ANTIQUE WATCHES OF THE FAMOUS MARFELS COLLECTION.

BY CHARLES A. BRASSLER.

Perhaps the most wonderful collection of antique watches is the property of Carl Marfels, of Berlin. It includes only handsome specimens of great artistic value which have been culled from thousands of antique pieces.

Thanks to his great perseverance, Mr. Marfels succeeded in gathering a collection unique of its kind, consisting of superb specimens of the chronometric art from its inception to the eighteenth century. True, these watches are not time-pieces of great precision. Everybody knows that precision in watches dates only from the nineteenth century. The handsome works, however, present all the perfection that could be expected of their makers, and they are in every way worthy of the wonderful and artistically-worked cases in which they are inclosed.

While great progress has been made latterly in endowing watches with remarkable accuracy, it may truly be said that the artistic skill reached in the sixteenth, seventeenth, and eighteenth centuries in the decoration of the cases, dials, and cocks cannot be excelled. Thus we meet engraved watch cases and dials from the eighteenth century which fill the art lover with boundless admiration. Enamel paintings have been preserved from the seventeenth century which could not be produced at the present time in such perfection. Think of the goldsmithing work in the watches of the seventeenth and eighteenth centuries, the precious stone embellishments, the chasing, *repoussé* work, the application of four-colored gold, the vernis Martin, filigree work.

The accompanying illustrations cannot even faintly reproduce the beauty of the originals, as they lack the gorgeous colors of the enamel and the sparkle of the precious stones which can only be indicated in black and white, nor do they give an adequate idea of the fineness of the engraved and pierced work. Still, they may serve to show the reader the high degree of perfection attained by the decorative arts in former centuries.

1.—Early cylindrical watch; 2.—Foliot and hog's bristle of cylindrical watch; 3.—A richly-worked bronze watch; 4.—Egg watch; 4a.—Side view of egg watch; 5.—Silver cross watch, Amsterdam, 1650; 6.—Egg watch, Amsterdam, 1650; 7.—Gold-enameled egg watch, 1600; 8.—Engraved egg watch, indicating week, date and phase of moon; 9.—Smallest of old watches (9 mm. or 0.354 inch in diameter); 10 and 10a.—Engraved watch made by Gamod, 1640; 11.—Watch with religious scenes, 1700; 12.—Watch set with pearls and inclosing a music box; 13.—Watch made by Albery, London, 1800; 14.—Gold box containing a bonbonnière and a wren that chirps; 15.—Tulip watch of gold, inlaid with pearls, 1800; 16.—Mandolin watch with filigree work; 17.—Rock crystal watch with engraved dial.

HISTORIC WATCHES IN THE MARFELS COLLECTION.

It is to be hoped that this beautiful collection, if it should ever be on the market, through death or otherwise, will be acquired by one of our art lovers or museums, and thus, like so many other charming works of art, ultimately come to America, where it is certain to be admired and appreciated as much as anywhere in the world.

As is well known, Peter Henlein, of Nuremberg (about 1500), is now generally credited with the invention of the portable watch, and a movement is on foot to erect a monument to the memory of this ingenious locksmith in his native city.

The earliest watches were naturally rather crude; this is shown by the few specimens still in existence (see Figs. 1 and 2). They were circular in shape (not oval or egg-shaped), and entirely made of iron. In place of the round balance we find a straight one called "foliot." Like almost all watches up to the year 1790, they were provided with the verge escapement. The hair spring is, of course, absent; it was not invented till 150 years later. In order to obtain a tolerably uniform rate an upright hog's bristle (the dot at which the arrow *a* in Fig. 2 points indicates where the bristle is situated) was used against which the foliot strikes. The uneven traction of the spring they endeavored to prevent by means of a brake. Great accuracy was not aimed at, which is shown by the fact that the oldest watches with very few exceptions up to about the year 1700, indicated only the hours, the minute hand being entirely absent.

