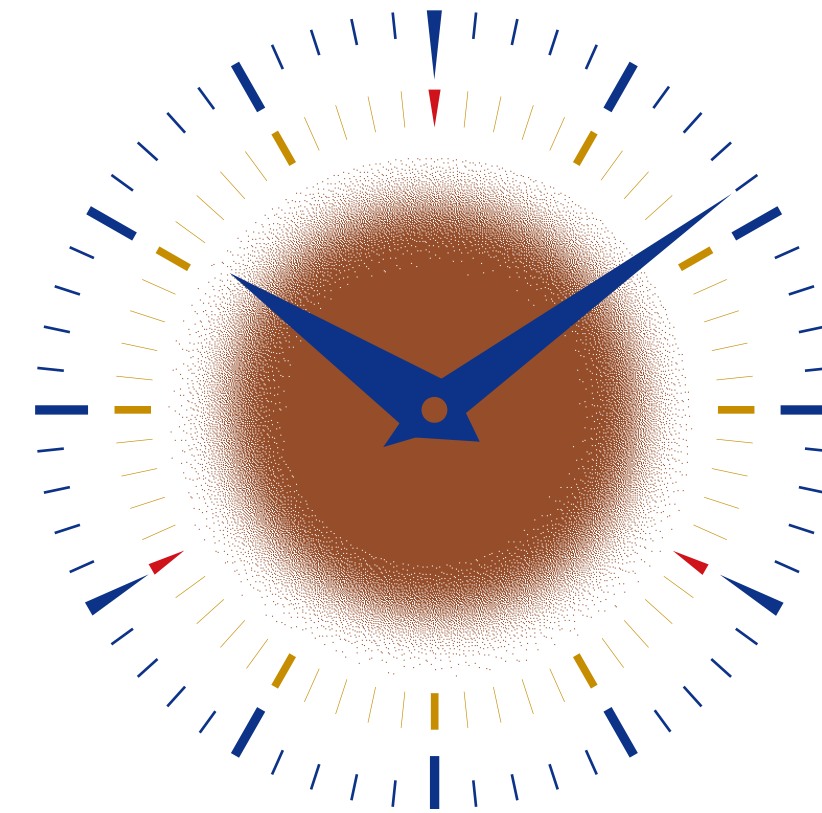


GENEVA AT THE HEART OF TIME
THE ORIGIN OF SWISS WATCHMAKING CULTURE

Capital Museum
Compiled by Geneva Museum of Art and History
Vacheron Constantin

日内瓦：时光之芯

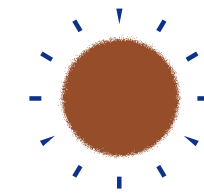
瑞士钟表文化之源



首都博物馆
日内瓦艺术与历史博物馆 编
江诗丹顿

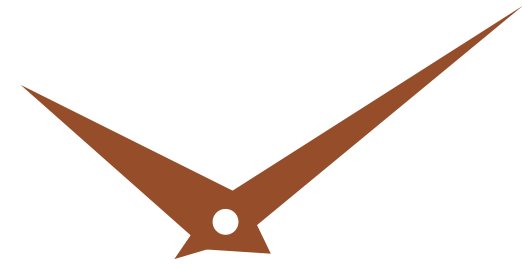
北京出版集团公司
北京美术摄影出版社

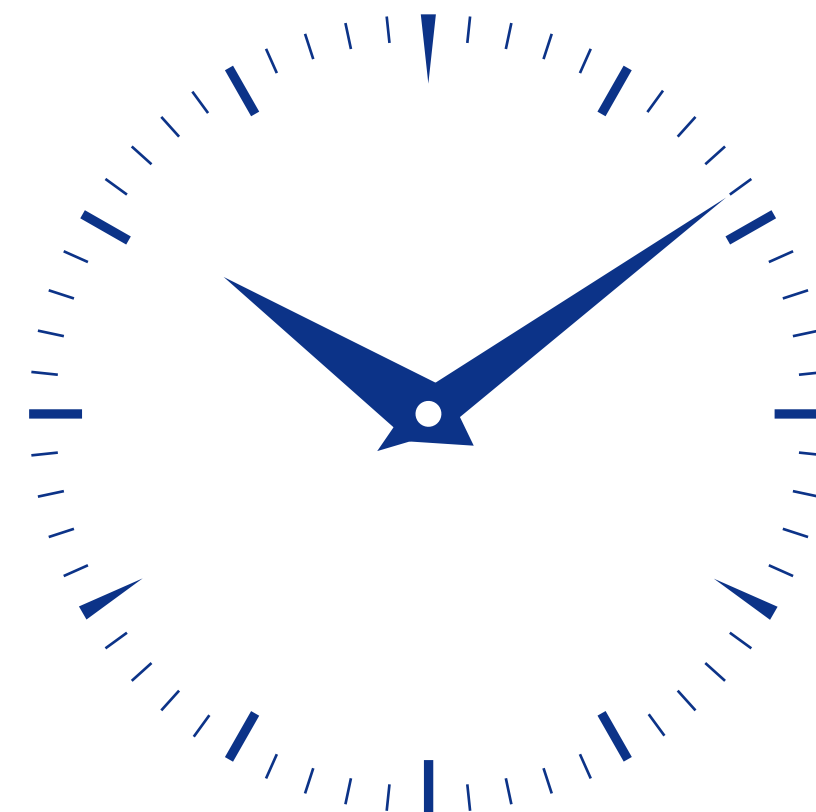
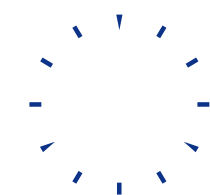
日内瓦：时光之芯
瑞士钟表文化之源



首都博物馆
日内瓦艺术与历史博物馆
江诗丹顿 编

北京出版集团公司
北京美术摄影出版社





GENEVA AT THE HEART OF TIME
THE ORIGIN OF SWISS WATCHMAKING CULTURE

Capital Museum

Compiled by Geneva Museum of Art and History

Vacheron Constantin

日内瓦：时光之芯

瑞士钟表文化之源

首都博物馆

日内瓦艺术与历史博物馆 编

江诗丹顿

北京出版集团公司
北京美术摄影出版社

这本图录是配合《日内瓦：时光之芯——瑞士钟表文化之源》展览出版的。展览于2015年4月24日至8月12日在首都博物馆举办，主办方为首都博物馆及日内瓦艺术与历史博物馆，协办方为江诗丹顿公司。

This volume has been published in conjunction with the exhibition “Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture” held in Capital Museum China in Beijing, 24th April-12th August 2015 and organized by the Capital Museum China, in collaboration with the Museum of Art and History in Geneva and Manufacture Vacheron Constantin, Geneva (Switzerland).

展览项目组

项目主持：杨文英

项目统筹：龙霄飞

展览总监：鲁晓帆

艺术总监：徐伟

展览责任人：张贵余 冯好

联络协调：赵雅卓 张贵余

展览大纲：邵欣欣 张贵余 赵雅卓

展览设计：李赫

文本翻译：张贵余 赵雅卓 邵欣欣

牛静美 杨丽明 薄海昆

布展：索经令 王超 夏天龙

Work Group

Exhibition Curator

Museum of Art and History, Geneva: Estelle Fallet

Collections supervisors

Museum of Art and History, Geneva: Estelle Fallet

Vacheron Constantin: Julien Marchenoir

Scenography

Capital Museum, China

Exhibition Coordinators

Estelle Fallet

Maude Fellay-Zimmermann, Céline Daudin, Jérôme Meier, Vincent Helg

Exhibition texts and catalogue

Estelle Fallet

Translations

Texts translated from French to English by Susan Jacquet

Texts translated from English to Chinese by Capital Museum, China

Design and graphics: Capital Museum, China

Editor: Capital Museum, China

Capital Museum, China

Guo Xiaoling, Director

Yang WenYing, Vice Director

Museum of Art and History, Geneva

Jean-Yves Marin, Director

Estelle Fallet, Chief curator, collections of Horology, enamels,

jewellery and miniatures

Laura Zani, In charge of fundraising and international relations

Vacheron Constantin

Juan-Carlos Torres, CEO

Julien Marchenoir, Brand Equity and Heritage Director

序

人在时间与空间中存在。时间虽然是客观的过程，但我们用以度量生命存在的单位，如秒、小时、天、年等却是人为的，是人类创造的一种计量人与其他事物运动过程的方法，通常是按照某种自然现象的运动周期设计出来的。比如，我们目前通用的公历时间计量单位年、月、日，分别与地球环绕太阳运动、月球环绕地球运动，以及地球自转运动的周期相对应，因此地球公转、自转与月球公转的周期是目前标准时间的基本参照。而更小或更大一些的时间单位，如小时、分、秒、毫秒、微秒或世纪、千年纪等，则是在此基础上的进一步细分。

为了确定时间，人类在历史上发明了许多工具。经过时间的筛选和淘汰，目前普遍流行的计量工具便是钟表。有鉴于此，现代人可以把时间称作“钟表的量度”。

众所周知，瑞士是世界优质钟表的制造国，人称“钟表王国”。为什么这样一个蕞尔小国，却能够成为全球优质钟表的设计国与产出国呢？首都博物馆和日内瓦艺术与历史博物馆合作，即将开展的《日内瓦：时光之芯——瑞士钟表文化之源》会告诉我们原因，以及钟表业在瑞士尤其在日内瓦兴起与发展的过程。随着技术的进步，时间的计量方法总的发展趋势越来越复杂，计量结果越来越准确。但瑞士制表业始终能引领技术的发展潮流，且成为技术进步的推动者。我们在这个令人感动的展览中，可以看到瑞士人与时俱进、不断创新的努力。

毫无疑问，瑞士钟表的上乘质量是瑞士制表师、工匠和企业 500 年精心努力的结果。他们的产品在世界各地用户的手腕上、衣袋中、住室里得到验证，因而有口皆碑。我个人便有这样的感受，我的第一块手表是我父亲 20 世纪 40 年代初购置的欧米茄夜光表。父亲戴了它 33 年，待我接过那块表时，表壳的不锈钢已磨得圆润，每日上表的表把上防滑的刻纹基本已磨平，表面的玻璃已有裂痕，但表芯却依然忠实地为我运作了十年，表

针的夜光材料虽有剥落，却仍旧能够发挥识别的光亮。我个人的经验表明，一种品质的口碑 500 年不衰，是同每个使用者的切身体验密切联系的。所以至今我与家人的手表，仍然都来自于瑞士。

这是一个同时间相关的展览，而时间是一个容易引起感慨的话题。世间一切事物都在时间空间范围内存在。我们每个人的生命在时间长河中只是极为短暂的一瞬。譬如，我国目前人均寿命 2.6 万多天，发达国家人均寿命 3 万天左右，而人类的历史已经有大约 250 万年的时间。对所有人来说，时间都是一次性的，逝者如斯，一旦过去就永不复返。因此，珍惜时间乃是世界各个民族的共识。欧美列国有“Time flies”（时光如飞矢）和“Time is money”（一寸光阴一寸金）的说法；中国则有类似的表述，如“时如白驹过隙，稍纵即逝”“光阴似箭，日月如梭”等，都在表达我们对时间的感悟，认为珍惜时间就是珍惜生命。一切具有积极人生态度的人都应当善于把握时间，为社会创造更多的价值，也创造自己更有意义的人生。

感谢瑞士同仁和首都博物馆有关人员对这个精彩的展览付出的时间与精力，预祝展览圆满成功。

郭小凌
首都博物馆馆长

Preface

Mankind lives in time and space. Time is an objective process, but the units that we use to measure the existence of life, such as seconds, hours, days and years, are man-made. They are a method created by human beings to calculate the movements of people and things, and are usually designed according to the motion of natural phenomenon. For example, the generally used calculation units of Gregorian calendar time – year, month, and day – correspond to the cycles of the earth’ s orbit around the sun , the moon’ s orbit around the earth and the earth’ s own rotation. Hence, the current time standard basically refers to the period of earth’ s rotation and the revolution of earth and moon. Some other time units, longer or shorter, like hour, minute, second, millisecond, microsecond, century, and millennium etc., are further divisions on this basis.

Throughout history, many tools have been invented to make it easier for people to determine the time. After being tested and eliminated by time, it is clocks and watches that become the most popular calculation tool today. Accordingly, in the modern era, time can be referred to as the measurement provided by clocks and watches.

It is well known that high-quality clocks and watches are manufactured in Switzerland which is called the “Kingdom of Clocks and Watches” . How has such a small country become the global maker-designer of “Fine Watchmaking” ? The Capital Museum and the Museum of Art and History in Geneva are cooperating to hold this exhibition “Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture” to explain the reasons and to show the rise and evolution of the watchmaking industry in Switzerland, especially in Geneva. With the progress of technology, the general tendency of the calculation of time becomes more and more complicated and accurate. However, the Swiss watchmaking industry has always kept up with the development of technologies and consistently promotes technological progress. In this impressive exhibition, we note that the Swiss keep pace with the times and continue to innovate.

The quality of Swiss timepieces is an achievement stemming from 500 years of intensive effort by Swiss watchmakers, craftsmen and manufacturers. Their products are used and tested by customers from all over the world and enjoyed widespread popularity among the people. I am one of them who have such feelings. My first watch was an Omega luminous dial watch bought by my father in the early 1940s. He wore it for 33 years. When I got the watch, the stainless steel case was worn smooth, the serration

on the winding knob was worn down, and the glass surface was little cracked, but the watch movement nicely ran for another 10 years. Although some luminous materials painted on the watch hands peeled off, I could still see their glow. My own experience shows me why people have praised Swiss quality for 500 years and is similar to every other user's feelings, therefore, my family and I always buy Swiss watches.

This is an exhibition about time, a topic that makes people sigh with emotion. All things in the world exist in the scope of time and space. The life of an individual is only a flash in the river of time. For instance, the average lifespan of Chinese people is more than 26 thousand days, and that of people in developed countries is around 30 thousand days, while the history of human being is as long as 2.5 million years. For all people, time is brief. It slides by quietly, never returns. So, all people of the world cherish time. People in European and American countries have idioms like "Time flies" and "Time is money". We have similar expressions in Chinese – "Time is like a fleeting show", "Time flies like a shuttle" highlighting our understanding of time. It is believed that cherishing time is equal to cherishing life. All people should have an active-life attitude grasping time to create greater good for society as well as a more meaningful life for themselves.

I want to thank our Swiss colleagues and the staff at Capital Museum who dedicated so much time and effort to prepare this wonderful exhibition. I wish the exhibition a complete success!

Guo Xiaoling

Director of Capital Museum, China

序

几个世纪以来，日内瓦因制表业而享誉全球。17 世纪，金饰制造业和制表业成为了这个城市的主流行业。幸运的是，这些专业知识技能与精美的实物（手表、钟表等）一起得到了公共机构、钟表制造商、收藏家和私人基金会的精心保存与研究。

20 世纪 90 年代末，日内瓦的文化、经济和旅游开始向钟表制造史方面靠拢，并逐渐将“钟表文化遗产”纳入到公共领域。此后，日内瓦不断努力促进当地历史文化的发展，并使其不但成为“世界钟表之都”，而且还是“世界时间之都”。正是我们使用历史、专业知识和创造力的成果，丰富了人类在探索测量时间技术的过程中所创造的哲学、美学和技术理念。

毋庸置疑，日内瓦是世界制表业的翘楚，我们携这一份极具代表性的文化遗产与大家分享，希望能为人们了解它提供一个机会。我很高兴能在北京的首都博物馆举办《日内瓦：时光之芯——瑞士钟表文化之源》展览，该展不仅旨在展示日内瓦的这一优秀文化，还特别要展现制表技术以及相关的珐琅和珠宝镶嵌技术，这些藏品均来自于日内瓦艺术与历史博物馆及其合作伙伴江诗丹顿公司。

作为日内瓦市市长和分管文化的官员，我为大家对我们的历史，以及对我们共同的文化遗产所表现出的浓厚兴趣和热情感到自豪。

萨米·卡纳安

日内瓦市市长、日内瓦市政府文化体育部部长

Preface

For several centuries, Geneva has been forging and consolidating its international renown thanks to its watchmaking industry. In the 17th century, goldsmithing and horology became the city's flagship activities. Fortunately, this expertise along with amazing collections of objects (watches, clocks, etc.) has been preciously safeguarded and studied by public institutions as well as by watch manufacturers, collectors and private foundations.

In the late 1990s, the city's cultural, economic and tourist appeal came to focus on the history of horology, progressively incorporating the "horological heritage" into the public domain. Ever since, Geneva has pursued the efforts undertaken in promoting local history and has thereby asserted itself as the "worldwide capital of Haute Horology" and of Time itself. We do indeed crystallise history, expertise and creativity, all of which serve to nurture philosophical, aesthetic and technical reflection on the measurement of time.

Geneva is an inescapable stakeholder in the field of watchmaking and it is entirely natural for us to offer you an opportunity to discover an exemplary heritage. I am therefore delighted that the Capital Museum of Beijing is hosting "Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture", an exhibition dedicated to Geneva's excellence, particularly as expressed through the watchmaking, enamelling and jewellery collections of the Museum of Art and History, as well as those of our partner, the Manufacture Vacheron Constantin.

As the representative of the political authorities in charge of culture, I am proud of the interest taken in this area of our history and of this implicit acknowledgement of our collective heritage.

Sami Kanaan,

Mayor of the City of Geneva

Administrative Councillor in Charge of Culture and Sport

保护制表业的遗产

多年来，历史将日内瓦塑造成一座“钟表博物馆”，这座博物馆一直致力于探讨钟表制作与珐琅工艺（特别是珐琅彩绘）和艺术工艺之间的密切关系。像许多杰出的艺术品一样，日内瓦的钟表起源于欧洲制表业，但自进入 19 世纪，其产品的品质和审美显然已经大大超越了法国、德国和英国。

自 16 世纪起，日内瓦就以制表业而享誉世界。今天，我们的博物馆拥有丰富的藏品，展示出了当地制表业艺术的全貌。

日内瓦艺术与历史博物馆的职责就是要保护和展示日内瓦钟表匠、金匠、珐琅师、微绘画家和其他艺术工匠的作品。我们的博物馆既回顾历史（历史藏品）又展望未来（近现代及当代作品），同时还为目前仍活跃在制表行业和珠宝行业的艺术家专门设置了一个代表他们“最新成就”的展区。

20 世纪中叶，我们收藏的众多钟表藏品可谓是顶尖作品，其中大部分来自于日内瓦和瑞士其他地区的私人团体，这些藏品的声名传遍全世界，而制表公司也一直不断地将自己的精品补充到这一公共文化遗产中。

我们的博物馆是一个特别的地方，私人领域和公共领域、个人和群体的历史可以在此汇聚一堂。它还是一个回顾历史、传播知识的中心。社会机构、收藏家、赞助人和私有财产管理者在这里相识相遇，与江诗丹顿公司富有成效的合作就是很好的证明，我们在此对他们表示感谢。

日内瓦艺术与历史博物馆创建于 1910 年，它的存在为日内瓦公众提供了一个跨学科和多学科间的互动场所。另外，作为一个外向型博物馆，日内瓦艺术与历史博物馆在欧洲乃至世界各地慷慨地分享其丰富的典藏。

让-伊夫斯·马林

日内瓦艺术与历史博物馆馆长

Preserving Watchmaking' s Legacy

Through the years, history has shaped Geneva' s “watchmaking museum” around a discourse aiming to emphasise watchmaking' s close relationship to enamelling, especially painting on enamel, and the artistic crafts. The European context, exemplified by many masterpieces, shows just how original the Genevan pieces were, once their quality and aesthetics had become distinct from French, German, and English production at the turn of the 19th century.

Today, the Genevan institution has a well-rounded collection that provides a complete picture of the arts used in local watchmaking, which has been continuously upholding Geneva' s reputation around the world since the 16th century.

The museum' s mission is to preserve and showcase the production of Geneva' s watchmakers, goldsmiths, enamellers, miniaturists, and other artistic craftspersons. The museum is both retrospective (historical collections) and forward-looking (modern and contemporary works), and is supplemented by a “latest developments” section especially for watchmaking and jewellery, in relation with artists who are currently actively working.

By the mid-20th century the various collections – most of which were initially gathered together by private parties from Geneva and elsewhere in Switzerland – were rightfully counted among the very best, with a reputation that had spread beyond the Old World. The watchmaking companies have always added to them by contributing selected pieces from their production to the public legacy.

The museum is a special place where private and public domains, individual and collective history, can come together. It serves as an active center for reflecting on history and disseminating knowledge, a place where institutions, collectors, patrons, and private asset managers can meet. The productive cooperation with Vacheron Constantin is evidence of this, and we would like to thank them here.

The Geneva Museum of Art and History was created in 1910, and its configuration favours inter- and multi-disciplinary interactions in the offerings created for the Genevan public. Beyond that, in Europe and throughout the world, it offers its qualities as an outward-looking museum that shares generously with a very diverse public.

Jean-Yves Marin

Director of the Geneva Museum of Art and History

时间：日内瓦的“灵魂”

时间是日内瓦的“灵魂”，因为日内瓦这座城市在时间的测量及表达方面所拥有的热情，在世界上没有其他城市可以与之媲美。位于日内瓦心脏地带的钟表制造商江诗丹顿谨对受邀合作举办《日内瓦：时光之芯——瑞士钟表文化之源》展览表示衷心感谢，该展览由日内瓦艺术与历史博物馆和中国北京首都博物馆主办。将我们的历史杰作和艺术与历史博物馆久负盛名的藏品一同展出，我们与有荣焉。

江诗丹顿由让-马克·瓦士伦于 1755 年创立，见证了日内瓦成为制表业的主导者。我们的典藏系列承载着公司 260 年的制表历史，展现了品牌创作风格的发展和精湛技术的演进，并且将传统的艺术手工艺运用于時計。

瑞士，尤其是日内瓦，在一个如此小的地方成功发展和保留了这些技艺与知识。拥有 500 多年制表历史的日内瓦，今天仍然是高级制表业的殿堂，因此受到了中国首都博物馆的特别关注。

此次展览中，江诗丹顿提供的作品包括运用高级制表技术和传统艺术工艺的经典藏品，展现了江诗丹顿源远流长的历史及作品的多样性。江诗丹顿见证着日内瓦制表业的发展，称得上是日内瓦制表历史上名副其实的代表。

这次展览是两国之间长期以来的文化交流及合作的成果。同时也为庆祝中国和瑞士建交 65 周年，以及 2013 年日内瓦与北京签署友好合作协议的一部分。

此次，我们也非常高兴及自豪地展现品牌的艺术手工艺。作为展览的一部分，我们的雕刻大师、机刻雕花大师、制表大师、珠宝镶嵌大师和珐琅大师将会莅临现场为大家展示各种精湛技艺。公众可藉此了解这些传承数个世纪，至今还运用于我们的制表工坊的杰出手工艺。

江诗丹顿制造的時計结合了世代相传的技艺 and 知识，承载着丰富浓厚的情感，象征并颂扬着人类的天赋、卓越以及对美的追求。因此，江诗丹顿非常荣幸能将这些历史杰作作为展品的一部分呈献给中国首都博物馆的参观者们。因为只有与众人分享热忱，才使得制表变得有意义。

希望大家度过一段美妙的展览之旅。

陶睿思

江诗丹顿首席执行官

Time: the “Soul” of Geneva

Time is the “soul” of Geneva, because no other town in the world has been so passionately committed to measuring and expressing it. Located in the very heart of Geneva since its foundation, the Manufacture Vacheron Constantin would like to extend its heartfelt thanks for this invitation to partner with the Art and History Museum for the “Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture” exhibition, organised by the Art and History Museum, Geneva (MAH) and the Capital Museum, China. We are immensely proud to be associated with the Museum of Art and History’s prestigious collection through presenting pieces from our own Heritage Collection preciously guarded for generations.

Vacheron Constantin was founded in 1755 by Jean-Marc Vacheron and witnessed the rise to supremacy of Genevan watchmaking. Representing 260 years of the history of watchmaking, our heritage collection demonstrates both the stylistic development and technical evolution of the pieces manufactured by our Maison, in addition to maintaining a record of the artistic crafts employed in their creation.

Switzerland, and Geneva especially, share the characteristic of having successfully developed and preserved these skills and know-how within the framework of a very small territory. With more than 500 years of watchmaking history behind it, Geneva today remains a temple of international watchmaking, making it a focus of particular interest on the part of the Capital Museum, China.

Within the framework of the exhibition, our collection demonstrates exceptional longevity and rare diversity, containing pieces that are both highly technical as well as classic examples of the application of the artistic crafts. Thus, as one of its key witnesses, Vacheron Constantin is a legitimate representative of the history of Genevan watchmaking.

This event is the culmination of a longstanding project and a large number of cultural exchanges between our two countries. It also takes place on the occasion of the 65th anniversary of the diplomatic relations between Switzerland and the People’s Republic of China, and as part of the partnership signed in 2013 between Geneva and the city of Beijing.

We are also very happy and proud to showcase our artistic crafts as part of the exhibition, which will be graced with the presence of a Master engraver, guillocheur, watchmaker, gemsetter and enameller. This will provide the public with an opportunity to discover these fascinating trades, which have been practised in our workshops for centuries.

Executed with a clever combination of discipline and expertise passed on from gesture to gesture, soul to soul, the emotional impact of timepieces from our Manufacture is truly intense. They embody human genius, excellence and beauty in a generous celebration. Vacheron Constantin is thus delighted and proud to present treasures from its heritage to visitors of the Capital Museum, China. Because a passion for watchmaking only makes sense if it is shared.

We wish you all a wonderful visit.

Juan-Carlos Torres
CEO Vacheron Constantin

目录

Contents

第一部分 | 制表业的历史与背景

Part 1 || History of Watchmaking and Context

一 时间的测量与感知	22	1. The Measurement and Perception of Time	22
二 非机械计时器	22	2. Non-mechanical Instruments for Measuring Time	22
三 从公共时间到私人时间	25	3. From Public Time to Private Time	25
四 走向微型化之路：从家庭钟表到便 携式手表	28	4. The Road to Miniaturisation: from Household Clocks to Portable Watches	28
· 文艺复兴时期的座钟	30	· Renaissance Table Clocks	30
· 挂钟	36	· Wall Clocks	36
· 壁炉钟	38	· Mantel Clocks	38
五 便携式钟表	46	5. The Portable Timepiece	46
六 巴黎、伦敦、日内瓦	49	6. Paris, London, Geneva	49
七 启蒙时代	50	7. The Age of Enlightenment	50
八 从机芯框架到莱皮纳机芯	52	8. From the Movement Cage to the Lépine Calibre	52
九 走向现代	60	9. Moving Towards Modernity	60
· 机器工具	62	· Machine Tools	62
· 擒纵系统	65	· Demonstration Escapements	65
十 20 世纪的变化	68	10. Changes in the 20 th Century	68
十一 日内瓦，时间之芯	71	11. Geneva at the Heart of Time	71
十二 工坊协会	75	12. The <i>Fabrique</i>	75

第二部分 | 钟表制造工艺

一 精密计时法 86

二 复杂的功能 94

三 计时码表 95

四 特殊显示功能 104

五 日期和日历显示功能 112

六 报时表 124

七 高度复杂功能 137

八 具有高度复杂功能的概念表 152

九 特别需求和体育运动 161

Part 2 || Horology

1. Chronometry.....86

2. Complications94

3. Chronographs.....95

4. Special Displays 104

5. Date, Calendars..... 112

6. Striking Watches..... 124

7. High Complications 137

8. Watches with Complications in Their Conception... 152

9. Specific Needs and Sport..... 161

第三部分 | 制表的装饰工艺

一 雕刻大师与机刻雕花大师 176

· 表壳和表盘的雕刻..... 179

· 机芯的雕刻 184

· 机刻雕花表壳和表盘..... 188

二 珠宝镶嵌大师 194

· 早期作品 198

· 铂金和钻石 212

· 装饰风艺术 224

· 黄金与宝石 229

三 表壳制作大师 232

· 宝石和其他材质的表壳..... 233

· 造型表壳腕表 240

· 精致的袖珍计时器..... 244

· 钟表上的自动人偶与音乐装置 251

四 珐琅大师 260

· 珐琅微绘 264

· 金属箔片嵌饰珐琅..... 278

· 内填珐琅 284

· 掐丝珐琅 293

Part 3 || Artistic Crafts – *Métiers d’art*

1. Master Engraver & Master Guillocheur..... 176

· Engraved Cases and Dials 179

· Engraved Movements 184

· Guilloché Cases and Dials 188

2. Master Jeweller — Master Gemsetter..... 194

· First Creations..... 198

· Platinum and Diamonds 212

· Art Deco 224

· Gold Jewellery and Precious Stones..... 229

3. Master Casemaker 232

· Cases in Stones and Other Materials..... 233

· Shaped Cases 240

· Tiny Timepieces, Precious Objects..... 244

· Automaton and Musical Mechanisms..... 251

4. Master Enameller..... 260

· Enamel Painted Miniatures..... 264

· Paillonné Enamel..... 278

· Champlevé Enamel 284

· Cloisonné Enamel..... 293



日内瓦：时光之芯
瑞士钟表文化之源

GENEVA AT THE HEART OF TIME
THE ORIGIN OF SWISS WATCHMAKING
CULTURE



制表业的历史与背景

Part 1
History of Watchmaking
and Context

|| 钟表制作涵盖科学、艺术、工业和商业领域，测量时间的仪器经历了四个发展阶段：早期测量仪器、13 世纪后期兴起的机械计时器、1650 年兴起的更为准确的计时器以及 1750 年兴起的科学计时器。现在的精密计时法更让钟表制作成为一门和时间测定有关的精密科学。

|| Watchmaking – the science, art, industry, and business of instruments used for measuring time – developed in four successive stages: early instruments, mechanical timepieces beginning in the late 13th century, more accurate timepieces beginning in 1650, and scientific timepieces beginning in 1750. Then there is chronometry which qualifies watchmaking as a precision science having to do with the determination of duration.

