity, but new variations such as grey, griotte (red) and antico verde (green) were introduced and dominated by the end of the century.

#### Characteristics of Period Marble

- Although the marble bases were polished, they were hand polished and rarely are as flat and perfect as later pieces.
- The unseen parts, including the undersides, are generally rough and sometimes the tool marks where the marble pieces were split are still visible. If there is a hole it often still shows the signs of being drilled and chiseled.
- Marble was also used for the figures and decorative elements. Since the figures would have been carved, there is less detail than if it were captured in bronze.
- The variegated marbles were more likely to have small imperfections due to the nature of the graining and shellac was used to fill them.
- When there were mounts the holes for the spikes were drilled and then filled with wood.

## **Porcelain/Bisque**

Bisque was used to make both clock cases and decorative plaques. It was not only left white, but could be decorated to imitate Wedgwood or painted with colorful garlands. Often it was also adorned with ormolu mounts. Porcelain was used for the cases, but was mostly paired with ormolu and decorative porcelain plaques were often used to adorn bronze cases.

Examples of manufacturers were Niderviller, The Duc d'Angouleme Porcelain Factory and Sevres.

Porcelain and Bisque were popular, but their fragility would make them easily susceptible to damage.

## **Enamel Plaques**

Enamel used not only for the dial, but as an additional decorative element, became popular during the 18th century and continued into the 19<sup>th</sup> century. The most popular were cobalt blue plaques elaborately decorated with gilt and polychrome garlands by such artists as Dubuisson and Coteau. Usually the plaques were pinned through the bronze frames and bordered by a beaded edge.

## **Porphyry, Lapis, Gold**

Only the very best clocks were made with such precious materials as they were extremely expensive and required the very best craftsmen.

## **Clockwork**

This section will cover the mechanism and dial and include characteristics common to period pieces.

### **Dials**

White enamel dials were used almost exclusively and, as they evolved, the overall size of the dials decreased and the hour and minute rings became smaller and arranged closer to the outside edge. The hours could be either Roman numerals or Arabic numbers while the 5-minute marks were always Arabic and were replaced at the end of the century by 15-min marks. Most carried the clockmakers signature, but it was not altogether unusual for it to be left off. The dials were finely lettered usually with black numerals since they showed up so well against the white, but blue and red were also used as were raised gilt marks.

When added complications are present, such as date features, they could be displayed on subsidiary dials or on the main dial in concentric rings where a combinations of colors was used for clarity.

Moon dials are generally exceptionally painted enamel discs and can be a subsidiary dial or show through an aperture on the dial.

There were chapter ring dials that were open in the center. This allowed the movements to be highlighted and if they were skeletonized would be a stunning decorative element.

The really extraordinary dials were decorated with exceptionally detailed garlands, zodiac signs and had wonderful gilt-work. Coteau, Dubuisson and Barbichon were exceptional dial makers and their work is absolutely stunning. Coteau often signed his dials in very small letters on the front at the very bottom edge of the dial and also on the backside like most of the others.

#### Characteristics of Period Dials

- The lettering on the front of the dial is generally slightly raised.
- The back of the dial is usually a speckled enamel with the earlier dials containing more imperfections.

#### Hands

Early on, delicate pierced and engraved ormolu hands were used for the time chapter generally with the hour hand being symmetrical and the minute asymmetrical. They soon evolved to both hands being more symmetrical and included elaborately shaped designs such as the lyre shape and some geometrically inspired designs like the scissor shape.

#### Characteristics of Period Hands

- The sweep second bit is always finely cut steel.
- If the hands are fire-gilded the backsides show no gold.
- The cut marks of the small saw blades used to pierce the hands are often still visible.
- If added complications are present the indicator hands are generally less elaborate than those used on the hour chapter, are often blued steel and sometimes double sided.

#### Movements

Clock movements were less robust and more utilitarian than earlier periods, but were still very high quality. Most of the movements were round, sometimes with a flat bottom, and were secured to dial plates that were mounted to the bezels, had four plain posts pinned on the backplate and solid plates unless skeletonized.

Generally there is count wheel striking with a five spoke count wheel planted on the backplate. In the earlier pieces the spokes were more triangular, creating a star shape, while on the later pieces they were more slender. The steel arbors for the count wheel locking and lifting arms are spring loaded with long steel springs mounted on the backplate. The striking hammer has a round brass head mounted to a malleable brass arm and the bell is affixed to the bell stand with a steel screw. It generally counts the hours at each hour and strikes once at the half-hour, but sometimes also struck the quarters which would often necessitate another train.