While the first watches were rather crude, we see, only 20 or 30 years after their invention, works that may almost be termed technically perfect. The iron plates and wheels had given place to finely gilt brass ones. The pinions are of steel and polished, the cocks artistically engraved, and the pillars neatly turned.

Greater precision was obtained when about the year 1660 the hair spring was invented by Dr. Hooke (and also, but entirely independent of the latter, by Huyghens). This opened the way for the introduction of the minute hand, which we meet quite generally around the year 1700. Some of the oldest watches were already furnished with a striking mechanism. About the year 1600 there were watches with alarm made, and in 1691 Barlowe, an Englishman, introduced the repeating watch.

The invention of the fusee is also quite old. The Marfels collection contains a table clock with spring and fusee dating from 1509.

Toward the year 1800 we meet for the first time the seconds hand in verge as well as cylinder watches. The cylinder escapement is known to be quite old; for it was originated as far back as 1710, but was not generally adopted until about 1840. The lever escapement, the one used in the majority of our American watches of the present time, was invented about 1765 by Thomas Mudge. No lesser artist than Pierre le Roy is the originator of the duplex escapement, which was contrived by him already in 1748, but like the cylinder escapement was not introduced until a whole century had elapsed.

A few remarks regarding the traits by which the age of watches may be determined will doubtless prove of interest. It is now definitely known that the egg-shaped watch is not the oldest form, as was formerly supposed. They are not met with till the middle of the sixteenth century; most of them date back to the period around 1600. Enamel painting in colors was invented in 1632, hence there were no watches decorated with enamel till that time. As stated before, the balance spring was invented as far back as 1658, but only rarely employed, and did not become more general until about 1690. Watches with striking mechanism were already carried in the sixteenth century, but repeaters were not invented before 1691, and only became frequent about 1720; while alarm watches were used as far back as in 1600. The minute hand was introduced only with the use of the balance spring, hence it is not met with in watches of older construction than the close of the seventeenth century. The cylinder escapement, though invented in 1710, is only found in isolated cases in the eighteenth century; almost all pocket watches till the beginning of the nineteenth century had verge escapements. Watches with chased cases do not occur before the beginning of the eighteenth century; most of them date from the period about 1750. Decoration in four-colored gold (*quatre couleurs*) is not found before the year 1770. The gong is first used about 1800. Movable figures on the dials, figures that beat upon bells, millwheels, etc., do not occur before 1790, musical watches not till about 1800, nor were there any watches set with pearls before that period. Pocket timepieces having the form of mandolins, harps, enameled shells, tulips, flasks, balloons, finger rings, and similar objects generally fall in the period from 1800 to 1820. Pierced cases, usually decorated with foliage and animal figures, date mostly from the time 1670 to 1720. Rock-crystal cases usually date from 1550 to 1650. Watches with stone cases, agate, jasper, as well as those decorated with precious stones, generally date from the eighteenth century. The very flat cylinder watches, generally with a pin for winding, were made around 1840. The earliest watches were cylindrical in shape. From the year 1550 to 1680 they were made

flatter. With the adoption of the balance spring about 1690, the watches became very thick, almost spherical, till they were made flatter again around 1770, to reach toward the year 1800 the thickness of the present watch.

A few words respecting the value of old watches may not be amiss. Valuable are all watches whose cases and dials are artistically decorated, the essential and prime condition, however, being that the cases are eminently handsome and well preserved. The state of preservation of the works is of no importance whatever, but that of the case and dial is so much more vital. All watches of the very oldest types (with iron works) are also valuable, as well as all egg watches, watches with finely pierced or handsomely chased cases that show no wear, gold enamel watches, which are enameled inside and outside, and all watches in general that are handsomely decorated in any respect.