一 时间的测量与感知

由于我们的五种感官中没有一种能够感知时间，所以只能用测量它的流逝来实现，而感知时间的背后其实是观察生物从生到死的过程。对太阳、月亮和星星轨迹的研究促成了星相图的发展，最早的历法也因此而诞生。将一天划分为两个 12 小时就是根据这一知识而测定。同样，地球围绕太阳旋转一周所需的时间被定义为一年。人类在古代用日晷根据日影的移动来测量时间，后被漏壶（水钟）和夜间测时器（通过观察星星来识别时间）替代，后来又出现了油灯钟¹和夜钟²，这样即使在恶劣的天气或者夜晚都能够知道时间。

二 非机械计时器

水、沙子和水银的流动是最初的非机械时间测量技术的基础，人们用它们流动的速度来测定时间。文明的进步创造了宗教、社会和经济机构，为了让这些机构运转顺利，就需要对时间的流逝进行测量。比如，在中世纪一个拥有两个（半小时）或四个漏壶（一刻钟）的沙漏就可以准确地测量教堂一次布道、法庭一次诉讼或者教室上一堂课

1 使用油灯测量时间始于 18 世纪。油灯中有一个小锡盒，盒里装有灯芯，锡盒与一个玻璃瓶相连，油就盛在这个玻璃瓶里，以油面的位置在锡条上显现出来的刻度来测定从晚 9 点到翌日早 7 点之间的时间。

2 夜钟于 17 世纪末出现在意大利，它用带孔的旋转钟盘代替指针。由于钟内放置蜡烛，所以人们可以在夜间通过钟盘的透光小孔来读取时间。

1.The Measurement and Perception of Time

Since none of our five senses can perceive time, this universal concept must be grasped by measuring its passing. Behind the perception of time lies the observation of the passage of living beings from life to death. Study of the paths of the sun, moon, and stars led to the development of sky maps and creation of the first calendars. The length of a full day, divided into two twelve-hour periods, derived from this knowledge, as did the definition of a year as the length of time it takes for the earth to revolve once around the sun. The sundial, which has been around since ancient times in the form of a gnomon (a stick planted in the ground), shows the passage of the sun on a dial with hour marks. The sundial was replaced by the clepsydra (water clock), the nocturnal (for telling time by taking an observation of the stars), and then the oil-lamp clock¹ and night clock², allowing time to be told even in bad weather or at night.

2.Non-mechanical Instruments for Measuring Time

The flow of a fluid (water, sand, mercury) was the basis for the first non-mechanical techniques for measuring time, by analogy: the amount of fluid that had flowed marked the time interval that had passed. Measuring passing time was necessary in order for the religious, social, and economic institutions

1 Use of the oil lamp began in the 18th century. It had a small tin case containing the wick and was connected to a glass flask that served as a reservoir. The level of the oil in the flask indicated the time as measured against marks on the tin strip, which indicated the night-time hours from 9 pm to 7 am.

2 The night clock appeared in Italy at the end of the 17th century. It allowed the time to be read in the dark thanks to a candle placed inside the clock. The pierced disc showing the hour and its fractions replaced hands; it turned to show the time by means of transparency.

created by civilisations to run smoothly. For example, in the Middle Ages, an hourglass with two (half-hour) or four (quarter-hour) bulbs could accurately measure the length of a sermon in church, a pleading in court, or a lesson. Sailors continued to use it on ships for a long time, in conjunction with the log, to estimate the ship's speed and the distance travelled. Used in China from the 6th century BC until the 17th century, incense clocks³ made use of one of the properties of incense, namely that it burns at a constant rate.

From the 11th century on, progress in mechanics and materials (especially wrought iron) meant that long periods of time, which were poorly measured by the non-mechanical instruments then in use, could be more accurately clocked. The development of clocks with a regularly oscillating mechanical system was supported by the general rapid development of the sciences and technology. Sailors were the first to benefit from the progress, which enabled them to calculate longitude, while the need for increasingly accurate time measurement culminated in the modern era's technological discoveries: electronic watch mechanisms that reproduce the vibrations of electrons. So the greatest accuracy was achieved by moving from observation of the infinitely large (the heavens) to the infinitely small (the caesium 133 atom).

3 A smouldering stick of incense was slowly consumed and burned a silk thread tied to a ball, which fell into a metal container. The sound meant that a certain amount of time had passed.

所用的时间。而航海员会在很长一段时期里重复使用沙漏，结合航海日志来估算船只航行的速度和距离。从公元前 6 世纪至公元 17 世纪，香钟³ 在中国广泛使用，即利用熏香以恒定速率燃烧的特性来测量时间。

人类最初是用非机械工具测量时间的，但测量较长时间时就无法做到准确。自 11 世纪始，机械和材料（尤其是锻铁）方面的进步使得长时间也能被准确测量。使用有规律振动机械系统的钟表的发展基于科学与技术的快速进步，海员是最早的受益者，科学技术的进步让他们能够测定经度。现代技术的探索让精确测量时间的需求达到顶峰：电子表机械可以再现电子的震动。从人类最初观察无穷大的物体（天空）感知时间，发展到通过观察极其微小的物体（铯 133 原子）以测量时间，人类最终实现能够精确地测量时间。

3 一炷香慢慢地燃烧，连着一个拴着丝线的小球，当丝线烧完，小球会落进一个金属容器中发出声音，这说明一段特定的时间已经过去。



油灯闹钟

1700—1725 年

法国或瑞士

高 11 厘米，深 10 厘米，宽 15.5 厘米

日内瓦艺术与历史博物馆藏

N 1121

◎闹钟铃响时可点亮油灯（灯与响闹
机制缺失）

Alarm with oil lamp

ca 1700-1725

France (?), Switzerland (?)

h. 11, d. 10, w. 15.5 cm

The oil lamp lights when the alarm
strikes (lamp and alarm mechanism
missing)

Geneva Museum of Art and History

N 1121

3.From Public Time to Private Time

Measured time has slowly been superimposed on ways of life based on natural and religious cycles, to such an extent that the clock now has considerable influence on how we think and act. It contributed to the general advancement of the sciences (astronomy), played an essential role in exploring new territories (on land, at sea, and in outer space) and created an environment conducive to the birth of machines and automation.

The mention of “clocks” (horloges) in European archives as early as the 11th century is attributable to the fact that at the time, the generic term “horologium” was applied to all instruments that measured time: the sundial, water clock, astrolabe, and hourglass, and even bells. In fact, there were no geared mechanisms prior to the 13th century. Who invented them, and where, remain unknown.

The first monumental clocks that appeared in Europe were the work of master locksmiths and blacksmiths, clever mechanics who put their skills to make these new instruments. These clocks regulated the pace of city life. Their bells tolled the hours and marked off the rhythms of daily life: waking, praying, working, sleeping. In the early 16th century, the notion of “public time” meant the time kept by city-dwellers, those living near a monastery, and members of a royal or princely family; these people enjoyed the benefits of an audible timepiece, symbolic of municipal power, private wealth, and openness to progress.

三 从公共时间到私人时间

无论从自然还是从宗教层面上来说，时间的测量慢慢成为人类生活方式的一部分，而钟表在很大程度上也影响着我们的思维和行动。这促进了科学（天文学）的全面发展，在探索新的领域（陆上、海上和外层空间）方面起到了至关重要的作用，也创造了一个有利于产生机械和自动化技术的环境。

早在 11 世纪，欧洲的档案中就有关于“时钟”的记载，这是因为“時計”这一术语是指所有测量时间的工具，包括日晷、水钟、星盘、沙漏，甚至是钟。事实上，13 世纪之前，并没有可以用来测定时间的齿轮机械装置，是谁在何处发明了那些装置？至今仍是个谜。

出现于欧洲的第一批巨大时钟是锁匠和铁匠大师以及聪明的机械师的杰作，他们用自己的技术制造了这些新的设备。这些钟表调整着城市生活的步伐，它们整点报时，划分日常生活的节奏：唤醒、祈祷、工作、睡觉。16 世纪早期，“公共时间”的概念是指城市居民所遵守的时间，他们是生活在修道院附近的居民以及皇室成员。他们有殷实的家境，受益于大钟带来的便利，是

市政权利和开放进步的象征。

钟楼上大钟的钟盘分成两个部分，每部分 12 小时，而且只有一个指针，从右向左转，像垂直的日晷上移动的影子。公共计时器标志着人类从“不均匀时间”和祈祷时间向 24 小时“均等”的昼夜平分时间过渡。驱使计时器运动的是平衡摆上的重锤，而时间由调速系统来计算。调速系统内有一个水平摆轮，也就是原始平衡摆⁴，它会定期、短暂地中断运动，以保证钟表恒速运动。半个世纪内，这一发明就传遍欧洲。但是，这一飞跃式的进步也只能是使时间的测量相对准确而已：这种时钟往往每天误差一刻钟，不得不借助日晷来校准。

近代的工业革命将“公共时间”变成了“共同时间”，这种时间在社区或城市（电子钟计时）、国家（由电讯发出时间信号）和全球的不同层面上共享。

The dial of a belfry clock was divided into two sections of 12 hours each and had a single hand, which turned from right to left, moving like the shadow on a vertical sundial. Public timepieces marked the transition from “unequal hours” and canonical hours to the 24 “equal” equinoctial hours defined by humankind. The energy that drove them was provided by weights, while time was counted by means of a regulator system in which a horizontal balance wheel, the foliot⁴, interrupted the movement for a brief period of time at regular intervals, to ensure a constant speed. This invention spread through Europe in half a century. However, this great leap forward was only relatively accurate: such clocks were frequently off by a quarter of an hour per day and had to be re-set by consulting a sundial.

The modern era and its industrial revolutions then moved “public time” toward “collective time”, shared at the level of a neighbourhood or town (time distribution via electrical timepieces), a country (time signal sent by telegraph), and finally the whole planet.

⁴ 原始平衡摆或冕状轮擒纵系统包含一个冕状齿轮，在重锤的驱动下左右转动，连接在一个轴柄上的两个棘爪（或机轴调节器）使冕状齿轮做间歇性摆动。齿轮和重锤是固定在一起的。

⁴ The foliot or verge escapement consists of a crown wheel that is rotated by the driving force of the weight and periodically stopped (hence the characteristic “tick-tock” sound) by two pallets attached to a shaft, or verge regulator. The gear and driving weights cannot be separated.



日内瓦福斯泰里广场

克里斯蒂安-戈特利布·盖赛尔

(1729—1814 年)

1804 年

Place de la Fusterie in Geneva

Christian Gottlob Geissler (1729–1814)

1804



1875 年的岛塔

江诗丹顿于 1843 年在岛塔成立其工坊，直到 1875 年才迁往附近的磨坊码头 1 号，即目前江诗丹顿博物馆及专卖店所在地。

江诗丹顿档案馆藏

La Tour de l'île, quai de l'île, around 1875. Vacheron Constantin set up here in 1843 before moving to its new premises nearby in 1875 to No.1, quai des Moulins which houses the Boutique and Heritage Department till today. Vacheron Constantin Archives

四 走向微型化之路：从家庭钟表到便携式手表

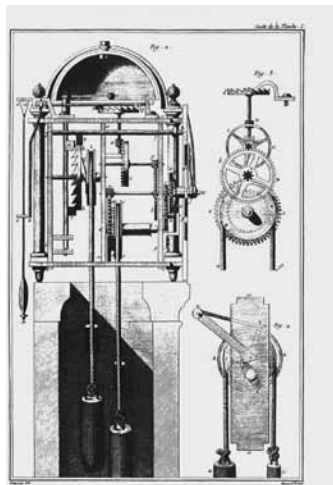
“私人时间”在 14 世纪的前半叶出现，当时采用冕状轮擒纵系统的普通时钟和报时钟（闹钟）进入百姓家庭。这些新鲜物件显示出主人的经济实力、时尚个性和独立于公共时间、宗教时间或民用时间的愿望。这些原始壁钟里齿轮被放在一个方盒子里，盒子上有锻铁立柱，让人联想到哥特式建筑风格。而金属表盘或者着色的木表盘则与这种装饰风格相得益彰。

15 世纪早期，钟表主发条作为意大利冶金技术进步的产物⁵，使得机械装置变小，从而制造出一种新型的便携式钟表，被称为“座钟”。由于不再依靠重锤驱动，这种钟表可以移动，进一步小型化之后，短短几十年里又发明出可随身携带的“手表”。

4. The Road to Miniaturisation: From Household Clocks to Portable Watches

“Private time” came along in the first decades of the 14th century when mechanical verge escapement clocks and chiming clocks (alarm clocks) were brought into homes. These innovative objects were intended to as a display of their owners’ financial means, modernity, and independence from public, religious, or civil time. The visible gears of these primitive wall clocks were housed in a cubical cage with wrought-iron uprights that evoked Gothic architecture. The sheet-metal or painted wood dials matched this style of decoration.

A product of metallurgical progress in Italy, the mainspring⁵ made it possible to miniaturise the mechanisms and build a new type of portable clock, called the “table clock”, in the early 15th century. No longer encumbered by its driving weights, the clock could now be transported; miniaturisation of this invention led in a few short decades to the creation of the portable “watch”.



狄德罗及达朗贝尔《百科全书》
第一部分，钟的制造
Diderot & d'Alembert *Encyclopaedia*,
Clock Making, First Section

⁵ 钟表主发条机芯的发明得益于钟表一个关键部件的完善，这个部件可以规律地将发条的能量传递给齿轮，它就是“均力圆锥轮”（又称芝麻链），发明于 15 世纪中叶，一直到 19 世纪还在使用。均力圆锥轮的形状像一个截锥体，有一个螺旋槽，从底部旋转到顶部。一条羊肠线（后来被细小的钢质芝麻链替代）绕在沟槽上，并与发条盒相连。当被绷紧时，发条作用于均力圆锥轮最小的直径，就会发挥出最大的制动力。当发条松下来时，发条作用于均力圆锥轮最大的直径，也会发挥制动力。发条本身由一个调节带和缠绕在发条盒内的蓝钢钢条组成。原始平衡摆（冕状轮擒纵系统中使用的）调节发条的传输能量，机芯上方的一个“摆轮夹板”将其固定住。

⁵ The invention of the mainspring movement was favoured by the perfecting of a part that could regularly transfer the energy of the spring to the gears. This essential component, discovered around the mid-15th century and used until the 19th, was the “fusee.” Shaped like a truncated cone, it had a helical groove running from the base to the top. A gut string (later replaced by a small steel chain) was wound around this groove and attached to the barrel. When fully wound, the spring acted on the fusee’s smallest diameter, which exerted maximum braking force. Once the spring had wound down, the largest diameter exerted the braking force. The spring itself consisted of a ribbon of tempered and blued steel rolled around the inside of the barrel. The foliot (verge escapement) regulated the spring’s energy. The foliot was held in position by a piece called the “balance cock” placed above the movement.



招牌——背着落地摆钟的钟表匠和妻子人偶
18 世纪
奥地利
彩漆马口铁
高 35 厘米，宽 15 厘米
日内瓦艺术与历史博物馆藏
AD 3495、AD 3496

Sign carriers, Itinerant watchmaker with a Morbier clock on his back and his wife
Austria, 18th century,
Painted sheet metal
h. 35, w. 15 cm
Geneva Museum of Art and History
AD 3495, AD 3496

· 文艺复兴时期的座钟

文艺复兴时期的座钟多是长方体或六面体的塔式钟（为公共时钟提供参考），有一个或多个垂直的表盘。其他座钟则是圆柱体或立方体，配有一个水平表盘。那时的表盘有时会用内填珐琅装饰，通常有表示 24 小时的一圈刻度。钟体由金属制造，通常使用镀金黄铜，并有精美的雕刻和镂空纹饰。这样的家用物件使王公贵族的私人寓所显得更为华丽，也显示出他们对天文学和机械学方面的品位。座钟往往会在整点报时或装有闹铃机制，还会有自动人偶报时。这种精美时尚的钟表在 16 世纪和 17 世纪上半叶流行于整个欧洲。

1657 年，又一场革命改变了钟表业，那就是钟摆即摆轮⁶的出现。这种钟摆用一根弦丝悬挂，独立于齿轮，通过交替运动将动能传送给擒纵轮，而擒纵轮的轮齿由持续的动力驱动。摆钟的精准度使得钟表上出现了分针，后来又出现了秒针。的确，是钟摆的振荡定义了这一新的时间单位。与最早由原始平衡摆⁷调节的机芯相比，钟摆机械装置是时间计算精度上的一个巨大成就。

⁶ 1642 年前后，在伽利略的研究工作基础上，克里斯蒂安·惠更斯（1629—1695）将钟摆用于钟表。

⁷ 钟摆降低了误差幅度，从每天 15 分钟至 30 分钟的误差降到只有 3 分钟，而且能够进一步将误差降至 10 至 15 秒以内。

☒ Renaissance Table Clocks

Many Renaissance table clocks were made as a square or hexagonal tower shape (a reference to public clocks) and had one or more vertical dials; others were cylindrical or cubical with a horizontal dial. Their dials, sometimes decorated with *champlevé* enamel, were often inscribed with a 24-hour circle. Made of metal, usually gilded brass, the cases were finely engraved and chased. These household items graced the private apartments of the nobility, reflecting their taste for astronomy and mechanics. Such timepieces often had an hour chime or an alarm, sometimes an automaton, and spread throughout Europe during the 16th and first half of the 17th century.

In 1657, another revolution changed the clock: the pendulum (balance wheel⁶), suspended by a string and isolated from the gears, transmitted an alternating movement to the escape wheel, the teeth of which were now subject to impulses of constant force. The pendulum clock's accuracy brought about the minute hand, then the seconds hand. Indeed, it was the pendulum's oscillation that defined this new unit of time. The result was a considerable gain in accuracy in pendulum mechanisms compared to movements regulated by the primitive foliots⁷.

Progress was such that the “clocks” of the day were soon “converted to pendulums” so as to enjoy the benefits of increased accuracy. These discoveries led to a boom in clockmaking for private homes. Many kinds of clocks were available to suit all regions and environments, country –

⁶ Continuing Galileo's work around 1642, Christiaan Huygens (1629-1695) adapted the pendulum to the clock.

⁷ The pendulum reduced the margin of error from on the order of 15 to 30 minutes per day to three minutes, and could already achieve accuracy to within ten to 15 seconds.

and city – dwellers alike, working and “well-off” classes. They were sometimes made entirely of wood, including the gears, and had astronomical complications showing the days, the moon’s age and phases, and sometimes the signs of the zodiac and chime systems using bells.

A clock on a console table or wall was an essential part of the furniture. The mechanism was contained in a simple wood cabinet painted to imitate shell, or a fancier case with ebony and tortoiseshell, sometimes embellished with bronze. If a clock’s simple silhouette and plain tin dial were somewhat austere, it was called a “religious” clock.

有了如此的进步，钟表很快就都使用钟摆了，计时器的精确性也大大提高。这一系列的发明掀起了一股制造家用钟表的高潮。适合于所有区域和环境的各类钟表应运而生，无论是乡镇还是城市居民，工人阶级还是“享乐”阶层都有机会买到适合他们的钟表了。那时的钟表包括齿轮在内有时全用实木制造，而且相当复杂，不仅能显示日期，还能显示月龄和月相，有时还能显示黄道十二宫，以及采用铃声来报时的自鸣装置。

放在桌案或挂在墙上的钟表成为家具装饰的必要组成部分，人们会把钟表机械装置放进仿贝壳图案的简朴木盒中，或者考究的玳瑁乌木匣子里，有时还使用青铜作为装饰。如果钟表的外轮廓和锡制表盘毫无装饰且有点严肃古板的话，则被称为“修道士”钟。



鼓形座钟

约 1525 年

德国或法国

高 7.5 厘米，直径 10 厘米

日内瓦艺术与历史博物馆藏

N 603

1883 年伊波利特·让·戈斯捐赠

◎该座钟的外壳及钟盘采用刻花青铜镀金，刻有百合花及双心双肖像徽章，肖像为身穿盔甲的国王和士兵。钟盘刻有罗马数字时标，紫色精钢单一指针，铁质底座；内为铁质机芯、肠线芝麻链，采用冕状轮擒纵系统，原始平衡摆和黄铜齿轮，夹板上装饰百合花图案

Table clock in the form of a drum

Germany (?), France (?), ca. 1525

Case and dial in gilded engraved bronze, base and small feet in iron, single hand in plum-colored steel, engraved Roman numerals, coats of arms forming two hearts and two portraits (king and soldier, both in armor)

Movement in iron, catgut fusée, crown wheel escapement, foliot, brass wheels, plate decorated with lily flowers

h. 7.5, diam. 10 cm

Geneva Museum of Art and History
N 603, donated by Hippolyte Jean Gosse, 1883



十字架旋转时盘座钟

约 1600 年

德国南部

高 34 厘米，深 16 厘米，

宽 14.5 厘米

日内瓦艺术与历史博物馆藏

AD 2043

○该座钟为镀金黄铜和银质框架，十字架背面刻有“INRI”字样。黄铜机芯框架，机轴（冕状）擒纵系统，黄铜圆形摆轮，精钢平游丝

Table clock with turning hour dial

Southern Germany, ca. 1600

Constructed in gilded copper and silver, in the form of a cross (INRI engraved on back)

Movement frame in brass, verge escapement, brass circular balance, flat steel balance spring

h. 34, d. 16, w. 14.5 cm

Geneva Museum of Art and History

AD 2043



多表盘天文座钟

约 1600—1625 年

可能制作于法国

高 25.5 厘米，长 19.3 厘米，宽 15 厘米

日内瓦艺术与历史博物馆藏

1885 年伊波利特·让·戈斯捐赠

N 241

◎该座钟为铜镀金框架，正面表盘嵌银胎，内填珐琅；内为冕状轮擒纵系统，芝麻链，具有双铃整点和半点自鸣功能

Astronomical table clock with multiple dials

France (?)

ca. 1600 - 1625

Constructed in gilded copper, silver dials, champlevé enamel on silver, multicolored enamels

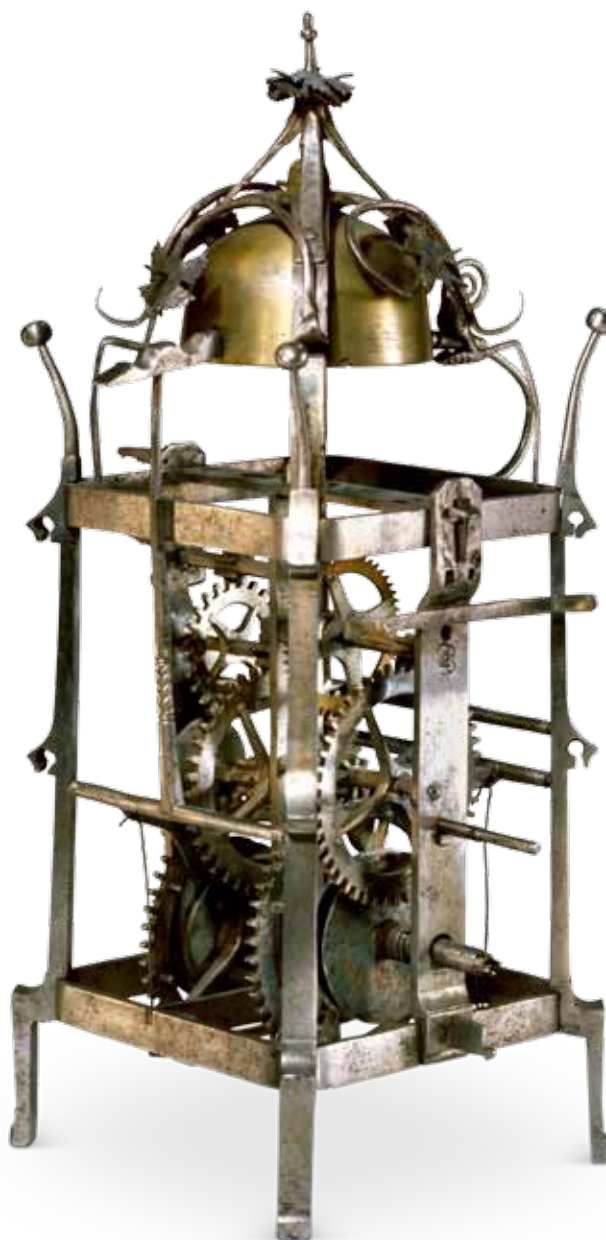
Crown wheel escapement, leather-cord fusée, hours and half hours struck en passant on two bells

h. 25.5, d. 15, w. 19.3 cm

Geneva Museum of Art and History

N 241, donated by Hippolyte Jean

Gosse, 1885



哥特式家用座钟
 爱合德·利吉特
 1579 年
 瑞士温特图尔
 铁
 高 38 厘米，长 21 厘米，宽 20 厘米
 日内瓦艺术与历史博物馆藏
 AD 3056
 ◎该座钟为铁质框架，机芯为铁和钢材质，顶部装有自鸣机制；原为冕状轮擒纵系统（带原始平衡摆），后更换为锚式擒纵系统。由于闹铃机制遗失，机芯不完整

Erhard Liechti, "Gothic" domestic clock
 Winterthur (Switzerland), 1579
 Constructed in iron, weight-driven movement in iron and steel, striking mechanism with count-wheel
 Original foliot escapement replaced by an anchor
 Movement incomplete (alarm mechanism missing)
 h. 38, w. 20, d. 21 cm
 Geneva Museum of Art and History
 AD 3056

• 挂钟

☒ Wall Clocks



挂钟

泰奥多尔·罗伯特

约 1750 年

瑞士拉绍德封

高 80 厘米，宽 37 厘米，深 15 厘米

日内瓦艺术与历史博物馆藏

AD 3652

◎该挂钟外壳装饰有镂空铜饰，绘仿玳瑁底色，嵌锡质钟盘，四时及八时处有两个上链孔。内为冕状轮擒纵系统机芯和摆线钟锤调校器，顶部安有铃式整点和半点自鸣装置

Théodore Robert, Wall clock

La Chaux-de-Fonds (Switzerland),
ca. 1750

Case decorated with cut out
engraved copper, back with
imitation tortoiseshell, tin dial.

Movement with crown wheel
escapement, cycloidal pendulum
regulator, mechanism with count-
wheel striking hours and half-hours
on a bell

h. 80, w. 37, d. 15 cm

Geneva Museum of Art and History

AD 3652



二问报时挂钟

约 1780 年

瑞士纳沙泰尔

高 76 厘米，连底座高 136 厘米

日内瓦艺术与历史博物馆藏

AD 2499

◎ 该挂钟为黄漆木质外壳，绘红色花卉纹及镂空装饰，底座上以红色绘有让-巴蒂斯特·乌德里（1686—1755）画作《犬吠天鹅》（1731）的局部。白珐琅钟盘配黄铜指针，四时及八时处有上链孔。内为黄铜镀金机芯，抽拉式二问报时装置，带有四音锤双音簧

Wall clock with repeater

Neuchâtel (Switzerland), ca 1780

Wooden case in yellow with floral decoration and a painting after Jean-Baptiste Oudry (1686- 1755) "Dogue combattant contre un cygne" (1731), enamel dial

Movement in gilded brass, pull repeater striking quarters with four hammers on two gongs

h. 76 cm, with console : 136 cm

Geneva Museum of Art and History

AD 2499

• 壁炉钟

18 世纪早期，安放在墙壁支架上的挂钟不再使用原有的直线设计，而改为小提琴式的曲线设计。当时，制作挂钟是诸多行业的工匠通力合作的结果，包括制表师、木匠、雕塑师、铸工、青铜工匠、雕刻匠，以及珐琅师（制作旋涡花饰钟壳和表盘），而放置钟表的柜橱装饰（镶嵌细工、玳瑁、染色的兽角、镀金青铜等）往往要与家具陈设风格一致，如要模仿来自远东用在家具上的漆（马丁漆、中国漆）。

这些工匠还可制造落地钟，这样的钟在 17 世纪时从英国传到整个欧洲大陆。在日内瓦，这样的落地钟会被放在高大垂直的箱子里，这与放置华丽的法国落地钟的箱子有很大区别，后者带有底座。

自 17 世纪起，非常流行将钟表放在抽屉柜、餐柜或者壁炉边的桌子上。19 世纪，其受欢迎程度达到顶峰，当时欧洲家庭的壁炉高度非常适合放钟表，这成为家庭内部装饰的一大创新。通常情况下，座钟会被放在壁炉上方的大理石台面上，旁边还会摆放烛台、花瓶或者香薰灯等。制作壁炉装饰钟的材料多种多样，如青铜（通常还要镀金）、普通或者贵重的木材、大理石、锡等。尤其是在巴黎，制表师们会制造出各种各样的壁炉装饰钟以满足不同时代的风格需求。

☒ Mantel Clocks

Early 18th century wall clocks made to be set on wall brackets became more violin-shaped instead of their earlier straight-line design. Creating a wall clock was now the result of a collaborative effort between the watchmaker, cabinetmaker, sculptor, caster, bronze craftsman, carver, and enameller (cartouche cases and dials). The cabinet decorations (marquetry, tortoiseshell, dyed horn, gilded bronze, etc.) blended in with those found on household furnishings. For example, lacquers from the Far East, which were used on furniture, were imitated (vernis Martin, Chinese lacquer).

Such artisans also helped make floor clocks, which spread from England to the Continent during the 17th century. In Geneva, these clocks were housed in tall straight cases very different from one of those housing the magnificent French clocks made to be set on a plinth.

Clocks placed on a chest of drawers, sideboard or table close to a hearth had been in vogue since the 17th century, and their popularity reached its peak in the 19th century with fireplaces of convenient leaning height topped by a mirror – a major innovation in interior decorating. It was usual to place a clock on the marble mantel above the fireplace, flanked by candelabra, vases, or perfume lamps. Mantel clocks were made of a wide variety of materials, for example, bronze (usually gilded), ordinary or precious wood, marble, and tin. In Paris, especially, clockmakers came up with a myriad of different varieties of mantel clock to conform to the styles of each era.