The tradition of the makers engraving their names on the backplates continued early in the period, but is seen less often as time passed.

Most movements were simple time and strike affairs, but other complications were available. They included calendar features, moon dials, equation of time, quarter-striking, alarms and sweep seconds.

#### Additional Characteristics of Period Movements



- The winding arbors are smaller than earlier periods and soon were no longer arranged asymmetrically. The click wheels are usually pinned against the plate.
- The springs are heavy and have obvious file marks down their length creating almost grooves. They are occasionally signed and dated by the spring makers although this is more often seen during the Empire period.
- The parts are made from cast brass, so the thicknesses of the plates varied slightly and small imperfections are often present. The better quality pieces tend to have fewer casting imperfections and it is not uncommon to find original plugs where the imperfections were eliminated by the clockmaker.
- The wheelwork is generally finely cut and relatively thin, has a plain collet and is mounted to steel arbors with polished pivots. The rim generally has small cut marks on either side of each tooth.

### **Escapements:**

The two basic escapements favored were the anchor and the pinwheel.

- The anchor is the most popular and is also referred to as a tic-tac if the anchor span in only a few teeth.
- Pinwheel - The pinwheel escapement is generally mounted between the plates, but also could be planted on the backplate. The escape wheel has steel pins mounted perpendicularly to the wheel, long steel caliper style pallets and could be paired with a sweep second hand.

### **Suspensions and Pendulums:**

- The silk-thread suspension was extremely popular and almost always paired with the anchor escapement. It consists of a silk-thread wrapped around a steel arbor that exits out the dial at about 12 o'clock and is strung to a brass post off the back cock forming a loop. The arbor is rotated to adjust fast/slow by lengthening or shortening the loop and consequently the center of gravity of the pendulum. The beat is adjusted by bending the crutch. The silk-thread pendulum has a hook at the top, a steel rod and a brass bob. If it is visible the bob is often an ormolu sunburst.
- The Knife-Edge and the reverse knife-edge were used on higher quality pieces and generally were paired with a grid-iron pendulum. It consisted of a block with a groove cut that supports the edge of a wedge shaped block mounted to the pendulum. The fast/slow is incorporated into the pendulum and the beat adjustment is usually a screwed assembly either on the crutch or the pendulum. The grid-iron pendulums theoretically compensates for temperature. They have a combination of brass and steel rods above the bob that expands and contracts at different rates and in different directions during temperature changes so the center of gravity remains the same.
- The Steel Spring is the predecessor of the Brocot suspension. The pendulum is usually much like a silk thread pendulum, but with the fast/slow adjustment below the bob. The bob could be plain or a sunburst and usually the rod is steel but real and fake grid-irons are used.

The Movement assembly in the case:

The movement and dial are secured to the front bezel by three screws along the edge of the dial that travel through the dial plate and into the bezel and the bezels are secured into the case by steel screws, usually at the 3 and 9 o'clock positions. Unlike later pieces, the bezels are not held together by straps and are completely independent of each other.

## Summary

The clocks produced during the late 18<sup>th</sup> century were wonderful quality. Skilled craftsmen and talented artists created an industry second to none. Although clock makers often receive the credit, artists, bronzers and marchand-mercier all designed and coordinated the production of wonderful pieces. Without the original drawings, invoices or any additional signatures the credit will continue to be attributed solely to the clock makers as their names are on the dials and movements.

There are two important things for the collector to keep in mind.

- Qualities Varied – The skill of the craftsmen and the expectations of the clients would greatly affect the final product. Even amongst examples of the same model there are good, better and best and only experience and a discerning eye will differentiate the average from a rare gem.
- Victorian Copies – During the latter half of the 19<sup>th</sup> century many copies of 18<sup>th</sup> century pieces were produced. Some of these copies are extraordinary and even use a fire-gilt finish, but the movements and construction are generally typically Victorian.

While the Louis XVI period began relatively quietly, it ended in Revolution. Gone were the guilds, many important clients and some of the craftsmen, but the clock production continued and as the Neo-classical period evolved and was influenced by the French culture the Empire period was born.