The following are, on the other hand, valueless or almost so: Chased watches whose figures are worn off; watches with painted tombac cases (copper enamels); watches with cases decorated with gold in four colors unless very beautifully executed and well preserved; watches with enamel-painted dials (enameled on copper); enameled watches which are much damaged; all watches which are devoid of any artistic decoration, hence silver and gold watches with plain cases and unadorned dials, no matter of what description the works may be.

In Fig. 1 is shown a cylindrical watch from the earliest time of watchmaking. The work is entirely of iron, with the so-called foliot (Fig. 2) and hog's bristle (see arrow *a*, which shows the dot marking the spot where bristle is) in place of a balance. The case is of bronze in charming chased work, a masterpiece of the sixteenth century.

A beautiful specimen handed down from the same century is the bronze case in wonderful pierced work depicted in Fig. 3. There are on its periphery four openwork rows of inscriptions and devices, such as: "Hingeht die Zeit, herkompt der Tod, o Mensch thue Buss und fürchte Gott," etc,, as well as one in Greek.

Highly interesting is the little egg watch shown in Fig. 4. It has a handsomely enameled dial, which on the back shows in raised enamele‹ work St. George with the dragon. The sides of the case bear the inscription of the Order of the Garter: "Honi soit qui mal y pense." (See Fig. 4*a*.) At the Spitzer auction this gem of the goldsmith's art brought 21,500 francs (No. 2,711 in the catalogue of the auction). Signed N. Vallin; time about 1600.

Fig. 5 shows us a silver cross watch with fine openwork case, depicting hunting scenes, remarkable for its rare work. Signed Carl Bauer, Amsterdam; time about 1650.

An egg watch in a finely-engraved silver case, partly gilt, is represented in Fig. 6. Signed Jacop Ducimin, Amsterdam. From the Spitzer collection. Time about 1650.

In Fig. 7 we see a gold-enameled egg watch. It dates from about 1600.

A veritable *chef d'œuvre* of the engraver's art, an egg watch in a silver-gilt case, indicating the day of the week, date, phase of the moon, zodiac, and age of the moon, is depicted in Fig. 8. The plates are superbly engraved. It belongs to the time around 1650.

The smallest watch of former centuries appears in Fig. 9; its diameter is nine millimeters. It has a gold enameled case and dial. This unique specimen is a product of the middle of the seventeenth century.

Notable among the gold-enameled watches in this collection is the one shown in Fig. 10, from the period of Louis XIII., with representations from the story of Anthony and Cleopatra on the inside and the outside of the case (Fig. 10*a*). This watch was made by C. Gamod at Paris about 1640. Another gold-enameled watch, likewise an excellent piece, shows scenes of the Madonna, etc. (Fig. 11); from the period around 1700.

Still another large gold-enameled watch is set with pearls and contains a music box playing on bells (Fig. 12). The back is decorated with lions and swans belching forth water (in operation); the inner rim charmingly engraved and pierced. A unique work of the first class from 1790.

Fig. 13 represents a gold watch, set with pearls, in translucent enamel. Signed Albery, London; time 1800.

Very odd is a gold box, the lower part of which serves as a *bonbonnière*, while the upper part, executed in the form of a watch, contains a willow-wren chirping a melody, with the corresponding motion of the beak, flapping its wings, and moving in a lively manner (Fig. 14). The whole is finely enameled and dates from about 1790.

Other odd shapes are shown in Figs. 15 and 16. The former is a tulip of gold inlaid with pearls and enameled (about 1800), while the latter is a gold watch in the form of a mandolin, in filigree work, set with pearls, from about the same period.

As want of space prevents me from illustrating all of the interesting ninety-odd pieces of the collection, I will close by presenting in Fig. 17 a rock-crystal watch with handsomely engraved dial. This watch was made around 1650, and once formed part of the Spitzer collection.

ROCKY MOUNTAIN AVALANCHES.