壁炉座钟

约 1720 年

意大利

高 60 厘米，宽 50 厘米，深 35 厘米
日内瓦艺术与历史博物馆藏

MF 4022

◎该座钟外壳由珍贵木料制成，并装饰有青铜镀金贴饰；前方钟门上的黄铜雕刻含有时间的寓意；内部为双发条盒机芯，冕状轮擒纵系统，具有双铃整点、整刻自鸣和闹铃功能

Mantelpiece striking clock

Italy , ca. 1720

Precious wood case with gilded bronze appliques "Allegory of Time" brass decoration on the door
Two-barrel movement, verge escapement, hours and quarters struck en passant on two bells, alarm mechanism

h. 60, w. 50, d. 35 cm

Geneva Museum of Art and History

MF 4022



“修道士”座钟

让·路易·格兰德诺

约 1765 年

瑞士尼永和日内瓦

高 52 厘米，宽 3 厘米，深 14 厘米

日内瓦艺术与历史博物馆藏

C 0010

◎该座钟为木质钟壳，涂仿玳瑁纹样漆，嵌白色珐琅钟盘配精钢指针；内部为冕状轮擒纵系统，具有拉抽式整点、整刻自鸣功能

Jean Louis Grandnom,

“Religieuse” free-standing clock

Nyon and Geneva (Switzerland),

ca.1765

Wooden cabinet with painted imitation tortoiseshell, dial in white enamel, steel hand

Movement with pull-striking hours and quarters, crown wheel escapement

h. 52, w. 3, d. 14 cm

Geneva Museum of Art and History

C 0010



壁炉日历座钟

夏庞蒂埃

约 1789—1810 年

法国巴黎

高 37 厘米，宽 32 厘米，深 12 厘米

日内瓦艺术与历史博物馆藏

AD 2095

◎该座钟下方为大理石底座，上方正中嵌白色珐琅钟盘，四时及八时处有两个上链孔，钟盘四周满饰青铜镀金花卉装饰及酒神女祭司雕像；内为冕状轮擒纵系统机芯和单铃自鸣装置，精钢指针用于指示位于钟盘外缘的日期刻度

Charpentier, Mantel clock with calendar

Paris (France), 1789-1810

Plinth in marble, with appliques and bacchantes in gilded bronze, enamel dial

Movement with crown wheel escapement, striking mechanism on a bell, steel hand indicates day of the month on the exterior rim of the white enamel dial decorated with garlands of flowers

h. 37, w. 32, d. 12 cm

Geneva Museum of Art and History

AD 2095

壁炉日历座钟

约 1780 年
法国巴黎
高 65 厘米，宽 24 厘米，深 12.5 厘米
日内瓦艺术与历史博物馆藏
AD 2235
◎该座钟为里拉琴造型，底座为白色大理石，底座和钟盘周围满饰青铜镀金的珠子、橡树叶、花环和阳光的装饰；白珐琅钟盘配中央秒针，四时和八时处有上链孔，钟盘中央镂空显示环绕机芯振荡的摆轮和星历。内部为铆钉式擒纵系统，单铃整点和半点自鸣装置，背面悬挂双金属格栅式摆轮

Mantel calendar clock
Paris (France), ca. 1780
In the form of a lyre, white marble and gilded bronze with decor of pearls, oak leaves, garlands of fruit and flowers, sun rays; enamel dial, center seconds
Balance oscillating around the movement
Skeleton movement revealing the calendar star, pin escapement, hour and half-hour striking on a bell, bimetallic grill-type balance, suspension at rear
h. 65, w. 24, d. 12.5 cm
Geneva Museum of Art and History
AD 2235



自鸣座钟

马克-路易·迪福和弗兰克-爱德华·洛斯耶

约 1885 年

瑞士日内瓦

高 49 厘米，长 28.3 厘米，宽 17.3 厘米

日内瓦艺术与历史博物馆藏

1963 年玛格丽特·梅罗兹-洛斯耶捐赠

AD 1407

◎该座钟为黑檀木外壳，铜胎画珐琅图案；内为锚式擒纵系统机芯，齿片音簧式整点和半点自鸣装置

Marc-Louis Dufaux

Frank-Edouard Lossier, Free-standing striking clock

Geneva (Switzerland), ca. 1885

Case in ebony wood, enamels

painted on copper

Anchor escapement, rack striking mechanism hours and half hours en

passant on a gong

h. 49, d. 17.3, w. 28.3 cm

Geneva Museum of Art and History

AD 1407

donated by Marguerite Meroz-Lossier, 1963



五 便携式钟表

和“钟”一样，历史学家们对第一块“表”诞生的日期、发明者和诞生地尚无定论。鼓形的表是源于与其类似的座钟（受钟楼上巨大时钟的启发），大约于 1475 年至 1500 年间产生于欧洲主要的几个钟表制造中心，如意大利、德国、法国和瑞士的日内瓦。如同座钟，那时的表有一个指针以及和钟类似的功能（报时、天文日历显示）。实际上，大到钟楼时钟，小到手表都具有相同的内部机制，通常会有一个动力装置（重锤或发条）、将时间划分为增量的机制（擒纵系统

5.The Portable Timepiece

As with clocks, historians' efforts to determine a date, inventor, and birthplace for the first “watch” have been fruitless. The drum-shaped mechanism was derived from the table clock it resembled – which itself had been inspired by monumental clocks – and appeared at more or less the same time during the last quarter of the 15th century in several European clockmaking centres: Italy, Germany, France, and Geneva, Switzerland. Like table clocks, watches had a single hand and the same functions (chimes, astronomical displays). In fact, mechanisms from the tower clock on down to the tiny watch shared similar internal arrangements and always included a power source (weight or spring), a mechanism for dividing time into increments (escapement and regulator), a transmission (gears), and a “display” (visual or audible).

Adoption of the reformed religion (Protestantism) in the mid-16th century was a major event in terms of the intellectual and social development of societies and of economic growth in some cities. The promulgation of the Edict of Nantes (1598), which granted Protestants freedom of worship, and its



狄德罗和达朗伯主编的《百科全书》
(1751—1780 年)
第一部分，制作时钟
《使用铆钉式擒纵系统的钟表及其他
部件的发展》
Diderot & d'Alembert
Encyclopaedia (1751-1780), Clock
Making First section
Plate X Continued No 2: Clock
Making, *Pin Wheel Escapement*
Watch and Development of Several
of its Parts

revocation (1685), had the same effect: French watchmakers who had become Protestants emigrated from the kingdom and went to practice their profession in English, German, and Swiss workshops, especially in Geneva.

Watchmaking was then further developed by the Corporations of Watchmakers set up in Paris (1544), Nuremberg and Augsburg (1565), Blois (1597), Geneva (1601), London (1631), and Lyons (1660).

From the beginning, watches were adopted as an accessory by men and women alike. They were luxury items for the elite classes, to which their rich decorations appealed, and their complex mechanisms aroused curiosity. Stimulated by the scientific disciplines (geography, mathematics, physics and the other natural sciences, medicine, etc.), which revealed a need for better precision in measuring instruments, watchmakers focused on increasing accuracy.

The various components of the watch movement (called the movement cage) were housed between two plates joined by pillars: the barrel, fusee, gears, and verge escapement wheel. The foliot (circular or straight bar) was placed above the back plate and supported by a bridge called the “balance cock,” the shape and engraved decoration of which varied depending on when and where it was made. Presented to the French Royal Society by Christiaan Huygens in 1675, the spiral balance-spring, or combined balance-wheel and spring, is to the watch what the pendulum is to the clock. Working in tandem with the spring, the spiral balance-spring regulates the escapement mechanism, to which it imparts a regular rhythm, as evidenced by the “tick-

与调速系统）、一个传动装置（齿轮）和一个“显示”系统（视觉或听觉）。

16 世纪中期的宗教改革（新教）无论是对社会的智力水平和社会发展还是对经济增长都是一件大事。法国颁布的南特法令（1598）赋予了新教徒们信仰自由，而该法令的废除（1685）亦影响深远：已成为新教徒的法国钟表工匠们纷纷移民到英国、德国以及瑞士，特别是在日内瓦，他们继续当地的工坊从事相同的行业。

各国行会的成立使得制表业得到更进一步的发展。巴黎行会始于 1544 年，纽伦堡和奥格斯堡行会始于 1565 年，布洛瓦行会始于 1597 年，日内瓦行会始于 1601 年，伦敦行会始于 1631 年，里昂行会始于 1660 年。

起初，手表作为一种配饰没有男、女款式之分。精英阶层佩戴这些奢侈品以展示其不菲的装饰，复杂的机械装置也可吸引人们的好奇。各门学科（地理、数学、物理和其他自然科学甚至医学等）对精确测量工具的需要，促使制表师们专注于提高钟表的精确度。

手表机芯被安置在由支柱连接的两块夹板之间，各部分组件包括：发条盒、芝麻链、齿轮和机轴擒纵轮。原始平衡摆（圆形的或直杆的）放

置在下夹板上并由一个“摆轮夹板”来支撑，其形状与雕刻的装饰取决于被制作的时代与地点。克里斯蒂安·惠更斯于1675年向法国皇家学会演示的螺旋形摆轮游丝或称作摆轮游丝组合，作用相当于“钟摆”。螺旋形的摆轮游丝与发条串联作用，调节擒纵装置，产生规律的节奏，“滴答”的声响即是证明。这个发明使得手表可做成圆形、大尺寸且呈球形（因而被昵称为“萝卜手表”，即大怀表），不仅为提高精度带来更多可能，也在1700年之后，使表盘上分针和分钟的刻度得以普遍使用。

随着精度的提高，手表的功能开始转变，从主要作为饰物变得更具实用性：新的机械进步使它们可显示日期和月份，通常也随之显示月龄、月相及日出与月出的时间。

tock” sound. This invention, which caused watches to be round, of large size, and bulbous in shape (hence their nickname, “turnip watch”), opened the doors for increased precision and, after 1700, justified general use of the minute hand and minute graduations on the dials.

As accuracy increased, watches gained in status and changed from being mainly jewellery to a functional object: new mechanical advances enabled them to display the date and month, often along with the moon’s age and phase, sunrise, and moonrise.

马托伊斯·梅里安 (1593—1650)
《日内瓦》
约1642年
Matthaus Merian, *Geneva*, ca. 1642



6.Paris, London, Geneva

During the 18th century, the art of watchmaking saw unparalleled development in three European cities: Paris, London and Geneva.

Well-known watchmakers – often of Swiss origin – worked in Paris and London, and the watchmaking fame of these cities was based on the manufacture of watches and clocks of high technical and artistic quality. The power of Geneva’s watchmaking industry, on the other hand, was sustained by its flourishing trade, which had outlets stretching from Constantinople to the Levant. The reputation of Geneva’s painters on enamel was such that watchmakers from all over Europe made use of their practices.

Watchmakers everywhere met the demand by targeting their products to fit their clients’ tastes. In Europe, it was good form for men and women to wear a watch or two at their waist, suspended from a ribbon, chain, or cumbersome chatelaine (from which hung, in addition to the watch and its key, scissors and a mirror, pill case, and other trinkets). In the Orient, watches and clocks were sold to the Chinese emperors and mandarins through English traders in Canton. Such sales involved rich pieces, sometimes with chimes and automaton, enamelled and decorated with pearls, offered in pairs. Geneva’s workshops were heavily involved in production for this market.

六 巴黎、伦敦、日内瓦

18 世纪，三个欧洲城市见证了制表艺术的空前发展：巴黎、伦敦和日内瓦。

知名的制表师们通常来自于瑞士而在巴黎和伦敦发展，并且这些城市制表业均以出产技术和艺术含量高的钟表而闻名。但日内瓦钟表制造工业的声望则源于其蓬勃发展的贸易，从君士坦丁堡（伊斯坦布尔）一直延伸到西亚黎凡特地区（今叙利亚、黎巴嫩和巴勒斯坦地区）。日内瓦珐琅艺术家的手工艺使得他们获得欧洲各地制表师的青睐。

任何地方的制表师们都致力于使他们的产品满足客户的品位。在欧洲，男人女人们在腰间佩戴一块或两块表是一种很好的装饰，坠在一根丝带、链子或繁琐的腰带上（除了表以外还可悬挂佩戴钥匙、剪刀和一面小镜子、小药盒或其他小饰品）。在东方，钟表往往由在广州的英国商人卖给中国的皇帝和官宦。所卖之物通常价格不菲，这些钟表有些安有报时装置和自动人偶，有些镶嵌珍珠并装饰珐琅，均论对出售。针对这一市场，日内瓦的工坊投入了很大的生产量。

七 启蒙时代

欧洲的 18 世纪通常被称作启蒙时代。作家和哲学家们相信几个世纪的蒙昧和无知被画上了句号，新时代在理性与尊重人权思想的激励下展现在世人面前。著名的思想家如狄德罗（1713—1784）、伏尔泰（1694—1778）、卢梭（1712—1778）以令人印象深刻的著作《百科全书》（或《科学、艺术和工艺详解词典》）作为武器率先向愚昧、迷信和暴政宣战。这部著作于 1751 年至 1772 年间在瑞士出版。此书内容涵盖了机械、工程与钟表制造业及手工艺装饰、印度棉面料绘制、还有修复手工艺等方面，使人类的聪明才智以及工业领域的辉煌成果得以传播。正是在这片祥和的环境里，钟表制造业持续快速地发展。在巴黎和日内瓦，制表师不是普通的手工业者，他们受过教育，参加政治辩论，光顾文学沙龙，参与咖啡馆里的讨论。他们对天文和科学感兴趣，富有远见，认为创新需要掌握技术和艺术以及文化知识。让-雅克·卢梭，出生在日内瓦，其祖父和父亲都是制表师，在那里他的思想得到了发展，体现在著名的《社会契约论》（1762 年出版）中。

7.The Age of Enlightenment

The 18th century in Europe is often called the Age of Enlightenment. Under the impetus of writers and philosophers who were convinced that centuries of obscurantism and ignorance were drawing to an end, a new era inspired by reason and respect for mankind opened up to the world. Prominent thinkers, notably including Diderot (1713-1784), Voltaire (1694-1778) and Rousseau (1712-1778) spearheaded the fight against ignorance, superstition and above all tyranny, using as a weapon the impressive project of an *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers* (*Encyclopaedia or Reasoned Dictionary of Science, the Arts and Professions*) published in Switzerland between 1751 and 1772. The brilliant results of humankind's industry and intellect, expressed through mechanics, engineering and horology, as well as in crafts such as *passementerie* (decorative trimmings) and *indienne* (painted Indian cotton fabrics), rehabilitated manual workmanship. It was amid this propitious climate that watchmaking continued its rapid development. In Paris as in Geneva, watchmakers were not simply artisans, but instead educated individuals who took part in political debate and frequented literary salons and coffee-shop meetings. Interested in astronomy and the sciences, they were visionaries who considered that innovation required technical mastery and a knowledge of the arts and culture. Jean-Jacques Rousseau, the son and grandson of watchmakers,

was a citizen of Geneva where he developed his ideas, including the renowned *Social Contract* published in 1762.



日内瓦制表师安东尼·达文（1749—1836）画像

佚名

年代不详

日内瓦艺术与历史博物馆藏

Artist unknown, Portrait of Genevan watchmaker Antoine Tavan (1749–1836), undated

Geneva Museum of Art and History



日内瓦制表师让·路易·利特（1785—1799）画像

加布里埃尔-康斯坦特·沃谢（1768—1814）绘

约 1800 年

瑞士日内瓦

Gabriel-Constant Vaucher (1768–1814), Portrait of Genevan watchmaker Jean-Louis Ritter (1785–1799)

Geneva, ca. 1800

八 从机芯框架到莱皮纳机芯

从 1720 年开始，钢质量的改进意味着“大怀表”的用料日益减少。约在 1770 年，一位出生在日内瓦的制表师让·安托万·莱皮纳（1720—1814）开创了制表史上一个新的时代，他去掉部分芝麻链结构而采用一小块简单夹板，以及其上的表桥来支撑机芯，用以代替以前的机芯框架。另一显著的特点是“莱皮纳机芯”上链钮与分针在一条线上，与“亨特机芯”⁸相对应。莱皮纳曾梦想制造一枚抛光金表壳，能把铰链或雕刻隐藏起来，展现了他对简约风格的创想。而由亚伯拉罕-路易·宝玑（1747—1823）所做的审美试验则实现了这一想法。莱皮纳机芯与宝玑“独家”手表都预示着机械和工业化制表的到来。这些伟大制表师的风格和发明为日内瓦及周边地区同行业者带来了巨大的影响。

⁸ 亨特机芯：表盘上九点到三点的线，垂直于表冠。

8.From the Movement Cage to the L é pine Calibre

Beginning in 1720, improvements to steel quality meant that the volume of the “turnip watch” could be gradually reduced. Around 1770, Jean Antoine L é pine (1720-1814), a watchmaker born within sight of Geneva, began a new era in watchmaking history by eliminating part of the fusee and replacing the traditional movement cage with a simple plate on which the parts of the movement are held by bridges. Another identifiable structural characteristic of the “L é pine calibre” is that the second hand is placed in line with the winding stem, in contrast to the “hunter calibre”⁸. L é pine also dreamed up a polished gold case with no visible hinge or engraving, which was innovative in its simplicity. Aesthetic experimentation by Abraham-Louis Breguet (1747-1823) completed the new look. Both the L é pine calibre and Breguet’s “subscription” watch were harbingers of the age of mechanisation and industrial watch production. The influence of the great watchmaker’s style and inventions on his contemporaries in Geneva and the surrounding area was considerable.

⁸ Hunter calibre: line from 9 o’clock to 3 o’clock, perpendicular to the stem.



怀表

弗朗索瓦·福尔

约 1690 年

瑞士日内瓦

高 6.8 厘米，直径 5.5 厘米，

厚 3.6 厘米

日内瓦艺术与历史博物馆藏

AD 4726

◎此怀表为雕花黄铜和钢制外壳，表盘外圈镶蓝色罗马数字及卷涡纹，中央为凸印花纹；内置黄铜框架机芯，埃及式夹板柱，采用冕状轮擒纵系统和芝麻链，并安装贝壳形大平衡摆轮，活动薄片调校系统

François Fol, Pocket watch

Geneva (Switzerland), ca. 1690

Engraved case in steel and brass,
dial with cartouches, blue numerals,
center in embossed copper

Movement frame in brass, Egyptian
pillars, crown wheel escapement,
chain fusée, large shell-shaped
balance-cock, flexible blade
regulating system

h. 6.8, diam. 5.5, thk. 3.6 cm

Geneva Museum of Art and History

AD 4726



怀表

让-路易·特朗布莱

约 1700 年

瑞士日内瓦

高 7.1 厘米，直径 5.6 厘米，

厚 3.3 厘米

日内瓦艺术与历史博物馆藏

N 431

◎该怀表为冲压黄铜镀金外壳，狩猎图案，铜镀金浮雕珐琅涡形纹饰表盘，配金质百合花形指针；内为黄铜框架机芯，埃及式夹板柱，装有芝麻链和大平衡摆轮，摆轮夹板装饰镂空希腊神话客迈拉怪兽图案；配游丝微调装置（快慢针）

Jean-Louis Trembley, Pocket watch

Geneva (Switzerland), ca. 1700

Stamped and gilded brass case, hunting decor; dial in chased, gilded copper with enamel cartouches, fleur de lys hands in gold

Movement frame in brass, Egyptian pillars, chain fusée, large balance, balance-cock decorated with chimeras, ratchet index with rosette

h. 7.1, diam. 5.6, thk. 3.3 cm

Geneva Museum of Art and History

N 431



腕表机芯

约翰·雅各布·施米德

约 1700 年

瑞士巴塞尔

直径 4.25 厘米，厚 2.71 厘米

日内瓦艺术与历史博物馆藏

N 189

◎该机芯安装了仿钟摆式摆轮，框架上有人形夹板柱；镂空摆轮夹板上浮雕荷兰威廉国王和玛丽王后的侧面像

Johann Jacob Schmid, Watch movement

Basel (Switzerland), ca. 1700

Balance with bob acting like a pendulum.

Anthropomorphic pillars, openwork balance-cock with embossed profiles of King William and Queen Mary of Holland

diam. 4.25, thk. 2.71 cm

Geneva Museum of Art and History

N 189



二问报时怀表

让-安托万·莱皮纳

约 1800 年

法国巴黎

高 6.75 厘米，直径 4.95 厘米，

厚 1.14 厘米

日内瓦艺术与历史博物馆藏

N 1145

◎该怀表为玫瑰金表壳，机雕偏心银表盘及金质指针；机芯为黄铜镀金和抛光精钢材质，配备双音簧二问报时机制和工字轮擒纵系统，悬挂式发条盒，黄铜圆形平衡摆轮和精钢游丝

Jean-Antoine Lépine, Pocket watch with quarter repeater

Paris (France), ca. 1800

Pink gold case, silver dial with off-centre guilloché, gold hands

Quarters struck on demand on two gongs, cylinder escapement, hanging barrel

Movement frame in gilded brass and polished steel, brass cylinder escapement, steel balance-spring
h. 6.75, diam. 4.95, thk. 1.14 cm

Geneva Museum of Art and History
N 1145





怀表

江诗丹顿公司

1755 年

瑞士日内瓦

直径 4.5 厘米

江诗丹顿典藏部藏

N° 10198

◎该怀表为银质表壳，珐琅表盘；配备黄铜镀金 16" 机芯、心轴擒纵系统及三臂环摆轮；芝麻链发条盒，镂空摆轮夹板；使用钥匙上链及设定

◎已知的由江诗丹顿创始人让-马克·瓦士伦制作的第一枚怀表。机芯镌刻“J.M. Vacheron A GENEVE”（让-马克·瓦士伦日内瓦制）字样

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1755

Silver, enamel dial

Caliber 16", round, in gilt brass, verge escapement, three-arm annular balance, barrel with fusee, open-worked balance-cock, key winding and setting

First known pocket watch created by the founder, Jean-Marc Vacheron. Movement engraved with the inscription : "J.M. Vacheron A GENEVE"

diam. 4.5 cm

Vacheron Constantin Heritage Collection

N° 10198



九 走向现代

出现于 19 世纪的中产阶级，有着一定的文化和财富，品位也在发生改变。隐藏在钱包、鼻烟盒、扇子和其他贵重物品里的表风靡一时。这些小型计时器继承了 16 世纪戒指表和手杖内嵌表的特点，象征着那时社会上升阶层欲将机械迷你化的尝试，上链的钥匙也因此变成了珍贵之物。

19 世纪下半叶的女装将表搭配在长项链上，使得这种出现于 19 世纪初的长项链得以复兴。这样的表成为饰品中的一部分，整套饰品还包括皮带扣、手镯和用珐琅贵金属做的耳环。镶嵌在宽手镯里的手表也被认为是该时期的杰作。这些新物件的装饰性明显优于实用性。除制表师以外，珐琅工艺师和雕刻师以及宝石镶嵌师也对这些奢华的钟表贡献卓著，怀表被做得很小，更便于携带。同时，由于 Bagnolet 机芯构造非常纤薄，超薄怀表才得以飞速的发展⁹。

为应对日益增长的需求，劳动生产的方式（由家庭工坊或小作坊组成的“钟表装配商”〔钟表组装工坊和贸易商〕）逐渐走向机械化生产。从 1820 年至 1830 年，瑞士制表业开始受到这种古老生产方式的困扰：即使是最简单的零件也

9.Moving Towards Modernity

With the 19th century emergence of the middle class, which enjoyed a certain level of cultural and financial wealth, tastes changed. Watches hidden in purses, snuffboxes, fans, and other precious objects were all the rage. These small timepieces, successors to the watches housed in rings and cane knobs in the 16th century, symbolise that period's stepped-up attempts to miniaturise the mechanisms. The winding keys, too, became precious objects.

Ladies' dress during the second half of the 19th century lent itself to a revival of the watches worn on a long necklace that had appeared early in the century; the watch was now one part of a complete jewellery set consisting of a belt buckle, bracelets, and earrings made of enamelled precious metal. Watches set into wide bracelets were known at this time. These new objects' decorative qualities took precedence over their practical side. Besides the watchmakers, enamellers and engravers, carvers, and gem-setters also contributed to these luxury creations, which made the pocket watch even more mobile, though small. At the same time, an interest in extra-thin pocket watches was developing thanks to the invention of the Bagnolet calibre, which allowed movements to be made even thinner⁹.

In response to growing demand, the way labour was organised (at home or in small workshops associated into a network by the comptoirs d'été tablissage assembly watchmaking workshops/dealers) gradually changed and moved toward mechanisation. From 1820-1830, Swiss

⁹ 相对于传统机芯（顺序为表背盖、齿轮组、夹板、表盘、指针），超薄机芯改变其构造将表盘放在齿轮组一侧使得机芯的厚度几乎不超过 1 毫米。

⁹ In contrast to a classic calibre (in which the order of parts was back cover, gear train, plates, dial, hands), the ultra-thin movement reverses the construction to place the dial on the gear-train side so the watch can be made barely thicker than a millimetre.

watchmaking began to suffer from its archaic production methods: even the simplest parts of movement blanks were still made by hand.

Jacques-Barth é l é mi Vacheron and François Constantin were amongst the first to grasp the necessity for technical development in watchmaking. They realised that the increase in precision obtained by using mechanical tools to make components would unavoidably be accompanied by a decrease in manual work when assembling the movements. While were eager to rationalize production, they were determined to prevent any loss in quality. Hired in 1839 by the Manufacture Vacheron Constantin in Geneva, the mechanic and horologist G.-A. Leschot (1800-1884) developed and perfected a series of machine tools (including a pantograph) which could, with extraordinary precision for the time, manufacture components that were both identical and perfectly adapted to existing calibres. Kept secret until 1844, these machines gave Vacheron Constantin a significant technical and commercial head start on their competitors.

19th century progress in metal alloys and thermal compensation improved the accuracy and reliability of timepieces and allowed for new applications (chronometry, medicine, physics, etc.).

只能手工制作。

雅克-巴尔泰勒米·瓦士伦与弗朗索瓦·江诗丹顿不仅意识到钟表制造业技术发展的必要性，还意识到在组装零件时通过使用机械工具制造组件必然会使体力劳动减少。出于对合理化生产的热忱，他们决心避免任何质量的下降。1839年在日内瓦受雇于制造商江诗丹顿的机械师和钟表匠乔治-奥古斯特·莱斯苏（1800—1884）发展完善了一系列机器工具（包括一个缩放仪），这是那个时期以极高精确度制造相同并完全适应现有机芯的组件。1844年以前这些机器一直秘而不宣，使得江诗丹顿在重大技术和商业先机上远远领先于竞争对手。

19世纪金属合金和热补偿理论的进步提高了钟表的准确度和可靠性，使钟表产生了新的应用功能（测时、医用、物理等）。

• 机器工具

☒ Machine Tools



滚齿机

雅各布·普里沃

约 1750 年

瑞士日内瓦

高 33 厘米，宽 28 厘米，直径 22 厘米

型钢、黄铜及齿轮驱动的铣头

日内瓦艺术与历史博物馆藏

AD 4957

Jacob Privot, gear-cutting machine

Geneva (Switzerland), ca. 1750

Formed steel, brass, milling head

advanced by gears

h. 33, w. 28, diam. 22 cm

Geneva Museum of Art and History

AD 4957



分度机和切削机

1733 年

瑞士日内瓦

高 19 厘米，直径 15 厘米

精钢和黄铜

日内瓦艺术与历史博物馆藏

AD 2568

Machine for dividing and cutting

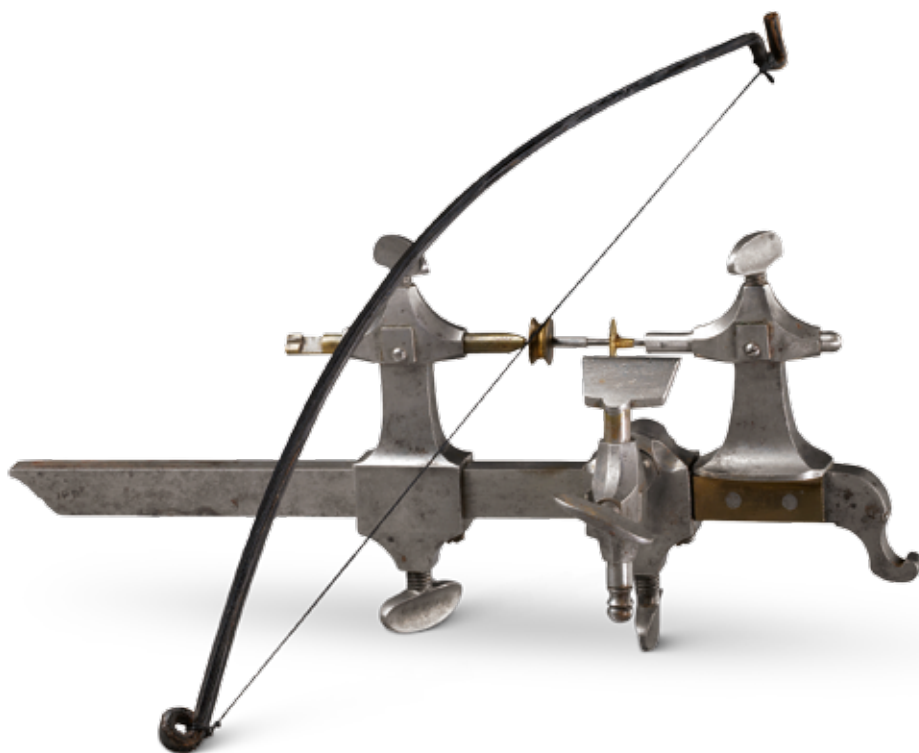
Geneva (Switzerland), 1733

Steel, brass

h. 19, diam. 15 cm

Geneva Museum of Art and History

AD 2568



研磨抛光工具组

19 世纪

瑞士

长 21 厘米

黄铜与精钢

日内瓦艺术与历史博物馆藏

AD 2567

Jacot tool for polishing pivots

Switzerland, 19th century

Brass and steel

l. 21 cm

Geneva Museum of Art and History

AD 2567



等比例缩放仪

乔治-奥古斯特·莱斯苏发明

1839 年

木材、黄铜和钢

长 100 厘米，宽 56 厘米，高 127 厘米

江诗丹顿典藏部藏

◎这台机器由制成用于在钟表机芯的夹板和表桥上定中心和钻孔，可制造完全相同、可相互替换的机芯

Pantograph

Invented by G.- A. Leschot in 1839

This machine was made of wood, brass, steel and used for the centring and drilling of the holes in the bridges and plates of watch movements, allowing the production of perfectly identical and interchangeable movements

l. 100, w. 56, h. 127 cm

Vacheron Constantin Heritage Collection



工作台

阁楼工坊，日内瓦艺术与历史博物馆

At the workbench

View from the Musée des
cabinotiers, Geneva Museum of Art
and History, Geneva

☒ Demonstration Escapements

There were other improvements as well, to the lever escapement (which replaced the verge and cylinder escapements), materials, and assembly methods.

“Complication” mechanisms proliferated: dials displayed the date, day of the week, month, sunrise and sunset, moon phases, the equation of time, tides, and even the temperature (thermometer). Annual and perpetual calendars were perfected, as were chronograph functions that could be used to time an event.

Since the time was being publicised ever more widely, watches became more commonly used. The railway revolution in the 1850s (which led to the abandonment of local time in favour of universal time) and the expansion of factory work, for which shift length was heavily regulated, made their use essential, and the rising standard of living made them affordable to everyone. A new era had dawned, between a long proto-industrial growth phase and the emergence of growth determined by mechanisation and the professionalisation of research. From then on, Swiss watchmaking continued to develop along a dual track: it kept on cultivating meticulous workmanship (luxury watches, hand finishes, complications, and high-precision pieces), and the watchmaking centres most attached to the traditional methods coexisted with integrated manufactories that used mechanisation to mass-produce low-end watches.