(*Continued from page* 164.)

of miners started to rescue the engineers when another avalanche descended, burying nearly twenty of the rescuers. In all no less than six masses of snow came down the slope during that day, and the bodies of the victims were not recovered until several months afterward. The snow was so deep that portions of the avalanche remained in the valley until late in the summer. A few days later the San Juan mine situated near the Liberty Bell was literally overwhelmed by an avalanche. A number of incidents have occurred in the San Juan district and other parts of Colorado which strikingly indicate the force of the snow movement. In one instance a gang of railroad men on the Colorado & Northwestern line were removing the snow from the track at a point near Long's Peak. Here the railway was built at an elevation of about 10,000 feet, but the mountain extends over a thousand feet above it. A rotary snow plow pushed by two locomotives, each weighing over fifty tons, was employed to clear the track, when a slide came down, of such dimensions that one of the locomotives was lifted from the rails, torn away from the other engine and carried nearly 500 feet down the slope with two of the men, who were killed.

Usually the mass of snow descends early in the spring, when the rays of the sun have weakened it sufficiently to create a movement. As soon as spring approaches, the townspeople carefully note the appearance of the dangerous snow fields and prepare for their descent, which is usually in one direction. When the Denver & Rio Grande Railroad was constructed to Telluride, the engineers learned of the yearly snow slide and surveyed a route which they thought would prevent it from endangering the track. The first spring after the road was completed, however, for some unknown reason the avalanche took a different course, striking the railroad with such force that no less than twenty-five loaded freight cars were thrown down the mountainside and destroyed. Fortunately the avalanches in Telluride have been made the subject of a special study by one of its residents, Dr. J. Q. Allen, who has obtained much valuable data as to their cause and effect. Dr. Allen had an opportunity to observe the first avalanches that damaged the Liberty Bell mine. His statement, which follows, is of special interest:

"The first slide at the Liberty Bell mine ran at least one mile. The snow was left 25 feet deep in the gulch, and probably much more than that in places, possibly a maximum depth of 40 feet. There was no mass of ice in the slide, only snow, solidly packed by the impact of the moving mass. The vertical distance which this slide descended was fully 3,000 feet. The slides all started above timber line, at an altitude of from 12,000 to 13,000 feet. The first 1,000 feet of the course of the slide referred to was at an angle of about 4 deg., the next 500 feet, 20 deg., and the balance of the way about 15 deg. from horizontal. Of course, the upper part of the range is much steeper than this, in places almost perpendicular; but the snow does not accumulate to any extent on such a steep surface, merely striking against the wall of rock and falling down to where it can stick to the surface until it accumulates to great depth. The current of air produced by an avalanche is often something terrific. The swiftly-moving mass of snow creates an air pressure in front and a partial vacuum behind, producing currents strong enough to destroy buildings untouched by the snow. The difference in air pressure within and outside of a building is sometimes sufficient to actually blow the structure to pieces. Of course, avalanches usually run in well-beaten tracks; but occasionally the wind will so drift the snow as to throw the slide out of the regular course. This explains why we often see a slide cutting down through timber, which is evidence in itself that no slide has run there for many years before. The causes which operate to start the slide are various. When a heavy fall of snow has taken place early in the winter, as soon as it is heavy enough it will move regardless of the time of day or of any other influence. Slides that occur in the month of April are usually caused by the heat from the sun. Where a large field has accumulated high up on the side of a mountain, and has been frozen to the earth, it will remain until the heat of the sun loosens it from the bottom. In our locality these slides usually start about four o'clock in the afternoon. In loose, freshly-fallen snow, very little force is needed to start a big slide. The firing of a gun or a sudden gust of wind may be sufficient. If a small bunch of snow, no larger than an orange, drops from a little cliff and starts rolling down the side of the mountain, it may enlarge rapidly enough to start an immense avalanche."