• 擒纵系统

其他方面的改进包括在杠杆式擒纵系统（取代了心轴和工字轮擒纵系统）、材料以及组装方法等方面。“复杂功能”装置丰富多样：显示日期、星期、月份、日出日落、月相、均时差、潮汐，甚至温度（温度计）。年历和万年历功能被完善，同时计时功能还可用来记事。

由于时间变得比以前更加广泛地被大众利用，手表被更广泛地使用。19 世纪 50 年代的铁路革命（导致放弃当地时间而使用世界时间）和工厂劳动的普及，倒班的时间受到严格的管理，使得手表的使用变得必不可少，而生活水平的提高使每人都买得起表。在漫长的前工业增长阶段和由机械化与研究职业化所导致的增长出现之间，一个新的时代也已到来。从那时起，瑞士制表业继续沿着双轨发展：采用传统方法坚持精工细做的工坊与机械化批量生产低端手表工厂并存的复合型制表中心。



工字轮和杠杆式擒纵系统及其他机芯
零件展板

日内瓦制表学校

1878 年

瑞士日内瓦

高 21.1 厘米，宽 29.8 厘米，

厚 1.3 厘米

日内瓦艺术与历史博物馆藏

H 2008-115

◎该展板是将机芯分解部件缝制在紫色天鹅绒布上。为 1878 年巴黎世界博览会上瑞士制表学校集体展览制作

École d'horlogerie de Genève,
Demonstration board for cylinder
and lever escapements

Geneva (Switzerland), 1878

Exploded pieces fixed on violet
velvet

This board, with three others, were
part of the joint display of the Swiss
Watchmaking schools at the Paris
Universal Exhibition in 1878

h. 21.1, w. 29.8, thk. 1.3 cm

Geneva Museum of Art and History

H 2008-115



杠杆式擒纵系统模型

日内瓦制表学校

约 1880—1900 年

瑞士日内瓦

直径 7.34 厘米，高 3.77 厘米

日内瓦艺术与历史博物馆藏

H 2008-123

◎ 夹板为镀金黄铜，上夹板镌刻“日内瓦制表学校杠杆式擒纵系统”字样，其他部分使用精钢及红宝石材

École d'horlogerie, model

demonstrating anchor escapement

Geneva (Switzerland), ca.1880-1900

Plates in gilded brass, upper plate

engraved "École d'horlogerie de

Genève Échappement à Ancre"

steel, rubies

diam. 7.34, h. 3.77 cm

Geneva Museum of Art and History

H 2008-123

十 20 世纪的变化

20 世纪最重要的一个变化是审美，自 20 世纪 20 年代开始，腕表超越了怀表开始流行起来，从最初的军事用途成为了女性手腕的征服者。转型期有很多问题需要解决，包括晶体、表壳和机械装置的防电磁干扰。瑞士和英国早期的品牌是针对其适应和改善表盘的易读性、对材料的选择范围的扩大，以及在人体工程学方面的改善。腕表在功能和应用方面的发展是基于对现代需求的开发，诸如潜水活动和征服高山与太空等特殊需求。

20 世纪见证的第二个变化在于技术，电磁铁（1881）与电子信号使得钟表的精度大大提高，这一领域的研究迅速向前发展：1928 年，石英钟表取代了机械与电子机械钟表。这就为极微小的钟表零件铺平了道路，为 20 世纪 50 年代的研究，即有关微电池、音叉¹⁰、集成电路和步进电动机作出了贡献。随着能提供极高精度的石英振荡器的出现，1967 年的“石英革命”¹¹成为瑞士钟表制造业史上的转折点。一些生产商欢迎这项新技术¹²，而另一些公司则只应用在某些特定产品上。1971 年，日本的液晶显示器

10.Changes in the 20th Century

The most important change at the dawn of the 20th century was an aesthetic one, as the wristwatch gained in popularity and outstripped the pocket watch beginning in the 1920s, moving beyond its initial military applications to conquer feminine wrists. The transition required that a number of problems be solved, including the shock and magnetic resistance of the crystal, case, and mechanisms. Early patents were filed in Switzerland and England for adapting and improving the legibility of dials, expanding the choice of materials, and making ergonomic improvements. The wristwatch became functional and its applications developed based on what was needed for modern exploits such as diving and the conquest of high altitudes and space.

The second change seen in the 20th century was technological, once electromagnets (1881) had been put together with electronic signals to help provide the sought-after precision for high- and medium-volume watchmaking. Research in this area accelerated: in 1928, the quartz clock supplanted mechanical and electromechanical timepieces. The way was paved for extreme miniaturisation of watch components, which left its mark on the research of the 1950s that investigated the microbattery, tuning fork¹⁰, integrated circuits, and step motors. With the advent of the quartz oscillator, which offered unrivalled precision, the “quartz revolution” in 1967¹¹ marked a turning point in the history of Swiss watchmaking. Some companies

10 1953 年由瑞士工程师麦克斯·埃泽尔发明，电子手表在 1960 年由宝路华首次出售，Accutron 是第一个使用音叉作为校准器的例子。

11 1967 年原子钟改变了一秒钟的定义：参考标准从一太阳日的若干分之一变成了铯 133 原子的频率。参考标准的范围已经成为从无限大到无限小。

12 瑞士的第一块电子手表生产于 1966 年。它包含有模拟显示，被纳沙泰尔的电子钟表业中心命名为 Beta 21。

10 Invented in 1953 by Swiss engineer Max Hetzel, the electronic wristwatch first sold in 1960 by Bulova as the Accutron was the first example of the use of a tuning fork as a regulator.

embraced the new technology¹², others did so only for certain products. In 1971, the liquid crystal display (LCD) introduced in Japan conclusively altered wristwatch design. The “Swiss watch” launched in 1982 illustrated the Swiss watchmaking industry’s adaptation of skills and infrastructure with a new combination of plastics, electronics, and design.

On the other hand, the 1980s also saw a revival of the mechanical complication wristwatch, for which demand was robust through the end of the 20th century and the first decade of the 21st century. Mechanical technology was put back into pocket watch complications, and skills were updated to include extra-thin movements, tourbillons, universal time and time zones, minute repeaters, moon phases, power reserve indicators, chronographs, and so on. The limits of the technically possible were pushed back by increased miniaturisation, more and overlapping functions (double regulator, etc.), and changes in the functions’ Configuration (coaxial escapement, gyrotourbillon, etc.) and complexity. These developments were supported by research into new materials for cases (titanium, carbon, tantalum, ceramic, etc.) and components (silicon spring, etc.). The accuracy of “fine watchmaking” movements, which remained steadfastly mechanical, increased thanks to new escapements and the reintroduction of the fusee and chain in a form adapted to the small volume of wristwatches. Once tenth-of-a-second accuracy was achieved, hundredth-of-a-second precision followed. Operating time (power reserve) followed the same trend, reaching 31 days without rewinding. The complications were not the only

决定性地改变了腕表的设计。1982年推出的“瑞士表”是瑞士制表业通过对塑料材质、电子技术和设计理念的新融合，来表达其对新技术与硬件发展的接受。

同时，20世纪80年代也见证了复杂机械腕表的复兴，20世纪末到21世纪最初的10年，市场对机械腕表需求出现了稳健的增长。新的机械技术被应用在复杂机械怀表上，技术革新更是使得多方面受益，如超薄机芯、陀飞轮、世界时间和时区、三问报时、月相、动力储备显示、计时功能等。日益的微型化、丰富而重叠的功能（双校准器等）、功能构造及复杂功能本身的改变（同轴擒纵系统、球体陀飞轮等）突破了更多技术上的限制。这些发展进步伴随着对表盘（如钛、碳、钽、陶瓷等）与组件（如硅游丝等）新材料的研究。

“高级钟表”机芯的准确度，仍坚定不移地保留着机械化，这要归功于新的擒纵系统与适用于小体积腕表的芝麻链的重新出现。一旦达到了十分之一秒的精确度，即会向百分之一秒的精确度进发。运行时间（动力储备）亦跟随着相同的进步潮流，可达到31天不用上链。进步不只在复杂功能方面；材料也是如此。例如，三问报时的声音受益于它所使用的更好的声学特性装置。

11 In 1967, the atomic clock changed the definition of a second: instead of being defined as a fraction of the solar day, the reference standard became the frequency of caesium 133. The standard had evolved from the infinitely large to the infinitely small.

12 The first example of a Swiss electronic wristwatch was introduced in 1966. It had an analogue display and was named the Beta 21 by the Centre électronique horloger de Neuchâtel.

到了 20 世纪，瑞士制表业生产主要围绕着三个领域进行建构：制造、装配及精加工。21 世纪初，多数瑞士制造商和品牌都在几家集团的旗下（斯沃琪集团、历峰、路威酩轩等）。只有极少数生产商能够自己控制整个生产流程，并活跃在高端市场，一般来说，这个行业还是以小型与中型企业为主。

多年以来，制表业就其自身而言已经成为了一种成熟的文化，即钟表已经成为哲学、百年传统、创新和创造力的象征。它具有了独特的技术内涵和专业知识，充满了令人赞叹的装饰艺术，所有这些都展现在那些能工巧匠们的智慧、耐心、良苦用心与灵思巧计中，他们始终致力于制作既精美又实用的時計。

things to improve; so did the materials involved. For example, the minute repeater chime reaped the benefits of the enhanced acoustical properties of the mechanisms in which it was used.

In the 20th century, Swiss watchmaking production was structured around three main areas of endeavour: manufacturing (*manufacture*), assembling (*é tablissage*), and finishing (*terminage*). In the early 21st century, most Swiss makers and brands are under the control of a few groups (Swatch Group, Richemont, LVMH, and so on). The *manufactures*, of which very few have kept the entire production process in house, tend to be active on the high-end market. Generally speaking, the industrial scene is dominated by small and mid-sized businesses.

Over the years, watchmaking has become a full-fledged culture in its own right, while watches have come to symbolise philosophy, centuries-old traditions, innovations and creativity. It is imbued with exceptional technical content and expertise, enriched by admirable decorative arts, all of which illustrate the wealth of intelligence, patience, meticulous care and dexterity of those who contribute to making a timepiece – an object that is both ornamental and useful.

11. Geneva at the Heart of Time

Geneva grew up on a plain (elevation 373 m) where two mountain massifs come together, namely the Jura to the north and the Alps to the south. The Geneva basin, located at the southwest end of Lake Geneva and crossed by a major river (the Rhone) and a tributary (the Arve), is characterised by its panoramic view of the Mont-Blanc massif (the roof of Europe), and by its lake, the largest body of fresh water in western Europe. Geneva's historic heart, known as La Cité, occupies the hill where the city first started, on the Rhone's left bank. The city's location is economically strategic, being in the centre of Europe and at the boundaries of two countries, Switzerland and France, and Geneva was the birthplace of the Swiss watchmaking industry.

The city acquired the status of an independent republic in 1541 and displayed a tradition of hospitality that lies at the root of the modern city's international character. A prime location for the major European fairs and a prosperous centre of local crafts, recognised since the 12th century for the quality of its jewellers, goldsmiths and silversmiths, the city specialised in watchmaking from the second half of the 16th century onwards. The latter development was favoured by the adoption of the Reform in 1536, an event that was to profoundly shape the city's destiny.

Jean Calvin (1509-1564), who had arrived in the city in 1535, settled there permanently in 1541. The reformer imposed his strict moral authority on the city. He enacted both sumptuary laws (1543) – which, by prohibiting

十一 日内瓦，时间之芯

日内瓦这座城市位于海拔 373 米的平原之上，向北延伸的汝拉山（亦称侏罗山，侏罗纪之名来源于此）和向南延伸的阿尔卑斯山在此交汇。日内瓦盆地处于日内瓦湖的西南端，罗纳河与其一条支流阿尔沃河穿城而过。令其闻名的不仅是能够观赏到被称为欧洲屋顶的勃朗峰全景，还有西欧最大的淡水湖日内瓦湖。日内瓦城历史上的核心区域称为老城，在罗纳河的左岸，最早的城就建在这处山坡上。这个城市处在经济要地，作为欧洲的中心且在瑞士和法国的交界处，同时也是瑞士钟表业的发源地。

日内瓦在 1541 年取得了独立的共和国地位，并以其好客的传统彰显着这个现代城市的国际品格。日内瓦作为欧洲商品交易的聚集地和繁荣的手工业中心，12 世纪在珠宝工艺和金银工艺人才上的优势突显出来，从 16 世纪后半叶人们转向专门从事制表业。制表业的发展受益于 1536 年宗教改革，这场改革深刻塑造了这个城市命运。

让·加尔文（1509—1564）于 1535 年来到这个城市，并于 1541 年定居在这里。这位宗教改革者对这个城市施以严格的道德权威，颁布了两

项有关取缔挥霍浪费的法令（1543），即通过禁止佩戴珠宝将珠宝制作技艺重新定位在制表业，以及制定法令旨在规定公民时间的使用，使得守时成为基本的社会价值观。城市里的钟表和教堂里边的沙漏成为节约时间这种新时代风气的象征，而更多新教徒的到来助长了这种风气。第一批（1598）和第二批（1685）避难的胡格诺移民潮将他们的专业知识与技艺——银行、艺术和手工艺（印花、丝绸、烫金、制表、珐琅雕刻）带到了日内瓦，使得这座城市变得更加繁荣。

就在1685年第二批难民潮之后，这个城市已经拥有80位金匠能手和100位制表大师，他们每年可以生产约5000块表。18世纪初期，日内瓦的经济为制表业及其相关贸易所主导，展现出经济繁荣的景象。那时日内瓦成为瑞士最大的城市。

the wearing of jewellery, redirected jewellery-making skills into the watch industry – and disciplinary rules intended to organise the use of civil time and make punctuality an essential social value. This new time-saving ethos was symbolically accompanied by the installation of clocks in the city and hourglasses in churches, developments also supported by the arrival of more Protestants. The first (1598) and second (1685) Refuge waves of Huguenot immigrants brought their expertise – banking, arts and crafts (printed calicoes, silk, gilding, watchmaking, enamelling) – to Geneva, which ensured that it would become more prosperous.

Just after the second Refuge (1685), the city had 80 master goldsmiths and 100 master watchmakers, who produced about 5,000 watches per year. In the early 18th century, the Genevan economy was dominated by watchmaking and the related trades, and was economically prosperous overall. At that time, Geneva was the largest city in Switzerland.

Around 1750, the number of watchmakers was estimated at about 700. The 1788 census reported more than thirty trades related to watchmaking:

日内瓦城市风光
临 M. 梅里安 1642 年作品
约 1750 年
日内瓦图像中心藏
View of the city of Geneva, after M.
Merian (ca. 1642), ca. 1750
Collection of the Geneva
Iconography Center



goldsmiths, watchmakers, case-fitters, engravers, jewellers, enamellers, lapidaries, spring makers, dial makers, hand makers, polishers, gilders, and makers of pinions, fusee chains, and clock bells. At that time, watchmaking was supporting about 3,000 people out of a total population of 26,000. The Geneva industry reached its peak during this period. The number of watches made in the workshops grew as the century passed, increasing from 5,000 to 100,000 pieces per year. Around 1800, nearly half of Geneva's working population was employed in the watch industry.

Since then, the city's watchmaking reputation has been based on three fundamental qualities. First, having been known to the world since the 16th



到了 1750 年左右，制表师的人数达到约 700 名。1788 年的普查显示，超过 30 种行业与制表有关：金匠、制表师、表盘装配工、雕刻师、珠宝工艺师、珐琅工艺师、宝石雕刻工、发条制作工、表盘制作工、指针制作工、抛光工、镀金工，以及齿轮杆、芝麻链和钟铃的制作工。当时制表业养活着日内瓦 26000 总人口中的约 3000 人。日内瓦的手工业在这一时期达到顶峰。手工作坊制作表的数目也在几个世纪之后迅速增长，从每年的 5000 块增长到 100000 块。到了 1800 年左右，近半数日内瓦的工作人口在从事制表业。

日内瓦的制表业之所以享誉全球正是基于在那时已形成的三种显著优势。首先，自 16 世纪被世界认识以来，日内瓦的制表传统有着不间断的历史；其次，这座城市以其高品质的产品赢得了口碑，从 18 世纪末起侧重于利润丰厚的精品

日内瓦库唐斯路及圣热尔韦区
克里斯蒂安-戈特利布·盖赛尔 (1729—1814)
18 世纪
Christian-Gottlieb Geissler (1729–1814),
Coutance and the Saint Gervais district in
Geneva, 18th c.

市场，并于 20 世纪下半叶提升至顶级高端市场；最后，日内瓦的声望与其作为相关行业和技能交汇之处的独特地位息息相关，将珠宝工艺师、金匠、雕刻工艺师、表壳装配工、珐琅工艺师、制表师以及经销商纳入在相同的地理区域范围内。

century, Geneva's watchmaking tradition has an uninterrupted history. Second, the city then acquired its reputation based on its quality production, which from the end of the 18th century onward focused on the luxury niche, and during the second half of the 20th century rose to the high-end segment. Finally, Geneva's fame is closely tied to its unique position as a place where the related trades and skills meet, bringing together jewellers, goldsmiths, engravers, case-fitters, enamellers, watchmakers, and the dealers themselves within the same geographic area.

日内瓦贝尔广场及岛上码头
克里斯蒂安-戈特利布·盖赛尔
(1729—1814)
约 1800 年
Christian-Gottlieb Geissler (1729–
1814), Place Bel Air and Quai de l'Île,
in Geneva, circa 1800



12.The *Fabrique*

The *Fabrique* has been shaping Geneva's economic, industrial, and artistic identity since the 16th century. This regional term, possibly inspired by the grande *Fabrique* of the Lyons silk industry which was organised similarly to Geneva's watchmakers, appeared in the early 18th century and means the set of businesses arising from watchmaking, goldsmithing and jewellery along with the trades related to these industries, which are based on working precious metals (design, engraving, guillochage, enamelling, and making hands, covers, cases, springs, fusees, balance cocks, chains, etc.)

The *Fabrique* operated on the basis of long-term personal relationships, the proximity of the required technologies, and commercial networks dedicated to the arts related to time measurement, jewellery, and decorating objets d'art.

This set of activities was confined to a limited area. The workshops were concentrated on the right bank of the lake and the Rhone river, at Saint Gervais. During the 18th century, they spilled out into the Rues Basses neighbourhood, Place du Molard, Place de la Fusterie and Bourg de Four. An 1828 directory lists 377 *cabinotier* employers, of which 225 were located in Saint Gervais and 152 on the left bank, Rue du Rhône became the centre for watch dealers.

Fabrique workers were called *cabinotiers*, a reference to their workplace. *Cabinets* were small workshops perched high beneath the roofs of the tightly

十二 工坊协会

自 16 世纪以来，“工坊协会”造就了日内瓦经济、工业和艺术的身份。受到与日内瓦钟表制造业相似的里昂丝绸业的启发，“工坊协会”这一地区性词汇出现在 18 世纪早期，是从制表业、金属制造业、珠宝业以及与这些产业有关的贸易发展而来的行业集合，而这些产业基于贵金属制作（设计、雕刻、机刻雕花、珐琅以及制造指针、表盖、表壳、发条、均力圆锥轮（又称芝麻链）、摆轮夹板、表链等）。

“工坊协会”的运作基于三点：其一是长期的私人关系；其二是所需技术的相近性；其三是与计时器、珠宝和装饰工艺相关的艺术商业网络。

相关的生产销售活动在一个特定区域内进行，协会下的工坊主要位于圣乔万镇的日内瓦湖右岸和罗讷河之间。18 世纪，它们扩展到低街社区、摩拉广场、浦特力广场和博地弗广场地区。1828 年的一个工坊名录上共列出 377 位阁楼工坊雇主，其中 225 位在圣乔万镇，152 位在左岸，钟表经销商则集中在罗讷街。

工坊协会的工匠被称为“阁楼工匠”，由其工作场所而得名。阁楼就是些小作坊，它们都是

在圣乔万镇附近密密麻麻的房子的最高一层，这样采光较好。资金充裕的商人和作坊主是制造业体系的中坚力量，也是工坊协会特许经销商（商行）的幕后推手。他们向工匠提供资金和原材料（对于他们来说，运输是相对容易的，但他们需要一支高水平的劳动力队伍，来作为他们获取商品附加值的源泉）并从他们那里订货；他们传达着消费者的品位，应对客户需求，并通过精心策划产品的销路来影响实际产量，对最遥远的市场也是如此。

江诗丹顿的历史就代表着日内瓦商业作坊主的发展史，从1755年让-马克·瓦士伦（生于1731年）和他的第一位学徒签署契约的那一刻起，就开始了江诗丹顿的历史。坚持这种师徒传承专业知识和技能的方式对日内瓦制表业的发展壮大有着举足轻重的作用，保证了这个行业的代代相传。

1813年，江诗丹顿公司进驻小岛街。从米兰到西西里，雅克-巴尔泰勒米·瓦士伦（让-马克·瓦士伦的孙子）的手表在整个意大利销售。为了确保业务的发展，于1819年与弗朗索瓦·江诗丹顿合作，并将公司命名为“江诗丹顿”。前者积极在日内瓦组织生产，而后者则致力于销售。弗朗索瓦·江诗丹顿有经商天赋，他不仅销售卓

packed houses in the Saint Gervais neighbourhood, to take advantage of the light. Merchants and *établis*, who had significant capital, were at the heart of the system and the driving force behind the *Fabrique*'s "dealerships" (*comptoirs*). They supplied money and raw materials (easy to transport, requiring a highly qualified labour force, a source of added value) to the craftsmen from whom they ordered; they conveyed the customers' tastes, managed demand, and directly influenced the supply by orchestrating its sale on even the most distant markets.

Exemplifying the development of Geneva's *comptoirs d'établissage*, the history of Vacheron Constantin began in 1755, with the signature before a notary of the apprenticeship contract between Jean-Marc Vacheron (born in 1731) and his first apprentice. The principles of transmitting expertise and specific skills, which are the very heart of the expansion of Genevan watchmaking, are also guarantees of continuity through the ages.

In 1813, the company was established on the Rue de l'Île. Jacques-Barthélémy Vacheron sold his watches across Italy, from Milan to Sicily. To ensure the development of his business, he associated in 1819 with François Constantin under the name "Vacheron & Constantin". The former was active in organising production in Geneva, while the latter took to the roads. François Constantin had a flair for trade: alongside his catalogue of exceptional watches, he offered refined jewellery produced in the Geneva workshop. He was the one who adopted the motto: "Do better if possible, and that is always possible".

A desire to modernise and health imperatives led to redevelopment of the neighbourhoods in the early 20th century, which brought about the disappearance of the buildings that had housed the *cabinotiers*' workshops. As it mechanised, the watch industry moved into larger workshops, causing production to migrate from the urban centre to outlying areas and settle in more suitable buildings. By the early 1930s, the traditional workshop structure of the *cabinotiers* had all but disappeared in favour of factory work in the modern sense.

Thanks to hydropower from the Rhône, Vacheron Constantin was able to have the architect of Geneva's Grand Theatre build its manufactory on Quai de l'Île in 1875, along with a watch hand factory. On the left bank, the Patek Philippe company converted its 1853 facilities before opting to rebuild. From 1910 on, electricity expanded the watchmaking industry's scope, particularly with the arrival of Rolex in 1919. After the slowdown of the 1960s and 1970s, Geneva's watchmaking industry embraced the mechanical watch

越的钟表，也为顾客提供在日内瓦的作坊里生产的精美珠宝饰物，正是他提出了公司的座右铭“悉力以赴，精益求精”。

20 世纪早期，一种渴望实现现代化与合理化发展的要求促进了社区的再发展，这也导致了拥有阁楼工坊的建筑物的消失。随着机械化的发展，钟表产业迁移到更大的工坊中，导致钟表的生产从城市中心转移到边远地区，并进入更为舒适的建筑物里。到了 20 世纪 30 年代早期，传统的阁楼工坊结构几乎消失，被具有现代意义上的工厂所取代。

由于利用罗讷河的水力，江诗丹顿在 1875 年聘请设计日内瓦大剧院的设计师在小岛码头上建立了它的制作工厂和表针厂。在罗讷河左岸，百达翡丽公司在选择重建之前更新了其 1853 年置办的设备设施。自 1910 年起，电力的发展扩大了制表业的范围，尤其是 1919 年劳力士的出现。在经历过 20 世纪 60 年代和 70 年代的经济放缓之后，日内瓦的制表业迎来了机械手表的复兴。但是，由于“高级钟表”领域的专业化，当地的制表业变得越来越单一。要知道，日内瓦的无限商机是依赖于久负盛名的制造商与非独家经营制造商的共同存在。非独家经营制造商通常是一

些总部设在汝拉山谷的子公司，这些公司拥有庞大的分销网络。

今天，只有一些与传统贸易相关的建筑保留在城市的历史街区，而钟表公司纷纷落户郊区，这一现实导致了曾经连接普遍民众与制表业的纽带断裂了。

随着行业持续自然地发展，日内瓦已经留下了使之声名远扬的技艺，有些名字反映了它们的起源，而有些机构则闻名全球。除了“阁楼工匠”和“工坊协会”这样的词汇，“日内瓦珐琅”¹³、“日内瓦透明珐琅”或“日内瓦瓷漆”“日内瓦波纹”“日内瓦印记”，以及日内瓦高级钟表大奖都是显而易见的例子。

17 世纪，于奥家族的成员创立了一所培养珐琅微绘画家的学校，他们对“日内瓦珐琅装饰手表”采用一种新的表壳装饰标准：在表盘、表壳中间，以及表壳内外饰以风景画和神话或者圣经故事。“日内瓦珐琅”这一名称自 18 世纪以来就声名远播，成为品质的标志。事实上，日内瓦珐琅的制造商们可以向制表工坊提供 300 种以上的颜色——不透明的、乳白色的、透明的，如用来表现阴影的“日内瓦湖蓝”。

“日内瓦瓷漆”大约出现于 1760 年，是珐

renaissance. But the local watchmaking scene was becoming less diverse due to specialisation in the “fine watchmaking” segment, whereas the richness of Geneva’s niche had lain in the coexistence of prestigious manufactures and less exclusive makers, often the subsidiaries of groups based in the Jura Arc and with a vast network of subcontractors.

These days, only a few rare structures related to the traditional trades remain in the historic part of town. The fact that watchmaking stakeholders have settled in suburban areas has contributed to the dissolution of the ties that once linked ordinary citizens with the world of watchmaking.

As the industry has continued to evolve naturally, Geneva has left the arts that made its reputation with some names reflecting their origin, as well as certain institutions that have become well known in all parts of the world. In addition to the terms *cabinotier* and *Fabrique*, “Geneva enamels”¹³, “Geneva clear enamel” or “flux” (*fondant de Genève*), “Geneva stripes” (*Côtes de Genève*), the “Hallmark of Geneva” (*Poinçon de Genève*) and the *Grand Prix d’Horlogerie de Genève* are all obvious examples.

In the 17th century, when members of the Huaud family founded a “school” of painters who executed miniatures on enamel, they imposed a new standard of case decoration for a “Geneva watch with painting on enamel”: the dial, case middle, and inside and outside faces of the case were decorated with landscapes and mythological or biblical scenes. “Geneva enamels,” which have borne this name abroad since the 18th century, became a sign of quality. The makers of Geneva enamels supplied the

13 这个词的意思是形容用珐琅料装饰并再上一层透明珐琅的手表，这些手表出自工坊协会的制表师之手，使用了当地独特的颜料。

13 This term describes watches decorated with enamels painted over clear enamel, which were made by craftsmen associated with the Fabrique who used the exceptional locally-made paint pigments.

workshops with a wide variety of colours (over 300) – opaque, opalescent, and transparent – in expressive shades such as *bleu Léman* (Lake Geneva Blue).

The “Geneva fondant” that appeared in around 1760 represents one of the major inventions in the field of miniature painting on enamel, developed simultaneously in Geneva and Germany. However, according to tradition, it was in Geneva that enamellers adopted the custom of coating the vitrified pictorial layers with one final transparent and colourless productive layer known as *fondant* or flux. Like a varnish applied to an oil painting, it makes the painted scenes last longer as well as giving them a smooth and pleasing brilliance and new depth. Watch models that were enamelled beneath this protective flux coating came to be called “Geneva watches”. Today, the term “Grand Feu enamel” refers to the inalterable and refined motifs adorning the dials of wristwatches.

In this same field of decoration, “Côtes de Genève”, also called Geneva stripes or waves, refer to a purely decorative finish of the watch movement (on the visible surface of the bridges) creating parallel undulating lines with a slightly raised effect that are crafted by hand in a regular pattern using a rectifying rule or a dedicated lathe.

Belonging to the general repertoire of watchcase and movement decoration, these Geneva-related terms became universally adopted.

Nonetheless, any success is liable to stir controversy and Geneva’s emergence in the field of cutting-edge techniques naturally aroused envy

琅微绘领域的重大发明之一，这一技术是在日内瓦和德国同时发展起来的。但从传统上讲，只有日内瓦的珐琅工匠才使用给图案覆盖透明涂层的惯用手法，这一无色透明的涂层被称为透明珐琅或瓷漆。像应用于油画的清漆一样，瓷漆使珐琅画的场景保持更长时间，也使它们看起来更光滑，显现出赏心悦目的光芒和更好的透视效果。上面涂有“瓷漆”的珐琅表后来被称为“日内瓦手表”。今天，术语“大明火珐琅”是指用来装饰腕表表盘的永不褪色且精致的图案。

同样在装饰领域，“日内瓦波纹”也被称为日内瓦条纹或日内瓦水纹，仅用来装饰手表机芯（表桥可见的表面上）的工序，形成平行起伏的线条并带有稍微凸起的效果，这是使用校正尺或者专用车床用一种固定的模式手工打造的。

这些与日内瓦有关的属于表壳和机芯装饰的术语被普遍采用。

然而，有些成功也会引发新的问题，日内瓦在前沿技术领域脱颖而出自然会引起嫉妒，也会产生仿冒品。为了保护“日内瓦”的声誉，日内瓦州设置了钟表非强制性检测办公室：这一机构通过使用日内瓦印记专门用于区分在州境内组装的机械表机芯。

在 20 世纪的发展进程中，几经修改的监管规章使任何带有其标记的机芯在质量和做工¹⁴上成为完美而耐久的象征。日内瓦印记选用带有日内瓦官方行政区徽的盾形纹章的形状，并印在机芯上。

另一个知名赛会组织创建于 2001 年，与日内瓦城市制表传统工艺和顶尖珠宝制作以及钟表珠宝展保持一致步调，它就是日内瓦高级钟表大奖，推出瑞士和国际品牌最近一年的新产品。日内瓦艺术与历史博物馆会收藏由制造商慷慨捐赠的获奖手表。这些赠品将成为未来遗产的证明，这些与制表界的特殊关系反映了一种跟上当代创作的步伐以丰富藏品的策略。

21 世纪的高档手表像在 14 世纪一样是财富的象征，但现在也象征着一种时尚。日内瓦有希望的公司都致力于生产结构复杂且装饰华丽的腕表，我们可以说，正是日内瓦这座加尔文的城市，见证了“高级钟表”这一概念的诞生（一个模仿“高级时装”而创造的词汇）。这一概念旨在支持向机械制表和设计师、总成工匠及装饰工艺师创造和改进的手工艺作品的回归。无论是在原厂制造商还是在装配贸易商（钟表社），都是一位位制表大师撑起了业界的品牌。因为，

and generated counterfeits. To protect the name “Geneva” appellation, the State of Geneva instated the *Bureau de contr le facultatif des montres* (office for optional inspection of watches): this authority placed the “Poin on de Gen ve” or Hallmark of Geneva – a distinction applying exclusively to mechanical watch movements assembled on cantonal territory.