Dr. Allen has made measurements of forest trees which have been cut down at the base by the force of the moving snow and found that many of them ranged from 15 to 18 inches in diameter; yet, as the photographs show, they were reduced to a mass of debris, and in many instances the trunks were stripped of their branches. Dr. Allen has personally had several thrilling experiences with snow slides in Colorado and was one of those who escaped in the Liberty Bell disaster. His account of his experience contains some valuable data and is here given:

"My first experience with a slide was at Creede, Col. I, with three other men, was on the side of a mountain looking at some mining property. We were above timber line and about half way from the bottom of the gulch to the top of the mountain. I did not think at the time of danger, as the snow where we were was only about 18 inches deep. The field suddenly cracked and the snow below us moved down a foot or two. This took away the support of an immense mass of snow above us, where it had blown over the top of the ridge to a depth of 15 or 20 feet. It broke at the crest of the ridge, and all of the snow on our side of the mountain came rushing down upon us. The mountain curved around us in a circular manner and the width of the slide was more than 1,000 feet, we being about in the center. I glanced up, on hearing the snow break, and, acting upon my first impulse, turned my back to the avalanche. It struck me first on the legs, and I sprang into the air as high as I could. The mass passed under me, and by the terrific rush of the snow I was kept on the top all the way down into the gulch, about 500 feet. I was the only one free, and proceeded to dig the others out. As the snow frequently packs after running, almost to the consistency of ice, this was no easy matter. The man next to me was buried in a perpendicular position, with only his hair visible. I had to free his body down to the ankles before I could pull him out. The last man reached was dead when extricated. The rest of us escaped with slight bruises. It was the next July before articles we lost were found. When the Liberty Bell disaster occurred, I was conducting a hospital for the mining companies. Receiving news of the first slide, I went to the mine, finding several men who were severely injured. After attending them, I sent them down to the hospital. About eleven o'clock the second slide came down in the track of the first slide, starting a little to one side, and burying several of those in the gulch searching for the dead and injured of the first slide. We then decided to leave the locality, taking the injured with us. After passing over the next ridge and on coming down into the gulch beyond, the third slide came down. This slide ran almost a mile. I was the last man in the procession. A heavy snow storm prevailed, so that we could see only a few feet, but as I knew we were about to cross the old track of a slide I kept listening. Presently I heard the breaking of timbers far up the side of the mountain. This could be distinctly heard above the roar of the storm. Turning my horse, I ran him up the trail just in time to escape the main body of the slide. I was caught on its edge, however, carried off the trail with my horse and tossed, as by a wave, on the side of the mountain, where the slide made a turn. Four of us were struck by this slide, and all were killed but myself. In all twenty-three men were killed at this place by slides that day."

Method of Making Violins.

Many theories have been advanced by the experts of our day to explain why the violins of the famous old masters so far excel the best products of modern workshops. One of these theories is to build the instrument in such a manner that not only the strings, but the body itself shall be under tension. While many inventors have attempted to put this theory into practice, it appears that but one of them has succeeded. Mr. Louis H. Hall, of Hartford, Conn., who was granted a patent covering his construction in 1900, has according to many experts solved the problem. Briefly, Mr. Hall's method consists of cutting the upper and lower tables so that they do not quite fit upon the blocks, and then to force them into proper position under great pressure, thereby putting the required tensile strain into the body.

Dr. T. Lamb Phipson, the well-known English expert, has declared the violin thus constructed the equal of many of the finest instruments of Joseph Guarnerius. Arthur Broadley, another world-famed English expert and player, has unqualifiedly recommended the instrument. The great virtuoso Ysaye has expressed his interest in the violin, and will procure an example of Mr. Hall's work.

Death of Alphonse Chassepot.

Alphonse Chassepot, inventor of the famous Chassepot gun, is dead. He was the son of an armorer, of Mutzig, and followed his father's trade, entering the French state factories and being transferred to Paris in 1858, where he soon became head of the establishment. He studied the Prussian rifle and perfected it, giving his name to the new weapon, which was first used in Italy against the Garibaldians. It has since been abandoned for a more perfect style of rifle. Chassepot received the cross of the Legion of Honor in 1866.