Its regulations, which were modified in the course of the 20th century, have made it the perfect and enduring symbol of quality and fine craftsmanship¹⁴ for any mechanical movement bearing it. The Hallmark of Geneva takes the form of a heraldic shield bearing the official coat-of-arms of the canton (Geneva seal), stamped on the movement.

Other renowned institution instated in 2001 and entirely in keeping with the City of Geneva’s tradition of watchmaking and jewellery prizes as well as Watch & Jewellery exhibitions, the *Grand Prix d’ Horlogeri  de Gen ve* distinguishes the new models presented throughout the year by Swiss and international brands. The Geneva Museum of Art and History receives the winning watches that are generously donated to the institution by the manufacturers. A testimony of the present forming a legacy for the future, these special ties with watchmaking circles reflect a policy of enriching the collections in close step with contemporary creativity.

In the 21st century just as in the 14th century, high-end timepieces are a sign of wealth, but have now also come to symbolise a lifestyle. Complicated and richly decorated wristwatches are the work of prestigious houses

14 12 项评判标准包括关于机芯部件（包括附加机械装置）、结构、材料和做工的精确规格。在日内瓦印记使用 125 年之后，它的检测标准不仅针对机芯，还会考虑与手表外观和运行相关的标准。

14 12 criteria comprise precise specifications regarding movement parts (including additional mechanisms), construction, materials and finishes. On the occasion of its 125th anniversary, the Poin on de Gen ve has evolved towards certifying the complete watch, taking into consideration criteria linked both to the watch exterior and to its performance.

established in Geneva, to the extent where city of Calvin witnessed the emergence of the concept of “*haute horlogerie*” – a term modelled on haute couture and which aimed to bolster a return to mechanical watchmaking and to the artisan-type work of the designers, watch constructors and decorators involved in both creation and reinterpretation. Independent master watchmakers round out the circle of brands, whether they are full-fledged Manufactures or *établisseurs*. For it is indeed the artistic crafts, including that of watchmaker, that constitute the very essence of the added value associated with contemporary “*haute horlogerie*” from Geneva and from Switzerland as a whole.

只有包括制表师成果在内的这些艺术杰作才是创造当代日内瓦“高级钟表”乃至瑞士钟表价值的精华所在。





‖ 知识和技能传承是钟表业崛起的核心，因此师徒之间的关系对钟表制造工艺的发展至关重要。自从 1601 年开始采用行会制度，日内瓦地区的职业规范，在涉及法规法令以及贸易组织的时候特别注意这方面的要求。五年学徒之后，那些有志于成为制表大师的学徒们必须做出“一个挂在颈部可以报时的小闹表，以及一个放在桌子上的方形钟”。只有这样，他们才有资格自立门户。一旦获得“制表大师”这个称号，他才被允许收徒，在任何时间都只能招收一个或两个学徒，而且还必须作出承诺，就像一位父亲教给他的儿子们一样把自己手艺的全部传授给学徒。

‖ 建立于 19 世纪的制表学校脱胎于这样一种制度，那就是：所有学生都必须在毕业时做出自己的作品——“校表”，这长期以来被认为等同于在中世纪的师徒制度下每个学徒在出师时所制作出的“名作”。许多年过去了，直到今天，钟表大师不仅是发明家，也是设计师，他们用双手，以及技艺、精度、品位和智慧打造各种各样的手表。他们不断追求卓越和完美，而好奇心自然促使他们反复琢磨自己的作品。在他们的手里，无限短暂的时间可以用计时码表来测量，漫长的世纪时光可以用万年历来计量。时间可以用摆脱重

力干扰的陀飞轮装置，可以用倒计时来测量，或者可以用敲响打簧装置来报时，如一问、二问或三问表。

Ⅱ 制表职业需要相当大的耐心，注意力也要高度集中，因为工匠们要非常熟练地、不知疲倦地重复世代代传承下来的无数个动作来处理微小的部件，与操纵轮、小齿轮，螺丝和梢栓打交道。为了完全控制每一个步骤，工匠都要将注意力集中到手表的每一个部件上，从装配和调校机芯到安装表盘、指针和最后的表壳。从最简单到最复杂的机芯，工匠都能够制造出来，他们是技能、知识、激情和控制力的化身。工匠们对审美要求非常敏感，所以会竭力寻找使手表达达到完美的技术。他们利用自己的创意天赋，用最合理的方式安装机芯，给表盘留下足够的空间去装饰，而且还要精心设计机械装置以满足微型化、精雕细琢和机芯与表盘基本工作的要求。从设计到最后的修饰，这种追求卓越的理念一直引领着制表大师。

一 精密计时法

精准是一个一直被执着追求的目标，在钟表制造工艺历史上扮演着重要的角色。对精密技术的研究可以分为几个关键阶段：19 世纪欧洲航海家的需求促进了时间测量技术的改进，因为他们要去发现一个未知的世界。“精密计时器”（**chronometer**）一词就是源于希腊语，意思是“测量时间的仪器”，它的渊源与大航海时代息息相关，重点关注在广阔的海洋上给船舶定位这一重要问题。

皮埃尔·西蒙·古努卢（1779—1847）是一名制表师，绰号“日内瓦的宝玑”，还有安托万·德莫勒（？—1830），两位都是艺术协会的成员，在日内瓦发展精密钟表制造工艺的过程中起到了积极的作用。大约 1790 年，德莫勒航海表每天只有十分之几秒的偏差；1808 年，安托万·塔万（1749—1836）提交给日内瓦艺术协会一只带有独立擒纵系统的钟表，在表盘中心安装有大秒针，秒针每秒一跳（称为中央独立秒针）。

1.Chronometry

The quest for precision has played a fundamental part in the history of horology, like a stubbornly pursued goal. This research was punctuated by several key stages: the improvement of time-measuring technologies was boosted by the requirements of the 19th century European navigators who set off to discover a largely unknown world. While the etymology of “chronometer” comes from the Greek meaning “instrument to measure time”, its origins are anchored in the world of navigation and focused on the major issue of determining ships’ position amid the vast ocean expanses.

Pierre Simon Gounouilhou (1779-1847), a horologist nicknamed “Geneva’s Breguet” and Antoine Demole (?-1830), both members of the Geneva Society of Arts, were two of the Geneva watchmakers who played an active role in developing precision horology: dated circa 1790, the Demole marine watch varies by only a few tenths of a second per day. In 1808, Antoine Tavan (1749-1836) presented to the Geneva Society of Arts a watch with independent escapement and large seconds-hand mounted at the centre of the dial, which beats out the seconds (called independent seconds).



独立秒针腕表机芯

安托万·塔万

1825 年

瑞士日内瓦

直径 4.34 厘米，厚 1.4 厘米；

凹槽直径 5.45 厘米

日内瓦艺术与历史博物馆藏

N 472

◎该机芯配备时、分盘和中央独立秒针盘，使用单一上链系统

**Antoine Tavan, Watch movement
with independent seconds**

Geneva (Switzerland), 1825

Hours and minutes counter with
central independent seconds, unique
winding system

Movement in gilded brass

diam. 4.34, thk. 1.4 cm ;

back cover : diam. 5.45 cm

Geneva Museum of Art and History

N 472



“Subscription” 怀表

亚伯拉罕-路易·宝玑

约 1802 年

法国巴黎

高 8.35 厘米，直径 6.27 厘米，

厚 1.64 厘米

日内瓦艺术与历史博物馆藏

H 2006-101

◎该怀表为金银材质表壳，珐琅表盘，蓝钢单一指针；黄铜镀金机芯带中央发条盒，使用配红宝石的工字轮擒纵系统，黄铜三臂平衡摆轮，减震装置和平游丝

Abraham-Louis Breguet,

“Subscription” pocket watch

Paris (France), 1802

Gold and silver case, enamel dial,
single hand in blued steel

Movement in gilded brass,

“Subscription” calibre with central
barrel, cylinder escapement with
ruby, three-arm brass balance, shock
absorber, flat spring

h. 8.35, diam. 6.27, thk. 1.64 cm

Geneva Museum of Art and History

H 2006-101





怀表

韦涅赫兄弟

1780—1795 年

瑞士日内瓦

高 8.4 厘米，直径 6.2 厘米，
厚 1.9 厘米

日内瓦艺术与历史博物馆藏

E. 赛尔韦捐赠，日期不详

N 290

◎该怀表为银质外壳，铜胎珐琅表盘。上方 12 时处设时、分小表盘，右侧 3 时处设小秒盘，左侧 9 时处设潮汐小表盘；内为黄铜、银和精钢框架式机芯，采用冕状轮擒纵系统，安装芝麻链，黄铜圆形平衡摆轮，蓝钢游丝和银质游丝微调装置（快慢针）

Veigneur frères, Pocket watch

Geneva (Switzerland), 1780-1795

Silver case; dial of enamel on copper, small hours and minutes dial at 12 o'clock, small seconds dial at 3, small tide dial at 9.

Movement frame in brass, silver and steel, crown wheel escapement, chain fusée, circular brass balance, balance spring in blued steel, silver rosette

h. 8.4, diam. 6.2, thk. 1.9 cm

Geneva Museum of Art and History

N 290, donated by E. Servet, no date



怀表

德皮尼

约 1800 年

瑞士日内瓦和法国费内-伏尔泰

高 7.55 厘米，直径 5.3 厘米，

厚 1.55 厘米

日内瓦艺术与历史博物馆藏

N 132

◎该怀表为抛光金质外壳，铜胎珐琅表盘，安有固定防尘罩；内为黄铜和精钢框架式机芯，Lépine 1er 型机芯和冕状轮擒纵系统，黄铜圆形平衡摆轮，蓝钢平游丝，芝麻链，抛光精钢游丝微调装置（快慢针）

Depigny, Pocket watch

Geneva (Switzerland), Ferney

Voltaire (France), ca. 1800

Polished gold case, dial of enamel

on copper, fixed dust cover

Movement frame in brass and steel,

Lépine 1er type caliber, crown wheel

escapement, circular brass balance,

flat balance spring in blued steel,

chain fusée, polished steel rosette

h. 7. 55, diam. 5.3, thk. 1.55 cm

Geneva Museum of Art and History

N 132



精密计时猎表

江诗丹顿公司

1869 年

瑞士日内瓦

直径 5.4 厘米

江诗丹顿典藏部藏

N° 10762

◎ 18K 黄金表壳，珐琅表盘；20" 德国银圆形机芯，配备天文钟擒纵系统（即爪式），双金属截断式自动补偿摆轮，螺纹式游丝，简易调速器及金质齿轮轮系机构，使用 19 颗宝石轴承

Vacheron Constantin, Hunting-case pocket watch, Chronometer

Geneva (Switzerland), 1869

18K yellow gold, enamel dial

Caliber 20", chronometer, round, in

German silver, detent escapement,

cut bimetallic compensation

balance, helical balance-spring,

simple adjustment index, gold gear train, 19 jewels

diam. 5.4 cm

Vacheron Constantin Heritage

Collection

N° 10762



精密计时怀表

江诗丹顿公司

1919 年

瑞士日内瓦

直径 6.4 厘米

江诗丹顿典藏部藏

N° 10671

◎ 银质表壳和表盘；RA 22"-224 黄铜镀金圆形机芯，具有动力储存功能，配备杠杆式擒纵系统，“纪尧姆”平衡摆轮，宝玑游丝和鹅颈式测微调速器，共使用 21 颗宝石轴承。为经日内瓦天文台和英国皇家天文台认证的顶级怀表

Vacheron Constantin, Pocket watch, Chronometer

Geneva (Switzerland), 1919

Silver, silverdial

Caliber RA 22" 224, power

reserve, round, in gilt brass, lever

escapement, "Guillaume" balance,

"Breguet" balance-spring, "swan's

neck" micrometric regulator,

21 jewels

1st class Bulletin from the

Observatories of Geneva and

Teddington

diam. 6.4 cm

Vacheron Constantin Heritage

Collection

N° 10671

二 复杂的功能

当制表师的客户们着迷于手表装饰方面的成就时，他们同样也被技术创新所吸引。技术创新可以不断地提供新款式，特别是在一些款式中加入视觉或听觉的元素，使之有生气、有灵性，还能满足诸如像夜间报时等功能的实际需求。

正是由于日常生活的种种需求，在简单的计时器上出现了很多复杂的功能，如闹钟、日历（简单日历、年历、万年历）、报时装置、动力存储等。

其他更具体的要求促进了特殊装置和系统的发展，如功能性装置（计时码表、双秒追针和动力存储）、自动上链（带有摆陀或转子）、时区显示、防水表壳，还有旨在提高精度的系统：陀飞轮（补偿地球引力的影响）、防震，以及防磁等。

这些功能，无论是单独出现，还是集中出现在“超复杂功能”的表款中，它们的存在给钟表本身戴上了一个神秘且珍贵的机械力学的光环。

2.Complications

While watchmakers' clients are fascinated by the decorative aspect of watches, they are equally drawn to the technical innovations. The goal is thus to offer them a constant stream of new features, particularly in the area of visual or auditory elements that enliven the models, as well as meeting practical needs such as telling the time at night.

The constraints of daily life are also behind most of the “complications” with which simple timekeeping instruments have been equipped: alarm, calendar (simple, annual, perpetual), repeater chiming mechanisms, power reserve.

Other more specific requirements have given rise to functional instruments (chronograph and split-second, power reserve), automatic winding (with an oscillating weight or rotor), timezone displays, water-resistant cases as well as systems aimed at improving precision: tourbillon (compensating for the effects of gravity), anti-shock, anti-magnetic, etc.

Whether individually or grouped within “ultra-complicated” models, these indications endow timepieces with a mysterious and precious mechanical aura.

3. Chronographs

The chronograph, like the pedometer, is among the functional instruments that emerged in the late 18th century: the measurement of short times served to evaluate performances (horse races, foot races, etc.). The timepiece thus became a sequence counter.

The forerunners of chronographs, deadbeat seconds watches and watches with independent seconds, appeared in the latter half of the 18th century. In 1776, the Genevan watchmaker Jean-Moïse Pouzait (1743-1793) invented an escapement with independent deadbeat seconds, featuring a centre hand making one jump per second. The model he presented to the Société des Arts is still kept in the Geneva collections.

Equipped with a second gear train, the centre or sweep-seconds hand can be started and stopped at will without disturbing the running of the movement. Inventions began popping up everywhere, in Paris, London and Vienna: the chronograph can be stopped to measure intermediate or “split” times (the principle of the split-second chronograph) or brought back to its point of departure (zero-set principle).

In the 19th century, optimisation of this mechanism and the invention of the “reset to zero” function were to lead to the chronograph in its current form. Other functions (pulsometer, tachymeter, thermometer, etc.) then revealed new uses for timepieces that were useful in certain professions or in sports. Doctors, the military, engineers, astronomers and meteorologists also

三 计时码表

计时码表就像计步器，是出现在 18 世纪晚期的功能性仪器，用来评估各种比赛项目（如赛马、竞走比赛等）。因此，钟表成为一个次序计数器。

计时码表、跳秒手表和带有独立秒针手表的雏形出现在 18 世纪下半叶。1776 年，日内瓦制表师让-摩西·普才（1743—1793）发明了带有独立秒针的擒纵系统，使中央秒针具有每秒一跳的特征。他赠送给艺术协会的这款表仍保存在日内瓦博物馆的藏品中。

配备一个秒针齿轮组的手表，中心秒针或长秒针可以随时启动和停止而不影响机芯的运行。各种发明开始在巴黎、伦敦和维也纳遍地开花，如计时器可以暂停来测量中间某段时间或分段时间的功能（双秒追针计时的原理），以及可以回拨到起始点的功能（调零原理）。

19 世纪，计时功能的优化以及“归零”功能的发明为计时码表发展成现在的形式奠定了基础。其他功能（脉搏计、转速计、温度计等）则显示出计时器的一些新用途，在一定的专业或者体育领域具有实用性。根据医生、军人、工程师、

天文学家和气象学家的不同需求，制表师为他们做出特定的款式。这些需求推动了计时码表精度的发展，使得计时可以精确到五分之一、十分之一、五十分之一或者百分之一秒。

requested watchmakers to make models specific to their discipline. These requests enabled the development of chronographs accurate to the nearest hundredth, fiftieth, tenth or fifth of a second.



独立秒针怀表

弗朗索瓦和奥古斯特·梅朗

约 1830 年

瑞士日内瓦

高 7 厘米，直径 4.8 厘米，

厚 1.45 厘米

日内瓦艺术与历史博物馆藏

AD 6803

◎该怀表为手工和机刻雕花金质表壳，带螺丝珐琅表盘；独立秒针，每前进一格为一秒，其前进和停止由吊坠上按钮控制。配备黄铜和精钢桥架式机芯，使用杠杆式擒纵系统，截断式双金属平衡摆轮，宝玑上绕游丝及快慢针

François & Auguste Meylan, Pocket watch with independent dead seconds

Geneva (Switzerland), ca. 1830

Gold case, engraved and guilloché; enamel dial with screws, large independent central seconds, jumping once per second, started and stopped by a push button on the pendant

Movement with brass and steel bridges, independent dead seconds, lever escapement, bimetallic cut balance, Breguet overcoil balance-spring, index

h. 7, diam. 4.8, thk. 1.45 cm

Geneva Museum of Art and History

AD 6803



独立秒针年历怀表

路易·乔治

约 1800 年

德国柏林

高 7.88 厘米，直径 5.7 厘米，
厚 2.3 厘米

日内瓦艺术与历史博物馆藏

H2006-102

◎该怀表为抛光玫瑰金表壳，珐琅表盘，带 5 秒大刻度，6 时位置设小时盘，12 时位置设日期显示；另外，启动 / 停止计秒拨杆位于表侧。内置黄铜镀金 3/4 夹板机芯，使用让-穆瓦斯·普策的擒纵系统（日内瓦，1743—1793），芝麻链，四臂大平衡摆轮，精钢游丝和钻石轴承

Louis George, Pocket watch with independent dead seconds and calendar

Berlin (Germany), ca. 1800

Case in polished pink gold, enamel dial with large 5-second counter, hour counter at 6 o'clock, date at 12; seconds start/stop lever on the side 3/4 plate movement in gilded brass, escapement by Jean-Moyse Pouzait (Geneva, 1743-1793), fusee chain, large four-arm balance, steel balance-spring, diamond endstone h. 7.88, diam. 5.7, thk. 2.3 cm

Geneva Museum of Art and History
H2006-102





累积计时男士腕表

江诗丹顿公司

1920 年

瑞士日内瓦

直径 3.75 厘米

江诗丹顿典藏部藏

N°10643

◎ 18K 黄金表壳，珐琅表盘；RA 15" 德国银镀金圆形机芯，具有 30 分钟累积计时功能，配备双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 21 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, Single-pusher counter-chronograph

Geneva (Switzerland), 1920

18K yellow gold, enamel dial

Caliber RA 15", 30 minute counter-chronograph, round, in gilt German

silver, lever escapement, cut

bimetallic compensation balance,

"Breguet" balance-spring, "swan's

neck" micrometric regulator,

21 jewels

diam. 3.75 cm

Vacheron Constantin Heritage

Collection

N° 10643



6087 男士计时腕表

江诗丹顿公司

1960 年

瑞士日内瓦

直径 3.8 厘米

江诗丹顿典藏部藏

N° 11056

◎ 18K 黄金表壳，银质表盘，牛角形表耳；13" - 492 黄铜镀铬圆形机芯装有防磁软铁内壳，具有 30 分钟计时器功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及简易调速器，共使用 19 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch model 6087, Counter-chronograph with tachymetric scale

Geneva (Switzerland), 1960

18K yellow gold, "Cow Horns" lugs

Movement protected from magnetic radiation by an internal dome in soft iron

Caliber 13" - 492, 30 minute counter-chronograph, round, in rhodium-plated brass, lever escapement, cut bimetallic compensation balance,

"Breguet" balance-spring, simple adjustment index, 19 jewels
diam. 3.8 cm

Vacheron Constantin Heritage Collection

N° 11056



双秒追针计时怀表

江诗丹顿公司

1901 年

瑞士日内瓦

直径 4.8 厘米

江诗丹顿典藏部藏

N° 10257

◎ 18K 黄金表壳，珐琅表盘；RA 17" 德国银圆形机芯，具有双秒追针计时功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 26 颗宝石轴承

Vacheron Constantin, Pocket watch, Split-seconds chronograph

Geneva (Switzerland), 1901

18k yellow gold, enamel dial

Caliber RA 17", split-seconds chronograph, round, in German

silver, lever escapement, cut bimetallic

compensation balance, "Breguet"

balance-spring, "swan's neck"

micrometric regulator, 26 jewels

diam. 4.8 cm

Vacheron Constantin Heritage

Collection

N° 10257



累积计时男士腕表

江诗丹顿公司

1928 年

瑞士日内瓦

3.4 厘米 × 3.4 厘米

江诗丹顿典藏部藏

N° 11059

◎ 18K 黄金表壳，银质表盘，配备脉搏计；RA 13" 黄铜镀金圆形机芯，具有 30 分钟累积计时功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及简易调速器，共使用 21 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, Single-pusher counter-chronograph with pulsometric scale

Geneva (Switzerland), 1928

18K yellow gold, silvered dial, pulsometer

Caliber RA 13", 30 minute counter-chronograph, round, in gilt brass, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, simple adjustment index, 21 jewels

w. 3.4 cm × 3.4 cm

Vacheron Constantin Heritage Collection

N° 11059

四 特殊显示功能

在表盘上使用指针来计量时间的推移，可以看作是人类对行星绕太阳公转的模仿。钟表上的指针显示可分为实体指针显示和电子指针显示。

其他显示模式，如跳时显示系统，主要用于整点计时。这种方式类似于孔径型日历显示装置，指针被数字显示盘代替，并在每个整点跳跃显示。

除了孔径型显示外，表盘还具有多种不同的显示形式：双面的表盘，12 小时及 24 小时刻度显示，神秘时钟等。还有一种被称为“空中的手臂”的机械装置，根据需求，启动人偶的一只或两只手臂来指示小时和分钟。

4.Special Displays

The adoption of hands running over dials, in step with the passing of time, was the obvious choice by analogy with the rotation of the planets and the sun. Analogue displays are sometimes numerical and more recently digital.

There are however other display modes, such as the so-called jumping-display systems, mainly used for hours. In this mechanism visually similar to aperture-type calendars, the hand is replaced by a disc on which the hour numerals appear and jump in passing each new hour.

In addition to aperture-type displays, dials have featured numerous variations and indications: twin-faced dials, 12 and 24-hour indications, mysterious hours... Embodied by a curious figure, the so-called *bras en l'air* (arms in the air) mechanism points to the hours and minutes with one or other arm of an automaton that is activated on demand.



空中的手臂人偶怀表

约 1800 年

瑞士日内瓦

高 8.12 厘米，直径 5.8 厘米，

厚 2.5 厘米

日内瓦艺术与历史博物馆藏

N 373

◎该怀表为银质表壳，内有一金质人偶，人偶手臂为指针；珐琅表盘上右侧为 12 小时显示，左侧每格为 5 分钟刻度；配备黄铜镀金圆筒形夹板柱框架式机芯，机轴（冕状轮）擒纵系统和芝麻链，三臂平衡摆轮，平游丝，抛光摆轮夹板；按吊坠即可读时

Bras en l'air pocket watch

Geneva (Switzerland), ca. 1800

Case in silver, figure in chased gold,

dial in painted enamel, 12-hour

scale on right, 5-minute scale on left

Movement frame with cylindrical

gilded brass pillars, verge

escapement and fusee chain,

three-arm balance, flat balance-

spring, polished balance-cock, time

indicated by pressing the pendant

h. 8.12, diam. 5.8, thk. 2.5 cm

Geneva Museum of Art and History

N 373



24 小时显示双面怀表

路易·迪谢纳公司

约 1770 年

瑞士日内瓦

高 6.05 厘米，直径 4 厘米，

厚 2.42 厘米

日内瓦艺术与历史博物馆藏

H 2008-136

◎该怀表为黄金和彩金表壳，两面表圈均为纯银材质嵌玫瑰形切割钻石，珐琅表盘和镶钻指针；正面为传统读时（12 小时），背面为 24 小时表盘；内置黄铜框架式机芯，冕状轮擒纵系统，芝麻链，圆形平衡摆轮和精钢游丝

Louis Duchêne & Cie, Double-face pocket watch, 24-hour display and calendar

Geneva (Switzerland), ca. 1770

Case in gold and coloured golds, rose-cut diamonds set in silver, enamel dials, hands with diamonds
Movement frame in brass, crown wheel escapement, fusee chain,

circular balance, steel balance-spring
h. 6.05, diam. 4, thk. 2.42 cm

Geneva Museum of Art and History

H 2008-136





显示窗猎表

莫尼耶父子

约 1820 年

瑞士日内瓦

高 6 厘米，直径 4.4 厘米，

厚 0.7 厘米

日内瓦艺术与历史博物馆藏

N 1228

◎该怀表为凹雕花纹黄金表壳，机雕装饰，银质表盘，银质雕花时盘，内填珐琅刻度时标；内置桥架式偏心中心齿轮特殊机芯，工字轮擒纵系统，吊坠位于 12 时位置；表底饰有马戏团图案：羽毛装饰的骏马、驯兽员和观众；表盖装饰洛可可风格人面和卷草纹浮雕

Monier & Fils, Hunter pocket watch with windows

Geneva (Switzerland), ca. 1820

Gold case, intaglio engraving, guilloché, silver dial, time discs in engraved silver, champlévé varnished index

Movement with bridges, special cylinder escapement with eccentric centre wheel, pendant at 12 o'clock
Decorated case back; circus scene with plumed horses, trainer and spectators; dust cover with rococo ornaments, masks and scrolls
h. 6, diam. 4.4, thk. 0.7 cm

Geneva Museum of Art and History
N 1228



世界时间怀表

路易·科捷（制表师）和爱德华·旺热（表壳制作师）

1930—1931 年

瑞士日内瓦

高 5.03 厘米，直径 4.36 厘米，

厚 0.69 厘米

日内瓦艺术与历史博物馆藏

AD 8088

◎该怀表为白金和玫瑰金表壳；配备桥梁式机芯，世界时间（转盘），杠杆式擒纵系统，蓝钢宝玑上绕游丝；表肩镌刻法文各时区地名“伦敦、巴黎、柏林、罗马、伊斯坦布尔、巴格达、亚丁、莫里斯、孟买、加尔各答、新加坡、胡志明市、北京、上海、东京、悉尼、奥克兰岛、斐济、夏威夷、阿拉斯加、克朗代克、旧金山、丹佛、芝加哥、纽约、蒙特利尔、布宜诺斯艾利斯、里约热内卢、亚速尔群岛、马德拉群岛、加纳利群岛”和经度显示

**Louis Cottier (watchmaker),
Edouard Wenger (case-maker),
Pocket watch displaying universal
time**

Geneva (Switzerland), 1930-1931

Case in white and pink gold

Movement with bridges, universal
time (on revolving disk), lever
escapement, Breguet overcoil
balance-spring in blued steel

Engraved on the case middle:

“Londres Paris Berlin Rome
Constan.(tinople) Bagdad Aden
Maurice Bombay Calcutta
Singapour Saïgon Pékin Shangai
Tokyo Ile Aukland Fidji Hawaï
Alaska Klondike San Francisco

Denver Chicago New York Montreal
Buenos Aires Rio de Janeiro Acores
Maderes Cavarries”

h. 5.03, diam. 4.36, thk. 0.69 cm

Geneva Museum of Art and History

AD 8088



世界时间座钟

江诗丹顿公司

1948 年

瑞士日内瓦

直径 6.9 厘米

江诗丹顿典藏部藏

N°11437

◎铜质表壳，镀金表盘分三圈显示，中间带有 12 小时时标，第二圈为旋转区显示 24 小时，第三圈显示全球 67 个城市时间，基准时区为纽约，木质底座；采用 RA 22"73 黄铜镀铬圆形机芯，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 20 颗宝石轴承

◎江诗丹顿与日内瓦柯蒂耶家族的友谊可追溯至 1880 年，当时埃马纽埃尔·柯蒂耶是江诗丹顿的一名制表师。在 1931 年其子路易·柯蒂耶制造了一款世界时间装置，这款装置可通过中央表盘的旋转盘和刻有世界主要城市名的外表圈显示 24 个时区。该座钟即是 1932 年江诗丹顿生产的第一款搭载这种装置的世界时间钟表

Vacheron Constantin, Table clock, World time

Geneva (Switzerland), 1948

Copper, gilt triple-zone dial, central zone with 12 hour-markers, second rotating zone with 24 hours, exterior zone with indication of the time in 67 cities of the world, reference time zone New York, wooden base
Caliber RA 22"73, world time, round, in rhodium-plated brass, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, "swan's-neck" micrometric regulator, 20 jewels
The relationship between Vacheron Constantin and the Genevan

Cottier family goes back to 1880 when Emmanuel, father of Louis Cottier, was a watchmaker for our Maison. Louis Cottier developed in 1931 a universal time mechanism indicating the 24 time zones using a rotating disk around the central dial and outer bezel on which are inscribed the names of major cities around the world. As of 1932, this mechanism will be fitted in the first World Time Vacheron Constantin pieces.
diam. 6.9 cm
Vacheron Constantin Heritage Collection
N° 11437



双时区男士腕表

江诗丹顿公司

1982 年

瑞士日内瓦

直径 3.37 厘米

江诗丹顿典藏部藏

N° 10337

© 18K 黄金表壳，银质表盘；采用双
6" × 7"3/4 - 1010 黄铜镀铑桶形石
英机芯，共使用 7 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, Dual-time

Geneva (Switzerland), 1982

18K yellow gold, silvered dials,
double movement

Calibers 6"×7" 3/4 - 1010 quartz,
barrel-shaped, in rhodium-plated
brass, 7 jewels

diam. 3.37 cm

Vacheron Constantin Heritage
Collection

N° 10337

五 日期和日历显示功能

最初，人类只能依靠光线来感知时间。日月的光照决定了一年四季的变化，并使人类意识到经久不息的时间轮转。月圆月缺和日出日落一直以来决定着人类生存的节奏，以地球由西向东的自转来计算天数，以围绕太阳的公转来计算年份。一年分为 12 个月，而一个月，即从新月到满月再回到新月的时间，大约 29 天。

钟表制造者们一直着迷于如何使用钟表来显示天体的运行。16 世纪的钟表只能显示小时，不显示分秒，有时还带有一个简单的日历，指示着一个月中的某一天，在法语里称为“*quantième*”（日历）。

带有简易日历的钟表有时也显示月份，当结合月相使用时，也可以表明月龄，即自上次新月以来的天数。在少于 31 天的月份，日历不会自动整合时间，所以带有简易或完整日历的钟表需要人为进行调整。带有完整日历的钟表可以显示日期、星期、月份及月相，也常显示月龄。

在 15 世纪，一些天文钟已经包含万年历功能了，但真正具备这种超级复杂功能的第一块表（作为一项附加功能为钟表业界所认知）发明于

5.Date, Calendars

In the beginning, there was only light. The light of the moon or the Sun determines the cycle of the seasons and enables mankind to become aware of the never-ceasing turning of time. Human existence has always been punctuated by the waxing and waning of the moon and the rising and setting of the sun. The spinning of the Earth from west to east measures our days; and its rotation around the sun, our years. The year is divided into 12 months by the roughly 29 days it takes to pass from new moon to full moon and back again.

Horologists have always been fascinated by the challenge of translating astronomical movements into watch moments. While 16th century watches indicated only the hour, showing neither minutes nor seconds, they sometimes already featured a simple calendar indicating the date corresponding to the day of the month, known in French as the *quantième*.

A simple calendar watch sometimes also indicates the name of the month, and when associated with a moon phase, it may also indicate the age of the moon, meaning the number of days that have elapsed since the last new moon. Simple or complete calendar watches must be adjusted because they do not automatically take into account months with fewer than 31 days. The complete calendar watch shows the date, the name of the day of the week, the name of the month, the phases and often the age of the moon.

While some astronomical clocks dating from the 15th century already

included a perpetual calendar, the first watch incorporating this extraordinary complication (as such additional features are known in horology) was invented in 1770 and presented by Jean-Antoine Lépine to King Louis XV of France. Perpetual calendars, considered to be one of the most prestigious complications in watchmaking, automatically take into account the number of days in each month as well as leap years. Involving impressive mechanical programming capable of mastering the calendar's irregularities, they require adjustment only in centenary years that cannot be divided by four, such as 2100, 2200 and 2300.

Subsequently invented complications relate to the measurement of short times and extreme precision: the chronometer, the chronograph, the pulsometer, the tachymeter. All these mechanisms stimulated horological inventiveness and in parallel influenced the design of timepieces.

1770 年，让-安托万·莱皮纳将其献给了法国国王路易十五。在制表业中，万年历被公认是最复杂的功能之一，它可以根据每个自然月的天数以及闰年自动调整。由于使用了能够控制日历的不规则性的机械程序，万年历仅在不能被 400 整除的整百之年，比如，2100 年、2200 年和 2300 年需要调整。

随后发明的其他复杂功能与短暂时间的测量和极高的精度有关，如精密计时器、计时码表、脉搏计、转速计等。所有这些机械装置激发了钟表制作的创造力，同时也影响了钟表的设计。



年历怀表

泰鲁父子

约 1700—1710 年

瑞士日内瓦

高 7.15 厘米，直径 5.1 厘米，

厚 3.25 厘米

日内瓦艺术与历史博物馆藏

N 1130

◎该怀表为银质表壳，刻花银质表盘，黑色内填珐琅时标，第二层表壳遗失；配备黄铜和精钢材质框架式机芯，镂空涡纹夹板柱，冕状轮擒纵系统，黄铜圆形平衡摆轮，芝麻链，镌刻和镂空摆轮，银质游丝微调装置

Terroux & Fils, Pocket watch with calendar

Geneva (Switzerland),

ca. 1700-1710

Silver case; dial in engraved silver, markers in varnished black champlevé (second case missing)

Movement frame in brass, pillars with openwork scrolls, crown wheel escapement, circular brass balance, fusee chain, balance-cock pierced and engraved, rosette in silver

h. 7.15, diam. 5.1, thk. 3.25 cm

Geneva Museum of Art and History

N 1130



二问报时年历怀表

德孔巴

约 1800 年

瑞士日内瓦

高 7.3 厘米，直径 4.85 厘米，
厚 2 厘米

日内瓦艺术与历史博物馆藏

1973 年马丁捐赠

N 2268

◎该怀表为金质表壳，珐琅表盘；配备黄铜镀金和精钢框架式机芯，二问报时装置，冕状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，蓝钢平游丝，银质游丝微调装置

Decombaz, Quarter repeater pocket watch with calendar indication

Geneva (Switzerland), ca. 1800

Gold case, enamel dial

Movement frame in gilded brass and steel, quarter repeater on demand, crown wheel escapement, fusee chain, brass circular balance, blued steel balance-spring, silver rosette

h. 7.3, diam. 4.85, thk. 2 cm

Geneva Museum of Art and History

N 2268, donated by Martin, 1973



日历怀表

阿沙尔公司

约 1810 年

瑞士日内瓦

高 7.5 厘米，直径 5.65 厘米，

厚 1.9 厘米

日内瓦艺术与历史博物馆藏

N 137

◎该怀表为银质雕花表壳，冲压镀金铜质表盘，铜胎珐琅小表盘及铭牌、蓝钢指针，通过表盘上的弧形窗口可见黄铜镀金的摆锤；内置黄铜和精钢框架式机芯，日历显示功能，冕状轮擒纵系统和芝麻链，精钢平游丝

Achard & Cie, Pocket watch with annual calendar

Geneva (Switzerland), ca. 1810

Case in silver guilloché; copper dial stamped and gilded, hour circle and cartouche in enamel painted on copper and blued steel (semi-circular opening in dial), visible balance bob in gilded brass.

Movement frame in gilded brass and steel, calendar, crown wheel escapement, chain fusée, balance with bob, flat balance spring, silver rosette

h. 7.5, diam. 5.65, thk. 1.9 cm

Geneva Museum of Art and History

N 137



昼夜时间显示双面怀表

约 1830 年

瑞士日内瓦

高 5.9 厘米，直径 4.05 厘米，

厚 2.3 厘米

日内瓦艺术与历史博物馆藏

M 803

◎该怀表为金质表壳，第一层表盘为雕花金胎内填珐琅，背面嵌玻璃底盖，使第二层表盘清晰可见，该表盘由固定部分（风景和时标）、机雕金质铜胎珐琅转盘（昼夜指示）和指示时间的单一指针组成。内置黄铜和精钢材质框架式机芯，工字轮擒纵系统，摆轮和游丝类型不详，第一层表盘可见方形特殊快慢针，带款识

Double-face pocket watch with day and night indicated on a disc turning at the same time as the hand

Geneva (Switzerland), ca. 1830

Case in gold; dials in champlevé enamel on engraved, chased gold and enamel painted on copper; mobile disc in translucent enamel and enamel painted on gold guilloché

The back is fitted with a glass that

reveals the second dial comprising a fixed part (landscape and markers), a mobile disc (night and day) and a single hand indicating the time.

Movement frame in brass and steel, cylinder escapement, balance and balance-spring of undetermined type, special square index accessed from the dial

h. 5.9, diam. 4.05, thk. 2.3 cm

Geneva Museum of Art and History

M 803



万年历双面怀表

江诗丹顿公司

1884 年

瑞士日内瓦

直径 6.5 厘米

江诗丹顿典藏部藏

N° 10155

◎ 18K 黄金表壳，双面珐琅表盘；
RA 23" 黄铜镀金圆形机芯，具有万年历及月龄和月相显示功能，配备杠杆式擒纵系统，“纪尧姆”摆轮，螺旋纹式游丝及简易调速器，共使用 19 颗宝石轴承。经官方天文台认证

Vacheron Constantin, pocket watch, double-face, perpetual calendar, phases and age of the moon

Geneva (Switzerland), 1884

18K yellow gold, enamel dials

Caliber RA 23", round, in gilt brass,

lever escapement, "Guillaume"

balance, helical balance-spring,

simple adjustment index, 19 jewels

Watch with official Observatory

Bulletin

diam. 6.5 cm

Vacheron Constantin Heritage

Collection

N° 10155





男士完整日历腕表

江诗丹顿公司

1952 年

瑞士日内瓦

宽 3.6 厘米

江诗丹顿典藏部藏

N° 10933

◎ 18K 黄金表壳，银质表盘；12" 1/2 - 485 黄铜镀铬圆形机芯，具有完整日历和月相显示功能，配备杠杆式擒纵系统，铍合金摆轮，宝玑游丝及鹅颈式测微调速器，共使用 17 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, complete calendar and moon phases

Geneva (Switzerland), 1952

18K yellow gold, silvered dial

Caliber 12" 1/2 - 485, round,

in rhodium-plated brass, lever

escapement, beryllium balance,

"Breguet" balance-spring, "swan's neck" micrometric regulator,

17 jewels

w. 3.6 cm

Vacheron Constantin Heritage

Collection

N° 10933



万年历怀表

江诗丹顿公司

1955 年

瑞士日内瓦

直径 4.95 厘米

江诗丹顿典藏部藏

N° 10159

◎ 18K 黄金表壳，银质表盘；17" U 黄铜镀铬圆形机芯，具有万年历及月龄和月相显示功能，配备杠杆式擒纵系统，双金属截断式摆轮，平游丝和简易调速器，共使用 18 颗宝石轴承

Vacheron Constantin, Pocket watch, perpetual calendar, phases and age of the moon

Geneva (Switzerland), 1955

18K yellow gold, silvered dial

Caliber 17" U, round, in rhodium-plated brass, lever escapement,

cut bimetallic compensation

balance, flat balance-spring, simple

adjustment index, 18 jewels

diam. 4.95 cm

Vacheron Constantin Heritage

Collection

N° 10159



日历怀表

江诗丹顿公司

1929 年

瑞士日内瓦

直径 5.7 厘米

江诗丹顿典藏部藏

N° 11194

◎ 18K 黄金和白金表壳，银质表盘；
RA 17" 德国银镀金圆形机芯，配备
杠杆式擒纵系统，双金属截断式自动
补偿摆轮，平游丝及简易调速器，共
使用 18 颗宝石轴承

Vacheron Constantin, Pocket watch, Day, date and moon phases

Geneva (Switzerland), 1929

18K yellow gold, white gold,
silvered dial

Caliber RA 17", round, in gilt
German silver, lever escapement,
cut bimetallic compensation
balance, flat balance spring, simple
adjustment index, 18 jewels
diam. 5.7 cm

Vacheron Constantin Heritage
Collection

N° 11194



双面怀表

雅克·卡斯塔涅

约 1785 年

瑞士日内瓦

高 7.2 厘米，直径 5.2 厘米，

厚 2.6 厘米

日内瓦艺术与历史博物馆

H 2003-142

◎该怀表为金质表壳，珐琅表盘，一面为传统 12 时显示，另一面为 24 时显示；采用框架式机芯，配备机轴擒纵系统，圆筒式夹板支柱，芝麻链，黄铜摆轮及平游丝

Jacques Castanier, Double-face pocket watch, 24-hour display and calendar

Geneva (Switzerland), ca. 1785

Gold case, dial in white enamel, double display: traditional display on one side; 24-hour display on the other.

Movement frame with verge escapement, cylindrical pillars, chain fusée, brass balance and flat balance spring

h. 7.2, diam. 5.2, thk. 2.6 cm

Geneva Museum of Art and History

H 2003-142

六 报时表

在古代，漏壶（或水钟）已经装备了响铃装置，与中世纪的塔钟一样，不过守夜人还是会在夜里打更。

自16世纪以来，自鸣钟表表壳上的钻孔装饰能够使表内的报时铃声更易传出。这种装置的设计要求也出现在日内瓦制表师行会的规则里（1601），其规定是：若想成为一位钟表大师，学徒工必须制造出“一只挂在脖子上的闹表”。

在蜡烛是家中唯一照明工具的时代，由自鸣钟表演变而来的“报时问表”能够在夜间“告诉”人们时间，这是制表师们努力运用他们的想象力而创造的一项成果。这一探索促成了一个想法诞生，那就是通过在表壳上的按钮或拨杆激活一个机械装置，钟表就能在人们需要知道时间的时候报时，这样报整时的问表和报整时整刻的二问表在17世纪末的英格兰问世了。更为复杂的发明“三问表”出现在1740年左右，也是在英格兰。这种装置根据需求可以在小时、刻钟以及分钟时报时，后来又有了半刻钟和五分钟报时的装置。

18世纪末，亚伯拉罕-路易·宝玑（1747—1823）用环形淬火钢丝（音簧）取代了响铃，为

6.Striking Watches

In Ancient Times, some clepsydras (or water clocks) were already equipped with chimes, as too were the steeple clocks of the Middle Ages, when the watchman would call out the hour at night.

From the 16th century onwards, the cases of striking watches were engraved with drilled ornamentations enabling the chime to sound out “in passing” the hour when the bell secured to the back of the case was struck. This type of mechanism also appeared in the regulations issued by the Geneva Guild of Watchmakers (1601), which ruled that in order to become a Master Watchmaker an apprentice must make “a watch with alarm to be worn at the neck”.

Derived from striking watches, “repeater watches” were the fruit of watchmakers’ imaginative efforts to help people “tell” the time at night, in an era when candles were the only lighting available in private homes. This quest gave rise to the idea that by pushing a button or moving a slide on a watch case-middle, a striking mechanism could be activated to “repeat” the hour as required. Mechanisms repeating the quarters, as well as striking the hours and quarters on request, duly emerged in England in the late 17th century. An even more complex invention, the minute repeater, was developed around 1740, also in England: it strikes the hours,

quarters and minutes on demand. This was in turn followed by half-quarter and five-minute repeaters.

At the tail end of the 18th century, A.-L. Breguet (1747-1823) replaced the bells by circular strips of hardened steel (gongs) wrapped around the case in order to reduce the size and achieve a purer sound. In doing so, he contributed to the progress of miniaturising mechanisms that had begun with the abandonment of the cage-type calibre.

In the 20th century, the minute repeater was reduced to wristwatch format and established itself as one of the major feats of the horological art, operating like a mechanical memory able to sound the exact number of notes at any given time. A *petite sonnerie* strikes the hours and quarters, while a *grande sonnerie* (grand strike) strikes the hours and quarters in passing and also indicates the hour on demand.

A watchmaker's musical ear enables him to adjust the quality and the intensity of the sounds and to come up with innovative systems, whether for the hammer strike, the transmission of vibrations, the striking mechanism winding mode, or for improving sound quality.

了减小体积并能发出比较纯净的声音，这种环形钢丝被盘绕在表壳里。宝玑也因此为机械装置的小型化进步做出了贡献，而这种小型化是伴随着放弃框架式机芯而开始的。

到了 20 世纪，三问表机芯可以小到装进腕表中，这奠定了它作为钟表艺术主要成就的地位。三问表就像一个机械记忆卡，在任何需要的时候都会精准敲响时间。小自鸣分别报整点和刻钟，而大自鸣同时报小时和刻钟，还可像问表一样按需报出小时。

制表师的耳朵对音乐非常敏感，无论是为了音锤敲击、振动的传播、自鸣上链装置，还是为了提高声音的质量，他都能调整声音的质量和强度，并制作出新系统。



报时触摸式领口表

埃吉迪乌斯·翁格鲁斯

1520—1530 年

匈牙利布达佩斯

高 8.53 厘米，直径 6.16 厘米

厚 2.92 厘米

日内瓦艺术与历史博物馆藏

1948 年瑞士日内瓦和沃州钟表制造

商联合会捐赠，原为恩斯特·扎拉青-

冯德·米尔收藏

AD 339

◎该表为轧花透雕铜镀金表壳，表盘刻两圈时标，一圈为 I 至 XII（1—12），一圈为 13 至 24，可通过表盖上 12 个小孔看见，配精钢时针；使用黄铜材质框架式机芯和夹板柱，冕状轮擒纵系统，天平式摆轮，带两个一体式铁质摆陀，不配备调节发条动力的机制，铁质摆轮和齿轮组，手工锉齿，内传动报时凸轮，报时铃位于表壳内，配双发条，一个用于机芯，一个用于整点报时

Aegidius Ungarus, Chain watch, repeater and à tact

Budapest (Hungary), 1520-1530

Gilded, cut-out copper case with embossing; dial with two engraved hour circles I-XII and 13-24, steel hands, cover pierced with 12 holes
Movement frame and pillars in brass, crown wheel escapement, fly balance with two iron weights, single-piece construction, no mechanism to regulate the spring torque, iron balance-cock, iron gear train with hand-filed teeth, chiming cam with internal gear, bell inside the case, double spring for the movement and the hour repeater.

h. 8.53, diam. 6.16, thk. 2.92 cm

Geneva Museum of Art and History

AD 339, donated by l'Union des

Fabricants d'horlogerie de Genève

(Suisse) et Vaud, 1948, previously

in the Ernst Sarasin-von der Mühl

collection





闹铃怀表

拉扎尔·阿洛

约 1685 年

瑞士日内瓦

高 8.15 厘米，直径 5.65 厘米，

厚 3.65 厘米

日内瓦艺术与历史博物馆藏

N 169/1

◎该怀表为镂雕黄铜镀金表壳，铜胎珐琅表盘，精钢指针；黄铜闹铃小表盘上雕刻数字，配精钢单一指针；内置黄铜框架式机芯，埃及式夹板柱，冕状轮擒纵系统，芝麻链，独立闹铃发条盒，短游丝大平衡摆轮，快慢针设于刻花的摆轮夹板上，铃式闹铃固定于表壳底部

Lazare Arlaud, Pocket watch with alarm

Geneva (Switzerland), ca. 1685

Brass case, pierced, chased and gilded, dial of enamel on copper, steel hand, small alarm dial in brass, engraved numerals on left, single hand in steel.

Movement frame in brass, Egyptian pillars, crown wheel escapement, fusee chain, engraved second barrel for the alarm, large balance with very short spring, engraved balance-cock with drilled hole, index on

edge of cock, alarm with bell on the bottom of the case

h. 8.15, diam. 5.65, thk. 3.65 cm

Geneva Museum of Art and History

N 169/1





二问报时怀表
江诗丹顿公司
1827 年
瑞士日内瓦
直径 6.4 厘米
江诗丹顿典藏部藏
N° 10715

◎ 18K 粉红金表壳，银质表盘；22" 黄铜镀金圆形机芯，具有大小自鸣和二问报时功能，配备工字轮擒纵系统，三臂环摆轮，平游丝和简易调速器，4 个孔镶嵌宝石，使用钥匙上链和设定

Vacheron Constantin, Pocket Watch, grande and petite sonneries, quarter-repeater
Geneva (Switzerland), 1827
18K pink gold, silver dial
Caliber 22", quarter-repeater, round, in gilt brass, cylinder escapement, three-arm annular balance, flat balance-spring, simple adjustment index, 4 holes with jewels, key winding and setting
diam. 6.4 cm
Vacheron Constantin Heritage Collection
N° 10715



闹铃怀表

约瑟夫·德富瓦尼

约 1700 年

法国里昂

高 7.1 厘米，直径 4.9 厘米，

厚 3.15 厘米

日内瓦艺术与历史博物馆藏

1868 年伊波利特·让·戈斯于瑞士

日内瓦捐赠

G 46

◎该怀表为镂空雕刻铜镀金表壳，铜胎珐琅漆表盘；机芯带蓝钢和银质镶贴装饰，使用冕状轮擒纵系统，精钢圆形平衡摆轮，蓝钢平游丝，芝麻链，银质游丝微调装置

Joseph de Foigny, Pocket watch with alarm

Lyon (France), ca. 1700

Gilded cut-out brass case with openwork and engraving; dial of enamel on copper

Movement with appliques in blued steel and silver, crown wheel escapement, circular balance in steel, flat balance-spring in blued steel, fusee chain, silver rosette.

h. 7.1, diam.4.9, thk. 3.15 cm

Geneva Museum of Art and History

G 46, donated by Hippolyte Jean

Gosse, Geneva (Switzerland), 1868



音簧闹铃怀表

让·谢

1695—1700 年

瑞士日内瓦

高 6.85 厘米，直径 5.9 厘米，

厚 3.55 厘米

日内瓦艺术与历史博物馆藏

AD 2738

◎该怀表为镂空雕刻银质双层表壳，黑色内填珐琅时标，搭配精雕银表盘，镶贴黄铜装饰；内置黄铜镀金和精钢材质框架式机芯，冕状轮擒纵系统，芝麻链，圆柱蜗轮棘爪，圆形精钢平衡摆轮，蓝钢平游丝，银质游丝微调装置，带装饰性英式摆轮夹板

Jean Chais, Pocket watch with gong alarm

Geneva (Switzerland), 1695 - 1700

Double case in silver with cut-

outs and openwork, engraved

and chased, numerals in black

champlevé enamel on engraved

silver dial, cut-out brass applique

Movement frame in gilded brass

and steel, crown wheel escapement,

chain fusée, worm-gear ratchet,

circular steel balance, flat balance

spring in blued steel, silver rosette,

ornamental English balance-cock.

h. 6.85, diam. 5.9, thk. 3.55 cm

Geneva Museum of Art and History

AD 2738





三问报时男士腕表

江诗丹顿公司

1957 年

瑞士日内瓦

直径 4 厘米

江诗丹顿典藏部藏

N° 11381

◎ 18K 金表壳，银质表盘；RA 13" 德国银镀铬圆形机芯，具有三问报时及完整日历和月相显示功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，平游丝及简易调速器，共使用 29 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, minute-repeater, complete calendar and moon phases

Geneva (Switzerland), 1957

18K gold, silvered dial

Caliber RA 13", round, in

rhodium-plated German silver,

lever escapement, cut bimetallic

compensation balance, flat balance-

spring, simple adjustment index,

29 jewels

diam. 4 cm

Vacheron Constantin Heritage

Collection

N° 11381



三问报时男士腕表

江诗丹顿公司

1930 年

瑞士日内瓦

宽 3.35 厘米

江诗丹顿典藏部藏

N° 11243

◎ 18K 白金表壳，粉红金表针，银质表盘；RA 12" PC 德国银圆形机芯，具有三问报时功能，配备杠杆式擒纵系统，双金属截断式摆轮，宝玑游丝及简易调速器，共使用 31 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, minute-repeater

Geneva (Switzerland), 1930

18K white gold, pink gold, silvered dial

Caliber RA 12" PC, round, in German silver, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, simple adjustment index, 31 jewels

w. 3.35 cm

Vacheron Constantin Heritage Collection

N° 11243



怀表

江诗丹顿公司

1812 年

瑞士日内瓦

直径 5.5 厘米

江诗丹顿典藏部藏

N° 10302

◎ 18K 粉红金和黄铜镀金表壳，珐琅表盘；22" 黄铜镀金圆形机芯，具有二问报时功能，配备镰钩式擒纵系统，三臂环摆轮，平游丝及简易调速器，4 个孔镶嵌宝石，使用钥匙上链和设定

Vacheron Constantin, Pocket watch, quarter-repeater

Geneva (Switzerland), 1812

18K pink gold, gilt brass, enamel dial

Caliber 22", round, in gilt brass, virgule escapement, three-arm annular balance, flat balance-spring, simple adjustment index, 4 holes with jewels, key winding and setting
diam. 5.5 cm

Vacheron Constantin Heritage Collection

N° 10302

7.High Complications

Some models referred to as *hautes complications* (“high complications”) combine several of the most sophisticated horological complications, such as the annual or perpetual calendar, split-second chronograph, tourbillon, quarter or half-quarter repeater, sometimes complemented by a Grande and Petite Sonnerie (large and small strikes).

These masterpieces, which are the exclusive preserve of Master Watchmakers, are often made in extremely limited or one-of-a-kind editions. Intended for Queen Marie-Antoinette of France, the watch created in 1827 by A.-L. Breguet is the earliest example of such models: it encompasses all the known complications of the era, notably including a minute repeater, a perpetual calendar, an equation of time and a power-reserve indicator. In the 20th century, certain first-rate creations comprised a set of 25 and even up to 33 complications.

In the field of the wristwatch, Vacheron Constantin celebrated its 250th anniversary in 2005 by presenting the “Tour de l’Île” model, “the world’s most complicated series-made wristwatch”: its 834 part movement drives two dials displaying 16 complications, including an hour, quarter and minute repeater, a tourbillon, a display of the moon phases and age of the moon, a perpetual calendar, an equation of time, a sunrise and sunset indication as well as a sky chart.

七 高度复杂功能

一些被称为“超级复杂功能”（“高度复杂功能”）的钟表款式具有非常繁复的功能配备，如年历或万年历、双秒追针计时、陀飞轮、二问或半刻二问报时等，有时还辅以大小自鸣功能。

这些由制表大师创作的杰作，往往是限量版，有时甚至是绝版作品。亚伯拉罕-路易·宝玑在 1827 年为法国皇后玛丽·安托瓦内特制作了一块表，这款表包含了那个时代所有已知的高度复杂功能，是此类表的最早范例，包括三问报时、万年历、均时差（或时间等式）和动力储备指示器。到了 20 世纪，一些顶级作品具有 25 种甚至 33 种高度复杂的功能。

江诗丹顿于 2005 年在业界推出了它的“岛塔”表款以庆祝其建立 250 周年，这是一款“世界上最复杂的系列腕表”，包括 834 个机芯部件，两个表盘显示 16 种复杂功能，包括三问报时装置、陀飞轮、月相和月龄显示、万年历、均时差、日出与日落指示装置，还有天象图。



钥匙形双面日历表

艾汀·塔维涅

约 1820 年

法国巴黎

高 4.6 厘米，直径 2.6 厘米，
厚 1.25 厘米

日内瓦艺术与历史博物馆藏
1881 年安格朗（先生）捐赠

AD 3092

◎该怀表设计为钥匙形状，金质圆形表壳，正面凹槽表肩，反面表圈连接 12 时位置并设圆形挂环，6 时位置设精钢钥匙（方形插口），白色珐琅双表盘绘黑色和金色时标

Etienne Tavernier, Key of double-face calendar watch

Paris (France), ca. 1820

Key designed similarly to a pocket watch: round gold case; a fluted case-middle in front, a bezel hinged at 12 o'clock on reverse; suspending ring at 12, steel key (square female) at 6. Two dials in white enamel painted in black and gold

h. 4.6, diam. 2.6, thk. 1.25 cm

Geneva Museum of Art and History
AD 3092, donated by [M.] Angrand, 1881



三重复杂功能猎装怀表

江诗丹顿公司

1901 年

瑞士日内瓦

直径 5.95 厘米

江诗丹顿典藏部藏

N° 10536

© 18K 金表壳，珐琅表盘；RA 19" 黄铜镀金圆形机芯，具有万年历、月龄和月相显示、计时码表（附计速刻度）及三问报时功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及简易调速器，共使用 33 颗宝石轴承，通过旋钮设定时间

Vacheron Constantin, Hunting-case pocket watch, Triple complication

Geneva (Switzerland), 1901

18K pink gold, enamel dial

Caliber RA 19", single-pusher

chronograph, minute-repeater,

perpetual calendar, phases and age

of the moon, round, in gilt brass,

lever escapement, cut bimetallic

compensation balance, "Breguet"

balance-spring, simple adjustment

index, 33 jewels, time setting by bolt

diam. 5.95 cm

Vacheron Constantin Heritage

Collection

N° 10536



带温度计的怀表

西尔万·让迈雷（即西尔万·迈雷）

约 1835 年

瑞士力洛克

高 6.6 厘米，直径 4.75 厘米，

厚 0.64 厘米，上链匙：长 2.81 厘米

日内瓦艺术与历史博物馆藏

H 2006-116

◎该怀表为机雕“麦粒纹”玫瑰金表壳，冲压机雕银质表盘，银胎黑色内填漆时标，蓝钢指针；内置黄铜镀金机芯，抛光发蓝螺丝，带宝石轴承的工字轮擒纵系统，补偿式快慢针，配备列氏双金属温度计

Sylvain Jeanmairet, “Sylvain Mairet”, Pocket watch with thermometer

Le Locle (Switzerland), ca. 1835

Case in pink gold with “barleycorn” guilloché; silver dial, stamped, guilloché, varnished champlévé markers black on white, blued steel hands

Movement in gilded brass, polished blued screws, jewelled cylinder escapement, index with compensator, Réamur bimetallic thermometer

h. 6.6, diam. 4.75, thk. 0.64 cm,

key: l. 2.81 cm

Geneva Museum of Art and History

H 2006-116



陀飞轮航海精密计时器

詹姆斯·比勒顿

1941 年

瑞士力洛克

外盒：宽 12.92 厘米，深 12.12 厘米，
高 9.9 厘米；

机芯直径 4.48 厘米

日内瓦艺术与历史博物馆藏

H 2004-6

◎该航海表为桃花心木外盒，使用黄铜常平架悬挂表盘，以减少船体在快速运行和倾斜时对内部机制产生的影响，彩色黄铜表壳，珐琅表盘，6 时位置设小秒针；内置力洛克技术学校镀铑精钢机芯，弧形中央桥架上雕有变形条纹装饰，比勒顿三臂陀飞轮框架每分钟旋转一次，使用倾斜杠杆式擒纵系统，纪尧姆补偿式双金属螺丝摆轮，采用菲利普末端曲线的精钢合金游丝，红宝石中央轴承

James Pellaton, Chronometer with tourbillon

Le Locle (Switzerland), 1941

Mahogany box, brass gimbal suspension

Case in chrome-plated brass, enamel dial, small seconds at 6 o'clock

Movement in rhodiumed steel,

Technicum du Locle calibre with curved central bridge, “false sides”

decoration, Pellaton three-arm

tourbillon carriage (one revolution per minute) lever escapement

with lateral calibration, Guillaume bimetallic balance with gold

centrifugal weights, steel alloy balance-spring, Phillips curve,

central ruby endstone

Box: w. 12.92, d. 12.12, h. 9.9 cm

diam. movement: 4.48 cm

Geneva Museum of Art and History

H 2004-6





复杂功能怀表

卡比诺蒂耶·安德森公司、迪克雷及安德森公司

1982 年

瑞士日内瓦

高 7.15 厘米，直径 5.05 厘米，

厚 1.35 厘米

日内瓦艺术与历史博物馆藏

2003 年费尔南·奥尔特拉马尔于瑞士旺德夫尔捐赠

H 2003-119

◎该怀表为金质珐琅表壳，玻璃表盘和底盖；透过表盘可见平面机芯，有万年历和月相功能，机芯为抛光精钢材质，部分经发蓝处理固定于金质面板上

◎表桥镌刻“1981 年卡比诺蒂耶为日内瓦钟表博物馆制作”斯文德·安德森、米歇尔·博尔达、罗杰·杜比、萨米埃尔·洛雷达、纳坦·施莫洛维茨、让-马克·维耶德莱驰为制表师；安德·切克为雕刻工艺师；米里埃尔·迪克雷、安德烈·波多切尔为珐琅工艺师；威廉·佩雷为表壳制作师

Création Les Cabinotiers Andersen & Cie / Ducrey / Andersen & Cie, Pocket watch with complications
Geneva (Switzerland), 1982

Gold case with painted enamel, glass dial, glass case back
Visible flat movement, perpetual calendar and moon phases, polished steels partially blued mounted on a gold plate

Bridge engraved “Créations les Cabinotiers pour le Musée de l'horlogerie Genève 1981”
Svend Andersen, Michel Bordard, Roger Dubuis, Samuel Lloreda, Nathan Schmoulowitz, Jean-Marc Wiederrecht, watchmakers; André

Checa, engraver; Muriel Ducrey, Andrée Peaudecerf, enamellers; William Perret, case-maker.
h. 7.15, diam. 5.05, thk. 1.35 cm
Geneva Museum of Art and History
H 2003-119, donated by Fernand Oltramare, Vandoeuvres, 2003





高度复杂功能怀表

江诗丹顿公司

1918 年

瑞士日内瓦

直径 5.7 厘米

江诗丹顿典藏部藏

N° 11527

◎ 20K 黄金镌刻的精致表壳，珐琅表盘，机刻雕花表底盖并以蓝色珐琅绘主人詹姆斯·沃德·帕卡德姓名的缩写字母 JWP；RA 19" 德国银镀金圆形机芯，具有大小自鸣、二问和半刻二问报时及 30 分钟累积计时功能，配备杠杆式擒纵系统，纪尧姆平衡摆轮，宝玑游丝及鹅颈式测微调速器，共使用 43 颗宝石轴承

◎ 该怀表为美国收藏家詹姆斯·沃德·帕克（1863—1928）特别定制

Vacheron Constantin, Pocket watch, Grand complication

Geneva (Switzerland), 1918

20K yellow gold, enamel dial, chased case, guilloché back with engraved and enameled monogram of James Ward Packard

Caliber RA 19", grande and petite sonneries, quarter and half-quarter-repeaters, 30 minute counter-chronograph, round, in gilt German silver, lever escapement,

"Guillaume" balance, "Breguet"

balance-spring, "swan's neck"

micrometric regulator, 43 jewels

This piece was a special order from the American collector James Ward Packard (1863-1928)

diam. 5.7 cm

Vacheron Constantin Heritage Collection

N° 11527





高度复杂功能怀表

江诗丹顿公司

1929 年

瑞士日内瓦

直径 6.75 厘米

江诗丹顿典藏部藏

N° 11294

◎ 18K 黄金表壳，银质表盘，背面有以珐琅绘制的福阿德一世盾形纹章；RA 21" 德国银圆形机芯，具有双秒追针分钟累积计时、三簧三问报时、万年历、月龄和月相显示功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及测微调速器，共使用 46 颗宝石轴承

◎ 该款怀表于 1929 年由瑞士驻埃及侨民团体赠予埃及国王福阿德一世

Vacheron Constantin, Pocket watch, Grand complication

Geneva (Switzerland), 1929

18K yellow gold, silvered dial, back with enameled coat-of-arms of King Fouad I

Caliber RA 21", split-second 30 minute counter-chronograph, minute-repeater on three gongs, grande and petite sonneries, perpetual calendar, phases and age of the moon, round, in German silver, lever escapement,

cut bimetallic compensation balance, "Breguet" balance-spring, micrometric regulator, 46 jewels
Pocket watch presented by the Swiss Colony in Egypt to King Fouad I in 1929

diam. 6.75 cm

Vacheron Constantin Heritage

Collection

N° 11294





三重复杂功能怀表

江诗丹顿公司

1905 年

瑞士日内瓦

直径 5 厘米

江诗丹顿典藏部藏

N° 10158

◎ 18K 黄金表壳，珐琅表盘；RA 18" II 德国银圆形机芯，具有万年历、月龄和月相显示、双秒追针、30 分钟累积计时及三问报时功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 32 颗宝石轴承

Vacheron Constantin, Pocket watch, Triple complication

Geneva (Switzerland), 1905

18K yellow gold, enamel dial

Caliber RA 18" II minute-repeater,

split-second 30 minute counter-

chronograph, perpetual calendar,

phases and age of the moon, round,

in German silver, lever escapement,

cut bimetallic compensation balance,

"Breguet" balance-spring, "swan's

neck" micrometric regulator,

32 jewels

diam. 5 cm

Vacheron Constantin Heritage

Collection

N° 10158



八 具有高度复杂功能的概念表

制表师们喜欢把他们的艺术推向极致：在进入 19 世纪之时，机芯的轻薄特质给了他们向新成就挑战的机会，如一款双面逆跳小时显示和日出日落时间显示的手表，还有一款带温度计的手表，以及另一款带有偏心小时显示的超薄手表。

8.Watches with Complications in Their Conception

Watchmakers love to push the limits of their art: at the turn of the 19th century, the slender nature of the movements challenged them to new accomplishments, as evidenced in a key for a twin-faced watch with retrograde hours, sunrise and sunset times; a watch with a thermometer; or another ultra-thin watch with off-centred hours.



闹铃怀表

加伯雷尔和迪富尔

约 1830 年

瑞士日内瓦

高 6.55 厘米，直径 4.8 厘米，

厚 1.15 厘米

日内瓦艺术与历史博物馆藏

AD 3904

◎该怀表为机雕金质表壳，配精雕金质表盖和铜胎珐琅表盘；采用桥架式机芯，双重擒纵系统，截断式双金属平衡摆轮，蓝钢宝玑上绕游丝，抛光精钢快慢针

Gabriel & Dufour, Pocket watch with alarm

Geneva (Switzerland), ca.1830

Gold case, guilloché, engraved gold cover, dial of enamel painted on copper

Movement with bridges, duplex escapement, bimetallic cut balance, Breguet overcoil balance spring in blued steel, polished steel index

h. 6.55, diam. 4.8, thk. 1.15 cm

Geneva Museum of Art and History

AD 3904



超薄怀表

雅克-阿方斯·法蒂奥-朱诺

约 1845—1850 年

瑞士日内瓦

高 5 厘米,直径 3.58 厘米,厚 0.57 厘米,

上链匙:长 2.75 厘米,

链条:长 32.9 厘米

日内瓦艺术与历史博物馆藏

H 2003-145

◎该怀表为金胎内填珐琅表壳,6 时位置为偏心银质表盘,蓝钢指针;内置超薄桥架式机芯,即法蒂奥-朱诺倒置机芯(表盘位于齿轮组一侧,而非夹板一侧),使用工字轮擒纵系统。带表链和上链匙

Jaques-Alphonse Fatio-Junod, Extra-thin pocket watch with chain and key

Geneva (Switzerland), ca. 1845-1850

Gold case, *champlevé* enamels, off-centre silver dial at 6 o'clock, blued steel hands

Extra-thin movement with bridges, "Fatio-Junod" inverted calibre (dial placed on gear side not plate side), cylinder escapement

h. 5, diam. 3.58, thk. 0.57 cm;

key: l. 2.75 cm, chain: l. 32.9 cm

Geneva Museum of Art and History

H 2003-145





铝质怀表

江诗丹顿公司

1945 年

瑞士日内瓦

直径 4.5 厘米

江诗丹顿典藏部藏

N° 10167

◎铝质表壳，铝镀银表盘，表底盖有雕花；17" 439/7 圆形机芯，采用铝质主板和桥板，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 17 颗宝石轴承

◎加拿大铝业公司向江诗丹顿定制了全铝怀表，以此探索这种金属用于武器之外的和平用途。铝业公司将该款怀表作为礼物赠予在公司辛勤工作了 25 年的忠实员工。怀表的表壳和表盘皆为铝质，大部分机芯也由铝打造而成。该款怀表走时极为准确，同时也是有史以来最轻的怀表之一，总重仅 19.61 克，比同等的金质或银质怀表轻两倍。江诗丹顿于 1938 年至 1952 年间制造了铝质表款

Vacheron Constantin, Pocket watch, Aluminum

Geneva (Switzerland), 1945

Aluminum, silvered aluminum dial, back with engraving

Caliber 17"- 439/7, round, main plate and bridges in aluminum, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, "swan's neck" micrometric regulator, 17 jewels

A request was made by the Canadian Aluminium Limited Group of Companies to Vacheron Constantin to produce a watch (entirely) made of aluminum.

The aim was to use this metal for

a pacific purpose rather than for armament. The watch was a gift to thank employees for their 25 years of service to the Aluminium Group. The case is in aluminum, as are the dial and a large part of the movement. This very accurate model is one of the lightest pocket watches ever made and weighs 19.61 grams, two times less than an equivalent gold or silver watch. Vacheron Constantin produced watches in aluminum from 1938 to 1952
diam. 4.5 cm
Vacheron Constantin Heritage Collection
N° 10167





6099 系列超薄男士腕表

江诗丹顿公司

1955 年

瑞士日内瓦

直径 3.2 厘米

江诗丹顿典藏部藏

N° 11422

◎ 18K 黄金表壳，银质表盘；9"-1003 黄铜镀铑圆形机芯，该机芯厚度仅为 1.64 毫米，配备杠杆式擒纵系统，铍合金摆轮，平游丝及简易调速器，共使用 17 颗宝石轴承

◎ 9"-1003 机芯为江诗丹顿成立两百周年（1755—1955）特别纪念款。为庆祝这一盛事，江诗丹顿制造了该款腕表（型号 6099），腕表的每个表耳均代表马耳他十字的一端

Vacheron Constantin, Gentleman's wristwatch, Model 6099, Ultra-thin
Geneva (Switzerland), 1955

18K yellow gold, silvered dial

Watch with a 1.64 mm ultra-thin movement

Caliber 9"-1003, round, in rhodium-plated brass, lever escapement, beryllium balance, flat balance-spring, simple adjustment index, 17 jewels

The 9"-1003 movement was created especially for the Vacheron Constantin bicentenary (1755 - 1955). This model (6099) was produced to celebrate this Jubilee, and each lug represents a branch of the Maltese Cross

diam. 3.2 cm

Vacheron Constantin Heritage Collection
N° 11422



超薄机芯怀表

江诗丹顿公司

1931 年

瑞士日内瓦

直径 4.6 厘米，厚 0.36 厘米

江诗丹顿典藏部藏

N° 10726

○ 铂金表壳，银质表盘；RA 17" 5/12 黄铜圆形机芯，该机芯厚度仅为 0.95 毫米，配备杠杆式擒纵机构、双金属截断式自动补偿摆轮及平游丝，共使用 18 颗宝石轴承

Vacheron Constantin, Pocket watch, Ultra-thin

Geneva (Switzerland), 1931

Platinum, silvered dial

Watch with a 0.95 mm ultra-thin movement

Caliber RA 17" 5/12, round, in brass, lever escapement, cut bimetallic compensation balance, flat balance-spring, 18 jewels
diam. 4.6, thk. 0.36 cm

Vacheron Constantin Heritage Collection

N° 10726



超薄男士腕表

江诗丹顿公司

1968 年

瑞士日内瓦

宽 3.15 厘米

江诗丹顿典藏部藏

N° 11481

◎ 18K 黄金表壳，银质表盘；12" 1/2-1120 黄铜镀金圆形自动上链机芯，该机芯厚度仅为 2.45 毫米，配备杠杆式擒纵系统，“基隆麦克斯”自动补偿摆轮及平游丝，共使用 36 颗宝石轴承

Vacheron Constantin, Gentleman's wristwatch, Ultra-thin

Geneva (Switzerland), 1968

18k yellow gold, silvered dial

Watch with a 2.45 mm ultra-thin automatic movement

Caliber 12" 1/2-1120, automatic, round, in rhodium plated brass, lever escapement, flat balance-spring, "Gyromax" compensation balance, 36 jewels

w. 3.15 cm

Vacheron Constantin Heritage Collection

N° 11481

9. Specific Needs and Sport

Although ancestral knowledge of astronomy gave them tools (such as the astrolabe or the quadrant) to work out latitude, they had no instrument for calculating longitude, for which the exact measurement of time is necessary. In the 15th and 16th centuries, when the Great Explorers were opening up new sea routes, the prospect of boundless wealth spurred competing nations into a frenzied race for maritime domination.

Marine chronometers heralded the era of scientific watchmaking based on technological progress in all fields. In the late 19th century in Geneva, the introduction of chronometry competitions supported this progress, which the chronometric observatories subsequently founded in Neuchâtel, Besançon, Paris, Greenwich, Kew Teddington and Hamburg would also help to improve.

The exporting vocation of the Geneva industry took shape as early as the 17th century. Between 1750 and 1830, enthusiasts in Turkey, China and India showed an appreciation for richly decorated watches. Watches made for the Turkish market were thus specially designed with a triple case and a dial bearing Turkish numerals, while watch dials intended for China sometimes adopted Chinese characters.

In the 20th century, changes in habits and society led watch companies to offer timepieces tailored to new needs. The demands of the war and the development of leisure activities (automobiles, sport) gave rise to novel

九 特别需求和体育运动

虽然祖先传下来的天文知识使人们造出了星盘或四分仪这些测量纬度的工具，但是他们没有可以计算经度的仪器，而精确测量时间对于测量经度又是十分必要的。在 15 世纪和 16 世纪，当大航海家们开辟新航线的时候，对无限财富的憧憬使国家之间为了争夺制海权而展开疯狂竞赛。

航海天文钟预示着建立在各领域科技进步基础上的科学制表时代的到来。在 19 世纪末的日内瓦，计时竞赛的引入激励着这种进步。之后在瑞士纳沙泰尔、法国贝桑松和巴黎、英国格林尼治和泰丁敦以及德国汉堡建立的精密计时天文台也有助于推动科学制表的发展。

日内瓦工业领域的出口行业早在 17 世纪就已初具规模。在 1750 年至 1830 年间，土耳其、中国和印度的钟表爱好者对于装饰华丽的钟表情有独钟。为土耳其市场制作的钟表被特意打造成三重表壳以及带有土耳其数字的表盘，而为中国制作的表盘有时也采用中国汉字。

20 世纪，由于人们日常习惯和社会的变化，制表公司为新的需求提供更适合的计时器。战争

及休闲活动（汽车，体育运动）的发展对于计时设备的需求使得计时器在其功能显示和制作材料方面加入了新的元素。

elements in terms of displays and materials.



航海精密计时器

安托万·德莫勒

约 1790 年

瑞士日内瓦

高 12.3 厘米, 宽 15.5 厘米, 深 15.3 厘米

表壳: 高 4.28 厘米, 直径 8.49 厘米

日内瓦艺术与历史博物馆藏

AD 3494

◎该表为木质与黄铜表盒, 黄铜表壳和珐琅表盘, 使用黄铜常平架悬挂表盘, 以减少船体在快速行进和倾斜时对内部机制产生的影响; 采用黄铜镀金和精钢框架式机芯, 天文钟擒纵系统(爪式), 双金属平衡摆轮, 精钢宝玑上绕游丝

Antoine Demole, Marine watch

Geneva (Switzerland), ca. 1790

Wood and brass chest, brass case, enamel dial

Movement frame in gilded brass and steel, detent escapement with pivoting lever, bimetallic balance, steel Breguet overcoil balance spring
h. 12.3, w. 15.5, d. 15.3 cm; watch case: h. 4.28, diam. 8.49 cm

Geneva Museum of Art and History
AD 3494





有喊怀表及上链钥匙

爱德华·有喊

约 1860 年

瑞士弗勒里耶

高 6.7 厘米，直径 4.7 厘米，厚 1.67 厘米，

上链匙：长 3.88 厘米

日内瓦艺术与历史博物馆藏

H 2005-123

◎该怀表为银质表壳，珐琅表盘，罗马数字时标，中文“有喊”商标；采用黄铜镀金和蓝钢材质雕花桥架式机芯，杠杆式擒纵系统，双金属螺丝平衡摆轮，蓝钢平游丝。19 世纪 70 年代汉字“有喊”商标在中国注册，该怀表是为中国市场定制的

Edouard Juvet, “Chinese” pocket watch with its key

Fleurier (Switzerland), circa 1860

Silver case; enamel dial, Roman numerals

Movement with engraved bridges in gilded brass and blued steel, lever escapement, bimetallic balance with screws, flat balance-spring in blued steel

h. 6.7, diam. 4.7, thk. 1.67 cm;

key: l. 3.88 cm

Geneva Museum of Art and History

H 2005-123



汉字时标怀表

雅克·路易·阿尔弗雷德·吕埃格尔
约 1860 年

可能制作于瑞士日内瓦或弗勒里耶
高 7.47 厘米，厚 2.12 厘米，
直径 5.4 厘米

日内瓦艺术与历史博物馆藏

H 2007-0008

◎该怀表为银质表壳，珐琅表盘，以十二时辰中文显示 24 小时时间；采用黄铜镀金和精钢框架机芯，冕状轮擒纵系统，芝麻链，黄铜圆形摆轮，蓝钢游丝，银质游丝微调装置。该怀表是为中国市场定制的

Jacques Louis Alfred Ruegger,

Silver “Chinese” pocket watch

Fleurier (?), Geneva (?),

(Switzerland), circa 1860

Silver case; enamel dial, Chinese numerals

Movement frame in gilded brass and steel, crown wheel escapement, fusee chain, brass circular balance, blued steel balance-spring, silver rosette

h. 7.47, thk. 2.12, diam. 5.4 cm

Geneva Museum of Art and History

H 2007-0008



三层壳怀表

乔治·普里奥尔

约 1825 年

英国伦敦

高 7.46 厘米，直径 6.3 厘米，

厚 2.56 厘米

日内瓦艺术与历史博物馆藏

M 787

◎该怀表第一层和第二层为银质表壳，第三层表壳以玳瑁装饰，珐琅表盘带土耳其风格数字时标；采用黄铜和精钢框架式机芯，冕状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，蓝钢平游丝，银质游丝微调装置

Georges Prior, Triple-case pocket watch

London (England), ca. 1825

First and second cases in silver, third case embellished with tortoiseshell; enamel dial with Turkish numerals

Movement frame in gilded brass and steel, crown wheel escapement, chain fusée, brass circular balance, blued steel balance spring, silver rosette

h. 7.46, diam. 6.3, thk. 2.56 cm

Geneva Museum of Art and History
M 787





陆军工兵部队计时怀表

江诗丹顿公司

1918 年

瑞士日内瓦

直径 5.3 厘米

江诗丹顿典藏部藏

N° 10237

◎银质表壳，珐琅表盘，表底盖有雕花；RA 19"-194 德国银圆形机芯，具有计时功能，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及鹅颈式测微调速器，共使用 20 颗宝石轴承，通过按钮设定时间

◎ 1918 年在伯尔尼的美国远征军向江诗丹顿订制了超过 2000 枚计时表。这些计时表均采用氧化银制作而成，在不同温度环境中均可正常运转，数字和指针均为荧光。表盘和底盖镌刻“陆军工兵部队，美国”

Vacheron Constantin, "Corps of Engineers" pocket watch, chronograph

Geneva (Switzerland), 1918

Silver, enamel dial, back with engraving

Caliber RA 19" 194, chronograph, round, in German silver, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, "swan's neck" micrometric regulator, 20 jewels, time setting by push-piece

In 1918, the American Expeditionary Forces in Bern ordered more than two thousand chronographs from Vacheron Constantin.

These watches were to have the following specifications: To be in

oxidized silver, to be unvarying at different temperatures and to bear the following engraving on their back "Corps of Engineers, U.S.A." Numerals and hands must be luminous and the dial must carry the inscription "Corps of Engineers, U.S.A and Vacheron & Constantin Genève"

diam. 5.3 cm

Vacheron Constantin Heritage Collection

N° 10237



男士腕表

江诗丹顿公司

1921 年

瑞士日内瓦

宽 3.3 厘米

江诗丹顿典藏部藏

N° 11677

◎ 18K 黄金表壳，珐琅表盘，表盘向左偏转 45°；RA 11" 62 “Amérique” 德国银圆形机芯，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及简易调速器，共使用 16 颗宝石轴承

◎ 枕形腕表，表冠位于 11 点位置，是 20 世纪 20 年代制造的小型系列腕表之一。（另有表款在该款腕表基础上将表冠位置移至右手边。）表盘位置便于快速准确读时

Vacheron Constantin, Gentleman's wristwatch

Geneva (Switzerland), 1921

18K yellow gold, enamel dial, dial offset 45° to the left

Caliber RA 11" 62 “Amérique”, round, in German silver, lever escapement, cut bimetallic compensation balance, “Breguet” balance-spring, simple adjustment index, 16 jewels

This cushion-shaped model, with the crown set at 11 o'clock, is part

of a small series manufactured in the 1920s. (A variation of this model with the crown on the right-hand side also exists.) The dial position enables fast and discreet reading of the time

w. 3.3 cm

Vacheron Constantin Heritage Collection

N° 11677



“Driver” 女士腕表

江诗丹顿公司

1939 年

瑞士日内瓦

宽 2.5 厘米

江诗丹顿典藏部藏

N° 10387

◎ 18K 粉红金表壳，镀金表盘，表底盖有雕花；RA 7" 14/12 德国银椭圆形机芯，配备杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑游丝及简易调速器，共使用 17 颗宝石轴承

◎ 该款腕表于 1939 年在苏黎世举行的瑞士国家展览会上亮相

Vacheron Constantin, “Driver”, Lady’s wristwatch

Geneva (Switzerland), 1939

18K pink gold, gilt dial, back with engraving

Caliber RA 7" 14/12, oval-shaped, in German silver, lever escapement, cut bimetallic compensation balance, “Breguet” balance-spring, simple adjustment index, 17 jewels

This model was presented at the Swiss National Exhibition in Zurich, in 1939

w. 2.5 cm

Vacheron Constantin Heritage

Collection

N° 10387



222 系列男士腕表

江诗丹顿公司

1977 年

瑞士日内瓦

宽 3.7 厘米

江诗丹顿典藏部藏

N° 11524

◎ 钢质表壳，海军蓝表盘；12"1/2-1121 黄铜镀金圆形机芯，具有自动日期显示功能，配备杠杆式擒纵系统，“基隆麦克斯”自动补偿摆轮及平游丝，共使用 36 颗宝石轴承

Vacheron Constantin, "222"

gentleman's wristwatch

Geneva (Switzerland), 1977

Steel, dark grey dial

Caliber 12" 1/2-1121, automatic with date, round in gilt brass, lever escapement, "Gyromax" balance,

flat balance-spring, 36 jewels w. 3.7 cm

Vacheron Constantin Heritage Collection

N° 11524



日内瓦：时光之芯
瑞士钟表文化之源

GENEVA AT THE HEART OF TIME
THE ORIGIN OF SWISS WATCHMAKING
CULTURE



|| 与制表业息息相关的艺术品制作工艺是瑞士文化遗产的奠基石之一。在日内瓦，自从让·加尔文颁布关于外在装饰的法令之后，金匠和宝石工艺师将其才华用于钟表制作并参与到工坊协会，从此艺术品制作工艺就与钟表业在日内瓦的工坊协会紧密联系在一起。艺术品制作工艺展现了多种传统技艺，几百年里通过精心阐释、薪火相传。他们的灵感取自孕育他们的历史，并使他们能够跟得上当时的审美潮流。

|| 作为极致美学的同义词，艺术品制作工艺将源自古老的传统制作程序与作为手工技艺延伸的新技术相结合。他们致力于将日用品转化为艺术杰作，这就需要经过工匠之手为作品赋予高贵的气质。在这个特别的领域里，工匠的巧手至关重要。运用古老的工艺，灵巧的手指能够游刃有余地操作，把耐心和注意力倾注到每一处细节里，甚至在最微小的手表机芯的组件上也要实现艺术的完美。

|| 钟表是一种身份的象征，因此它成为结合多种技艺的真正艺术品。这可以从 16 世纪以

|| The artistic crafts are one of the foundations of the Swiss cultural heritage bound up with watchmaking. In Geneva, artistic crafts and horology were closely entwined within Geneva's Fabrique, after Jean Calvin's laws relating to outward adornment obliged goldsmiths and jewellers to turn their talents to watchmaking and to operate in networks. Artistic crafts are a form of expression inherited from multiple skills, elaborated and meticulously handed down over the centuries. The inspiration drawn from their history nurtures them and enables them to keep pace with contemporary aesthetic trends.

|| Synonymous with aesthetic perfection, artistic crafts combine age-old procedures stemming from traditions as well as new technologies acting as an extension of the human hand. They serve to transform utilitarian daily objects into masterpieces: the matter thus transformed acquires an aura of nobility instilled by the work of the artisan. In this particular world, the craftsman's expert hand is of crucial importance. Age-old techniques guide his nimble fingers in mastering matter, devoting patience and concentration to each and every detail and thus achieving artistic perfection in even the tiniest components of a watch movement.

|| The watch, worn as a symbol of prestige, thus becomes an authentic

work of art requiring a combination of multiple skills, as testified by the decorative arts developed from the 16th century onwards to contribute to the ornamentation of a watch: engraving, chasing, *repoussé* metalwork, multi-coloured gold, the setting of stones and pearls, tortoiseshell or horn decors, studding, vernis Martin, guilloché, enamelling, watches lavishly embellished with precious stones, mobile and musical mechanisms, notably including automata and jacks...

来发展的装饰艺术以及由此衍生的下列钟表装饰工艺中得到印证：雕刻、雕花、金属压花工艺、彩金工艺、宝石和珍珠的镶嵌、玳瑁或动物角装饰、钉饰装饰、马丁漆、机刻雕花、珐琅嵌饰。很多钟表还装饰有华丽的宝石、自动机械和音乐装置，特别是自动人偶和人形敲钟锤。

一 雕刻大师与机刻雕花大师

在 16 世纪和 17 世纪，雕刻和雕花工艺师们在手表表盘、表壳的侧面和表盖上创作阿拉伯式蔓藤花纹、风景画、寓言或宗教的场景。他们的灵感来自于巴黎装饰工艺师的图样，这些图样在纽伦堡、布卢瓦和日内瓦等制表重镇中广受欢迎。

到 1716 年，日内瓦的雕刻师行会一共有大约 50 名会员，到 18 世纪末已达到 204 名。

时尚相当青睐雕刻艺术，即使金属压花工艺（一种出现在 18 世纪上半叶的锤揲工艺，特别是在英格兰普遍使用）曾让雕刻工艺相形见绌。流行于 1720 年至 1770 年间的洛可可风就是借鉴了工匠们钟爱的卷涡纹和阿拉伯式蔓藤花纹的图案，这些图案采取手工方式进行凹雕或线雕。

自 1760 年至 18 世纪 90 年代，表壳被饰以各种颜色的金合金，目的是发掘新的装饰主题。雕刻工艺师与珐琅工艺师紧密合作，为彩绘图案刻出轮廓。这种合作自 1775 年起更加密切，雕刻师通过雕刻着丝带、花环、饰带的图案与圆形图案来衬托珐琅装饰。

到 18 世纪后期，出现了一种新的雕刻工艺师门类——机刻雕花工艺师。他们使用所谓“直

1. Master Engraver & Master Guillocheur

In the 16th and 17th centuries, engravers and chasing artists created arabesques, landscapes, allegorical or religious scenes on watch dials, as well as on the side and covers of the cases. They drew inspiration from the printed drawings of Parisian ornamentalists circulating in the horological centres of Nuremberg, Blois and Geneva.

In 1716, Geneva's guild of engravers comprised around 50 members and would reach 204 by the end of the 18th century.

Fashions long remained favourable to the exercise of this art, even though *repoussage* (a kind of hammering technique that emerged in the first half of the 18th century, notably in England) seemed liable to eclipse it. From 1720 to 1770, the *rocaille* style drew upon these artisans' flair for scrolled and arabesque motifs, executed by hand using intaglio or line engraving methods.

From 1760 to the 1790s, cases were adorned with gold alloys in a variety of colours in order to explore new decorative themes. Working in close association with enamellers, the engravers created the frames for the painted motifs entrusted to them by the former. This collaboration was to intensify from 1775 onwards, when enamelled decors began to be highlighted by wide borders engraved with ribbons, garlands, frieze motifs and medallions.

The late 18th century saw the appearance of a new category of engravers, the guillocheurs. Using lathes and so-called “straight-line” machines, they decorated cases with mechanically repeated geometrical motifs. With one hand,

the master craftsman turns a crank which moves the piece to be decorated; with the other he pushes a cradle holding the chisel to engrave fine, even lines onto the chosen metal. Using a combination of guilloché motifs improves the legibility of the dial which may thus feature *clous de Paris* (hobnailing), *grains d'orge* (barleycorn), *rayons de soleil* (sunburst), *gros grains* (coarse-grain) or *panier* (crossweave) patterns.

The powerful geometrical effects achieved by engraving and guilloché, combined with enamelling, were also used in conjunction with *flinqué* enamelling (*rayon de gloire guilloché*).

In the 1820s, chasing artists worked with metal without removing matter, shaping the motifs in relief, by means of doming punches, chasing tools and hammers: a number of cases were also enhanced with coloured gemstones and various gold colours, transformed into appliques, *grènetis* (sequence of raised grains) or *millegrain* settings. In the second half of the 19th century, imposing monograms that were cut out, chased, polished and applied, or simply engraved, were much in favour.

The pounced ornament technique – known in French as *ramolayé* – is similar to bas-relief in sculpture. Line (or copperplate) engraving was originally used in printing and for reproducing historical engravings. When working in relief, the craftsman uses a burin and a graver to cut around the design, which, spared by this delicate process, gradually emerges to the point of taking on its final three-dimensional form. *Joue* slanted-curve etching is another variation used for ornamental engraving in gold and silver. The engraver slants his

line bed”等设备，为表壳装饰重复的几何图案。工艺师用一只手转动曲柄以移动表壳；而另一只手推动固定在支架上的雕刻刀在金属表面上雕刻出精美平滑的线条。使用机刻雕花手法，表盘的模式更加清晰可辨，表盘可以被装饰成巴黎饰钉纹、麦穗饰纹、放射状饰纹、罗缎饰纹或十字交织饰纹等图案。

雕刻工艺与机刻雕花工艺表现出了良好的几何效果，再施以珐琅彩釉，透明珐琅也常配合使用。

在19世纪20年代，雕花工艺师对金属进行加工时，并不去除任何物质，而是使用球形凹纹工艺、螺纹刀具和锤子来塑造图案：许多表壳还装饰了彩色宝石和各种彩金，以及贴花、钉珠饰纹或其他珠形饰纹。到19世纪下半叶，经过剪裁、雕花、抛光与贴花的交织字母图案广受欢迎，即使只是经过简单的雕刻。

锤压浮雕装饰技术在法语中称作“*ramolayé*”，类似于雕塑中的浅浮雕。线形（或铜版）雕刻最初应用于印刷和复制古代雕刻。当创作浮雕时，工匠用镊子和雕刻刀在设计好的图案上雕琢，经过这一精雕细刻的过程，最终剩下的便是三维立体图案。大范围及渐进式斜面蚀刻是金银镂空雕刻的另一种方法。雕刻师倾斜其雕刻刀挖出一条

略宽的沟痕，使被雕刻的部分可以获得最大限度的光亮。为了做到这一点，他必须剔除碎屑，并刻出不同宽度与深度的线条，以凸显出图案或装饰的效果。

雕刻工艺师和机刻雕花工艺师极其丰富多样的作品不仅表现在表壳上，表盘上也处处可见。通过使用转印、绘制或贴附的手法，小时时标呈现的形式多种多样。另外，机芯部分的装饰也并未被忽略。自 16 世纪起，手表的夹板、夹板柱和摆轮夹板都装饰着大量的雕刻图案。19 世纪后期出现的“日内瓦波纹”，成为机芯表桥上醒目的标签。

尽管腕表的日益普及导致雕刻手法的使用率下降，且表壳上只有很小的部分可以用来雕刻，如表圈及表壳中间的部位，但是这一工艺仍然与金匠行业一同留存下来，继续为机芯、表壳和表盘雕出微妙而复杂的纹饰。

chisel to create a wider groove that will give maximum light to the engraving. To do this he chisels away shavings, making different widths and depths of groove to create the scene or decorative effect.

The extreme diversity of the work of engravers and guillocheurs can be observed not only on cases, but also on watch dials. Likewise, whether transferred or painted, added on or applied, hour-markers appeared in an infinite range of forms. Nor was movement decoration neglected, and from the 16th century onwards, the plates, pillars and balance-cocks of watches were abundantly engraved. Côtes de Genève (Geneva stripes), which appeared in the late 19th century, became an instantly recognisable signature appearing on movement bridges.

Even though the increasing popularity of wristwatches led to a decrease in the use of engraving, their cases offering only a limited surface consisting of the bezel or even just the case middle, this profession closely linked to that of goldsmithing survived and continued to adorn movements, cases and dials with subtle and sophisticated decoration.



双层表壳怀表

亚伯拉罕·科隆比

约 1760 年

瑞士日内瓦

高 6.22 厘米，直径 4.65 厘米，

厚 2.4 厘米

日内瓦艺术与历史博物馆藏

H 2004-5

◎该怀表第一层为抛光玫瑰金材质表壳，第二层为压纹黄金表壳，雕刻“维纳斯从埃涅阿斯手中救下海伦”的故事图案，镌刻黄金表盘；内置黄铜镀金框架式机芯，采用冠状轮擒纵系统和芝麻链，后夹板带波浪形银质镶边，银质雕镂和镂空游丝微调装置带垂花饰，银质摆轮夹板，栏柱式夹板柱

Abraham Collomby, Double-case pocket watch

Geneva (Switzerland), ca. 1760

First case in polished pink gold, second case in embossed yellow gold (“Helen saved from Aeneas by Venus”), dial in engraved yellow gold

Movement in gilded brass, crown wheel escapement, fusee chain, rear plate with silver border in wavelets motif, rosette with surround of chased and openwork silver, silver balance-cock, vase-shaped pillars

h. 6.22, diam. 4.65, thk. 2.4 cm

Geneva Museum of Art and History

H 2004-5



玫瑰金嵌宝石怀表

约 1800 年

瑞士日内瓦

高 5.7 厘米，直径 4.3 厘米，

厚 1.65 厘米

日内瓦艺术与历史博物馆藏

M 378

◎该怀表为玫瑰金表壳，镶贴彩金雕刻花卉图案，铜镀金表盘也装饰冲压、雕刻及镶贴彩金花卉图案，玫瑰金表链嵌凸面圆形宝石；内置黄铜和精钢框架式机芯，采用冠状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，精钢平游丝，银质游丝微调装置

Pocket watch

Geneva (Switzerland), ca. 1800

Case in pink gold, appliques in coloured golds, engraved, chased; dial in copper, stamped, engraved, chased and gilded, appliques in multi-coloured golds, chain in pink gold set with cabochons

Movement frame in brass and steel, crown wheel escapement, fusee chain, brass circular balance, flat balance-spring in steel, silver rosette

h. 5.7, diam. 4.3, thk. 1.65 cm

Geneva Museum of Art and History

M 378



怀表

吉拉迪耶·勒艾内

约 1815 年

瑞士日内瓦

高 7.7 厘米，直径 5.65 厘米，

厚 2.3 厘米

日内瓦艺术与历史博物馆藏

N 75

◎该怀表为银质雕花表壳，铜胎珐琅小表盘，表盘周围装饰镀金浮雕及镂空图案；内置黄铜和精钢框架式机芯，采用冕状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，蓝钢平游丝，银质游丝微调装置

Girardier l'Aîné, Pocket watch

Geneva (Switzerland), ca. 1815

Case in engraved silver, cut-out silver case embossed, engraved and gilded (dial surround) small dial in painted enamel on copper

Movement frame in brass and steel, crown wheel escapement, chain fusée, brass circular balance, flat balance spring in blued steel, silver rosette

h. 7.7, diam. 5.65, thk. 2.3 cm

Geneva Museum of Art and History

N 75



雕花怀表

江诗丹顿公司

1780 年

瑞士日内瓦

直径 4.6 厘米

江诗丹顿典藏部藏

N° 10718

◎黄金锤揲雕表壳，银质机刻雕花表盘，中央饰有雕花，17" 黄铜镀金圆形机芯，配备心轴擒纵系统、三臂环摆轮、平游丝、芝麻链发条盒及装饰摆轮夹板，钥匙上链和设定

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1780

Yellow gold, silver dial

Case engraved using the pounced ornament technique, guilloché dial, center engraving

Caliber 17", round, in gilt brass, verge escapement, three-arm annular balance, flat balance-spring, barrel with fusee, decorated balance-cock, key winding and setting

diam. 4.6 cm

Vacheron Constantin Heritage

Collection

N° 10718



· 机芯的雕刻

☒ Engraved Movements



“阿尔卡迪的牧人”怀表

江诗丹顿公司

1923 年

瑞士日内瓦

直径 5 厘米

江诗丹顿典藏部藏

N° 10659

◎黄金和珐琅表壳，珐琅表盘，装饰表圈，微型珐琅彩绘底盖描绘尼古拉·普桑的《阿尔卡迪的牧人》（原作藏于巴黎卢浮宫），内层表背采用镂空工艺雕刻，描绘利奥波德·罗伯特的田园画《收割者到达蓬蒂内沼泽》，以及贝多芬第六交响曲的部分乐谱

◎ 17" 德国银镀铬双角线刻圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及测微调速器，共使用 18 颗宝石轴承

◎日内瓦大师玛丽·戈尔 (1846—1933) 擅长将 18 世纪大师的作品用微绘珐琅的方式表现出来。尽管她的才能在当时未被认可，但是她仍然是 20 世纪初日内瓦画派微绘珐琅的领军人物之一

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1923

Yellow gold, enamel, enamel dial, engraved movement with line engraving of two angels, decorated bezel, case-back adorned with an enameled miniature by Marie Goll, reproducing a painting:

Les Bergers d'Arcadie by Nicolas Poussin (Paris, Musée du Louvre)

Dome engraved using the pounced ornament technique and depicting a pastoral scene *l'Arrivée des moissonneurs dans les marais pontins* by Léopold Robert and some notes from the partition of Beethoven's No.6 symphony Caliber 17", round, in rhodium-plated German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, micrometer adjustment index, 18 jewels

The Genevan artist Marie Goll (1846 - 1933) specialized in enamel

miniatures of paintings by the 18th century masters. Although her talent was unrecognized, she was one of the leading figures of Geneva's school of miniatures in enamels of the early 20th century
diam. 5 cm

Vacheron Constantin Heritage

Collection

N° 10659





镂空怀表

江诗丹顿公司

1953 年

瑞士日内瓦

直径 5.15 厘米

江诗丹顿典藏部藏

N° 11123

○铂金表壳，镶有长形切割蓝宝石，水晶表盘；RA 16" 14/12 Mérimont 12K 粉红金圆形机芯，使用锤揲工艺，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

Vacheron Constantin, Skeleton pocket watch

Geneva (Switzerland), 1953

Platinum, rock crystal, baguette-cut sapphires

Pink gold movement engraved using the pounced ornament technique

Caliber RA 16" 14/12 Mérimont, skeleton, round, in 12K pink gold, lever escapement, cut bimetallic compensation balance, flat balance-

spring, simple adjustment index,

18 jewels

diam. 5.15 cm

Vacheron Constantin Heritage Collection

N° 11123



镂空怀表

奥贝尔（制表师）、超薄钟表公司（制表商）、罗兰·加尚（珠宝工艺师）、布鲁姆和聚利（精雕工艺师）

1997 年

瑞士日内瓦

高 5.8 厘米，直径 4.8 厘米，
厚 0.7 厘米

日内瓦艺术与历史博物馆藏

2010 年由罗兰·加尚捐赠

H 2010-36

◎该怀表为刻花黄金白金表壳，外圈镶嵌钻石和红宝石，表冠镶嵌凸面圆形红宝石，配蓝钢指针；雕花镂空机芯采用黄铜镀金及磨砂精钢材质，配抛光螺丝，使用瑞士杠杆式擒纵系统，螺丝摆轮和蓝钢宝玑上绕游丝

Aubert (watchmaker), La Montre Extra Plate SA (watchmaker), Roland Gaschen (jeweler), Blum et Zullig (engraver), "Skeleton" pocket watch

Geneva (Switzerland), 1997

Case in yellow and white gold, engraved, diamonds, rubies, crown with ruby cabochon, blued steel hands

Engraved skeleton movement

in gilded brass, brushed steels,

polished screws, equidistant "Swiss lever" lever escapement, balance with screws, Breguet overcoil balance-spring in blued steel

h. 5.8, diam. 4.8, thk. 0.7 cm

Geneva Museum of Art and History

H 2010-36, donated by Roland

Gaschen, 2010

• 机刻雕花表壳和表盘

☒ Guilloché Cases and Dials



机刻雕花怀表

朱利安·勒鲁瓦

约 1750 年

法国巴黎

高 6.07 厘米，直径 4.69 厘米，

厚 2.42 厘米

日内瓦艺术与历史博物馆藏

M 965

◎该怀表为机刻雕花金质表壳，中央嵌玫瑰型切割钻石，铜胎珐琅表盘和金质指针；内置框架式机芯，采用冕状轮擒纵系统，芝麻链，圆柱蜗轮棘爪，圆形平衡摆轮，精钢平游丝，银质游丝微调装置

Julien Le Roy, Pocket watch

Paris (France), ca. 1750

Gold case, guilloché, set with a rose-cut diamond at its center; dial in painted enamel on copper, gold hands

Movement frame, (??) crown wheel escapement, chain fusée, worm-gear ratchet, circular balance, flat balance spring in blued steel, silver rosette

h. 6.07, diam. 4.69, thk. 2.42 cm

Geneva Museum of Art and History

M 965





二问报时怀表

江诗丹顿公司

1817 年

瑞士日内瓦

直径 5.53 厘米

江诗丹顿典藏部藏

N° 10436

◎ 黄金表壳，机刻雕花银质表盘。
22" 黄铜镀金圆形机芯，具有二问报时功能，配备心轴擒纵系统、三臂环摆轮、平游丝、芝麻链发条盒及装饰摆轮夹板，使用钥匙上链和设定

Vacheron Constantin, Pocket watch, Quarter-repeater

Geneva (Switzerland), 1817

Yellow gold, silver guilloché dial
Caliber 22" quarter-repeater, round, in gilt brass, verge escapement, three-arm annular balance, flat balance-spring, barrel with fusee, decorated balance-cock, key winding and setting
diam. 5.53 cm

Vacheron Constantin Heritage Collection

N° 10436



子弹式珐琅彩旋转座钟

日内瓦钟表公司

约 1925 年

瑞士日内瓦

高 13 厘米，直径 5 厘米

日内瓦艺术与历史博物馆藏

H 2005-10

◎该座钟为子弹形圆筒钟壳，雕花银胎蓝色珐琅，内置罗马数字旋转时标；采用镀铑 9 法分机芯，装饰变形条纹，杠杆式擒纵系统，截断式双金属平衡摆轮，蓝钢宝玑上绕游丝

Geneva Clock Co, Desk clock with turning dial

Geneva (Switzerland), ca. 1925

Cylindrical shell-shaped case, blue enamel on guilloché silver

9 ligne movement, rhodiumized, decor with false sides, Swiss lever escapement, bimetallic cut balance, Breguet overcoil in blued steel
h. 13, diam. 5 cm

Geneva Museum of Art and History
H 2005-10



女士带链吊坠表

江诗丹顿公司

1910 年

瑞士日内瓦

边长 5.2 厘米 × 4.2 厘米

江诗丹顿典藏部藏

N° 10184

◎铂金、黄金和珐琅表壳，银质表盘，镶有古典切割钻石、8/8 式切割钻石和凸面祖母绿，机刻雕花表背覆有半透明和不透明珐琅，使用珠镶钻石和封闭式镶嵌钻石工艺，带有种子图案。RA 10" 15/12 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式摆轮、平游丝和简易调校刻度，共使用 16 颗宝石轴承

Vacheron Constantin, Lady's pendant watch with chain

Geneva (Switzerland), 1910

Platinum, yellow gold, enamel, silver dial, old-cut diamonds, single-cut diamonds, cabochon emerald, case with translucent and opaque enamel on gold guilloché back, bead-set diamonds, collet-set diamonds, millegrain pattern
Caliber RA 10" 15/12, round, in German silver, lever escapement, cut bimetallic compensation balance, flat balance spring, simple adjustment index, 16 jewels
dimensions 5.2 cm × 4.2 cm
Vacheron Constantin Heritage Collection
N° 10184



二 珠宝镶嵌大师

金匠和珠宝匠是生活在一片令人眼花缭乱的贵金属和宝石世界里的发明家和艺术家。他们塑造金属，并用宝石使金属增色，创造出独一无二、广受欢迎的作品。

日内瓦金匠自 1566 年起建立了自己的行会，他们成为向本地制表师提供表壳的首批供货商。自 1625 年起，玉石工匠们（硬石料、紫水晶、玛瑙或者透明水晶的切割工匠）以及宝石的切割工匠被吸收进金匠的行会并遵守相同的规章。劳动分工在 1660 年更加明晰，之后，表壳装配工和雕刻工艺师分别在 1698 年和 1716 年都成立了自己的行会。在他们的制作工坊里，珍贵材料很快取代了最初表壳所使用的铜镀金或黄铜，各种不同颜色的金（黄色、白色、绿色或粉色）和银大大提升了钟表光亮度。

腰带链饰是 17 世纪最受喜爱的珠宝制品，其上镶有珍贵的宝石，并且激发出雕刻师、珐琅工艺师还有金匠们的天才创意。到了 19 世纪，腰带链饰转化成了胸针或用于悬挂华丽超薄表的链饰。

时装表的流行兴起于 17 世纪早期，之后被

2.Master Jeweller – Master Gemsetter

Goldsmiths and jewellers, who are creators and artists, work in a dazzling world of precious metals and gemstones. They shape the metals, enhancing them with gems to create unique and sought-after pieces.

Organised into a guild from 1566 onwards, the Geneva goldsmiths were the first suppliers of watch cases used by indigenous watchmakers. From 1625 onwards, the lapidaries (cutters of hard stones, amethysts, agate or rock crystal) and diamantaires (precious gemstone cutters) were admitted into the goldsmiths' guild and governed by common regulations. The division of labour was accentuated in 1660, when case assemblers and engravers formed their own guilds in 1698 and 1716 respectively. In their workshops, precious materials soon replaced the primitive cases composed of gilded copper or brass: gold in various colours (yellow, white, green or pink) and silver greatly enhanced the radiance of the timepieces.

Châtelaines, among the favourite items of jewellery in the 17th century, were set with precious stones and stimulated the creative talents of the chasing artists, engravers, enamellists and goldsmiths. In the 19th century, they were transformed into brooches or suspended from ornate ultra-thin watch chains.

The fashion for fancy watches that took hold in the 1600s gave way to round watches in the 1690s before re-emerging again in the 1810s: this return to favour of watches shaped like fruits, insects, daily objects or musical instruments corresponded to the considerable importance acquired by

jewellery within Geneva's Fabrique: enamelling, chasing and gem-setting were closely associated in these works.

In 1805, Geneva had no less than 50 jewellery workshops employing around 300 workers. The expertise of this particular profession exercised by some of the *cabinotiers* in the *Fabrique* was in great demand among watchmakers across the entire Jura Arc region and featured on a wide variety of watches worn as pendants, brooches, rings or bracelets.

During this period, precious or semi-precious stones, often as half-beads, were used to accentuate the curve of watch bezels, or to reinforce the decorative effect of a floral motif. These tones also adorned the chains, necklaces and brooches that held feminine watches.

In watchmaking, setting requires faultless attention to detail. Working with very fine layers of gold, the craftsman must take into account constraints linked to the watches' functionality as well as respecting the stones and metal. He must use his traditional tools with both strength and restraint so as not to risk a dent, a chip or worse still a broken stone. Once the piece is drawn and painted in gouache, he visualises the completed piece of jewellery to which his nimble fingers will give shape. As a specialist in gemstones (their cut, hardness and the way they reflect light), he will unfailingly choose the right setting techniques best suited to the aesthetic of the precious objects. Diamonds, rubies, sapphires, emeralds, turquoises, pearls, onyx, garnets and many other stones are used to adorn the curve of the bezel, or as part of an enamel painted miniature, or an engraved or finely embossed decor. Precious

17 世纪 90 年代生产的圆形表所取代，在 1810 年至 1819 年再度流行：这次回归更注重那些水果、昆虫、日常用品或乐器造型的手表，且珐琅、雕花、宝石镶嵌等工艺也都和这些作品紧密联系在一起，这点与珠宝在日内瓦工坊协会里的重要地位相符。

在 1805 年，日内瓦拥有不少于 50 家的珠宝工坊，雇用了约 300 个工匠。因为一些工坊协会的“阁楼工匠”具备这门特殊行业的专业知识，所以在整个汝拉山区的制表工匠里特别受欢迎，他们拿手的是制作诸如吊坠、胸针、戒指或手镯等形状的各色表。

这个时期，各种珍贵宝石或半宝石，通常切为半球状，被用来装饰表圈以增加其曲度感，或用来增强以花卉图案为主题的装饰效果。这种风格也用于装饰链、项饰以及带有女表的胸针。

在制表这门行业里，镶嵌工艺对所有细节都要完美无缺。在黄金表层上加工时，一个工匠既要考虑到表的功能限制，又要想到宝石和金属的局限。在使用那些传统工具时，既要保证力道，又不能用力过猛，以免出现凹痕、碎屑甚至更糟糕的宝石破碎的情况。一旦他用水粉把作品的小样绘制出来，就可以想象出即将出自他手的那件

珠宝饰品的样子。作为宝石方面的行家（熟谙其切割法、硬度及它们反光的方式），他会针对这些珍宝的审美需求去忠实地选取最合适的镶嵌手法。将钻石、红宝石、蓝宝石、祖母绿、绿松石、珍珠、缟玛瑙、石榴石以及许多其他宝石用在表圈上以增加其曲度感，或作为珐琅微绘、雕刻或精细浮雕的装饰。珍贵宝石和半宝石不仅突出了手表的轮廓，而且它们本身也是装饰。

腕表对于珐琅工艺领域来说多少产生了一些负面效果，但是它却促进了珠宝领域中新装饰方面的研究以及技术进步。女性被铂金和各种彩金造就的优雅珠宝腕表所征服。由于这些手表的风靡，钟表制造商们将注意力从带有方形或长方形机芯的手表架构上转移到小而纤巧的圆形或椭圆形表的制作上。大约在 1900 年至 1920 年间，宝石再一次得到了人们的青睐，人们将它们使用在上有半透明珐琅的机刻雕花装饰背景中，使其光泽度进一步增加。怀表制造商们的商品目录里再度出现镶嵌有缟玛瑙和玛瑙的怀表，而且他们还供应装饰着浮雕珐琅画的怀表。

从这个时期起，铂金被用来制作极为精细的装饰以突出钻石的闪亮。一些贵金属表壳成为衬托宝石的背景。20 世纪 40 年代黄金和玫瑰金越

and semi-precious stones not only highlight a watch's contour, but also serve as a decoration in their own right.

Contrary to its somewhat negative impact on enamelling, wristwatches stimulated new decorative research in the field of jewellery, as well as technical advances. Women were won over by graceful jewellery watches made in platinum and various gold colours. With these watches, horologists moved the construction of their square and rectangular movements in the direction of small and slender round or oval watches. Around 1900 to 1920, stones came into their own, further enhancing the radiance of the translucent enamels applied to guilloché backgrounds. Onyx and agate reappeared in the catalogue of pocket watch manufacturers, who also offered cameo-style enamel paintings.

From this period onwards, platinum was used to create extremely fine decors highlighting the sparkle of diamonds. Some precious metal cases became merely a discreet backdrop for the stones adorning them. The 1940s witnessed an increasing regard for yellow and pink gold, sculpted and sometimes associated with coloured gemstones. While steel dared to associate with diamonds and hard stones found their way onto 1970s watch dials, titanium and carbon have now established themselves as the latest on-trend materials.

来越受重视，它们有的用于雕刻，有的与色彩斑斓的宝石一起使用。在 20 世纪 70 年代的表盘上，我们发现钢材被大胆地用来与钻石及硬度大的宝石相搭配。与此同时，钛和碳材料作为两种时新的材质也开始使用。

· 早期作品

· First Creations



贝壳形表

让·鲁索

约 1640 年

瑞士日内瓦

高 4.5 厘米，直径 3.6 厘米，

厚 1.85 厘米

日内瓦艺术与历史博物馆藏

H 2003-98

◎该表为刻花银镀金表壳，刻花黄铜表盘；蓝钢单一指针；内置黄铜镀金和精钢框架式机芯，采用冕状轮擒纵系统，栏柱式夹板柱，摆轮夹板，精钢平衡摆轮

Jean [Js] Rousseau, Shell watch

Geneva (Switzerland), ca.1640

Gilded case in engraved silver, engraved brass, single blued steel hand

Movement frame in gilded brass and steel, detent escapement, vase-shaped pillars, simple balance-cock, steel balance spring

h. 4.5, diam. 3.6, thk.1.85 cm

Geneva Museum of Art and History

H 2003-98





盒装首饰套装

让-弗朗索瓦·博特公司

约 1840 年

瑞士日内瓦

外盒：高 24.5 厘米，宽 35 厘米，
厚 4 厘米

日内瓦艺术与历史博物馆藏

H 99-10 至 H 99-14

◎首饰套装包括一枚表，一条长项链，
一枚赛维涅胸针，一对米拉诺耳环和
一个皮带扣，均使用金胎内填珐琅工
艺制作

Jean-François Bautte & Cie, Set in its box

Geneva (Switzerland), ca. 1840

Set composed of a watch, a long
chain, a "Sevigné" brooch, a pair of
"milanos" earrings and a belt buckle

Champlevé enamel on gold

Box: h. 24.5, w. 35, thk. 4 cm

Geneva Museum of Art and History

H 99-10 to H 99-14



八角形吊坠表

传为丹尼尔·米萨尔所制

约 1680 年

瑞士日内瓦

高 6.4 厘米，宽 2.75 厘米

厚 2.6 厘米

日内瓦艺术与历史博物馆藏

1986 年爱德丽·昂热尔-米萨尔于日内瓦捐赠

AD 6025

◎该表为八角形切割水晶石表壳，雕花黄铜镀金镶包，雕花银表盘，上篆刻内填釉面，中央嵌黄铜镀金镌刻建筑图案圆盘，配精钢单一指针；采用冕状轮擒纵系统机芯，肠线传动芝麻链，栏柱式夹板柱

Daniel Mussard (attributed),

Octagonal pendant watch

Geneva (Switzerland), ca. 1680

Case in carved rock crystal,

engraved and gilded brass;

engraved silver dial, champlevé

varnish, engraved and gilded brass,

single steel hand

Crown wheel escapement, gut-

string fusée, vase-shaped pillars

h. 6.4, w. 2.75, thk. 2.6 cm

Geneva Museum of Art and History

AD 6025, donated by Idelette Engel-

Mussard, Geneva, 1986

怀表及其链饰

亚伯拉罕·科隆比
约 1745 年
瑞士日内瓦和法国巴黎
高 5.65 厘米，直径 4.45 厘米，
厚 1.95 厘米；链饰：高 10.55 厘米
日内瓦艺术与历史博物馆藏
M 980

◎该怀表为镌刻雕镂金质表壳，上珐琅微绘希腊神话《阿塔兰忒和墨勒阿格的狩猎》（或《卡吕冬的野猪》），珐琅表盘，银托镶玫瑰形钻石；银镀金雕花吊饰有阴文水晶印章、香料盒、奖章和怀表上链钥匙；内置框架式机芯，栏柱式夹板柱，采用冕状轮擒纵系统，芝麻链，精钢圆形平衡摆轮和平游丝，抛光精钢防转锁，银质游丝微调装置

Abraham Collomby or Colomby,
Pocket watch with long chain and charms

Geneva (Switzerland) and Paris (France), ca.1745
Engraved gold case, chased, enamel miniature (*Hunt of Atalante and Meleager* or *The Wild Boar of Calydon*); enamel dial, roses of diamonds set into the silver; charms with pompons, engraved and gilded, intaglio engraved seal in rock crystal cachet, vinaigrette, medallion and watch key.
Movement frame, vase-shaped pillars, crown wheel escapement, chain fusée, steel circular balance.

flat steel balance spring, polished steel end stone lock, silver rosette
h. 5.65, diam. 4.45, thk.1.95 cm
Châtelaine: h. 10.55 cm
Geneva Museum of Art and History
M 980



配链怀表

约 1820 年
瑞士日内瓦
高 5.6 厘米，直径 4.3 厘米，
厚 1.7 厘米
日内瓦艺术与历史博物馆藏
M 871

◎该怀表为冲压雕花玫瑰金表壳，封闭式镶嵌粉色托帕石，镶贴雕花黄金表圈，配雕花金质表盘；内置黄铜和精钢框架式机芯，采用机轴擒纵系统，芝麻链，黄铜圆形平衡摆轮，蓝钢平游丝，银质快慢针

Pocket watch with its matching chain

Geneva (Switzerland), ca. 1820
Case in pink gold, embossed, engraved and chased, pink topazes bezel-set in yellow gold mountings in appliques; bezel with chased appliques in yellow gold; dial in gold guilloché
Movement frame in brass and steel, verge escapement, chain fusée, circular brass balance, balance spring in blued steel, silver index assembly
h. 5.6, diam. 4.3, thk. 1.7 cm
Geneva Museum of Art and History
M 871





隐藏式超薄手镯腕表

博特（让-弗朗索瓦·博特公司）

约 1835 年

瑞士日内瓦

高 6.93 厘米，长 6.69 厘米，宽 3.83 厘米；腕表：高 3.12 厘米，直径 2.31 厘米，厚 0.59 厘米

日内瓦艺术与历史博物馆藏

H 2003-146

◎该手镯表为镌刻和抛光黄金表壳，翻盖上装饰机雕金胎内填半透明珐琅，精致纹理填白色珐琅表盘。为硬手镯，带腕表暗盒，镂空翻盖，铰链小表镜为镌刻黄金，装饰内填珐琅；装饰串珠和古式切割钻石。采用镀金铜质机芯，工字轮擒纵系统，镀金三臂平衡摆轮，平游丝

Bautte (Jean-François Bautte & Cie), Bracelet concealing an extra-thin watch

Geneva (Switzerland), ca. 1835

Yellow gold case, engraved and polished, white opaque and translucent champlevé enamel on engraved gold; dial in white enamel

Rigid bracelet with housing for the watch, openwork cover and hinged small security bezel: all in engraved yellow gold enhanced with champlevé enamels; cover in translucent enamel on gold guilloché, fine lines painted in white enamel, threaded pearls and ancient-cut diamonds

Gilded brass movement, cylinder escapement, gilded three-arm balance, flat balance spring
h. 6.93, l. 6.69, w. 3.83 cm;
watch: h. 3.12, diam. 2.31, thk. 0.59 cm
Geneva Museum of Art and History
H 2003-146



嵌珍珠怀表

约 1820—1840 年

瑞士日内瓦

直径 0.45 厘米

日内瓦艺术与历史博物馆藏

H 2005-45

◎ 该怀表为金质表壳铺镶半球形珍珠，雕花表盘，珍珠刻度和金质指针；采用镀金铜质机芯，工字轮擒纵系统，三臂平衡摆轮，平游丝

Pocket watch paved with half pearls

Geneva (Switzerland), ca. 1820 -1840

Gold case; engraved metal dial, markers set with pearls, gold hands

Gilded brass movement, cylinder

escapement, gilded three-arm

balance, flat balance spring

diam. 0.45 cm

Geneva Museum of Art and History

H 2005-45



女士腕表

江诗丹顿公司

1889 年

瑞士日内瓦

7 厘米 × 6 厘米

江诗丹顿典藏部藏

N° 10531

◎黄金和银质表壳，镶有玫瑰型切割钻石，珐琅表盘，表壳采用锤揲工艺雕刻，表带装饰两名双翼女神浮雕，钻石使用爪镶工艺；9" R “circular” 黄铜镀金圆形机芯，配备工字轮擒纵系统、三臂环摆轮及平游丝，共使用 10 颗宝石轴承，使用旋转表圈上链和设定。19 世纪晚期非常罕见的腕表样式，首次成系列出品

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1889

Yellow gold, silver, rose-cut

diamonds, enamel dial, case

engraved using the pounced

ornament technique, figures in relief

depicting two winged goddesses,

claw-set diamonds

Caliber 9" R “circular”, round, in gilt

brass, cylinder escapement, three-

arm annular balance, flat balance-

spring, 10 jewels, winding and

setting by turning the bezel

A very rare wristwatch model of the

late 19th century and the first to be

produced in small series

dimensions 7 cm × 6 cm

Vacheron Constantin Heritage

Collection

N° 10531



女士胸针表
江诗丹顿公司

1901 年
瑞士日内瓦
直径 3 厘米
江诗丹顿典藏部藏
N° 10187

◎ 18K 黄金和珐琅表壳，镶有玫瑰型切割钻石，表壳使用锤揲工艺、浮雕贴花和珠镶钻石工艺，珐琅表盘。RA 10"78 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式摆轮、平游丝及简易调速器，共使用 16 颗宝石轴承
◎ 使用里特纳公司日内瓦工坊的新艺术风格装饰手法，在珐琅花朵上使用的天然色彩

Vacheron Constantin, Lady's brooch watch
Geneva (Switzerland), 1901
18K yellow gold, enamel, rose-cut diamonds, enamel dial, case engraved using the pounced ornament technique, applique in relief, bead-set diamonds
Caliber RA 10"78, round, in German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 16 jewels
Art nouveau decoration by Genevan workshop of Rittenor and Co. The

natural colours used for the enamel flowers are typical of the new art trend
diam. 3 cm
Vacheron Constantin Heritage Collection
N° 10187



· 铂金和钻石

· Platinum and Diamonds



女士腕表

江诗丹顿公司

1916 年

瑞士日内瓦

6.5 厘米 × 6 厘米

江诗丹顿典藏部藏

N° 10939

◎铂金镂雕和雕花表壳，镶有明亮式切割钻石，使用珠镶钻石工艺，带有种子式装饰，银质表盘。RA 6" 德国银弯曲长形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

◎原为印度布宾德拉·辛格爵士，即帕蒂亚拉拿邦大公收藏

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1916

Platinum, brilliant-cut diamonds, silvered dial, openworked and engraved case, bead-set diamonds, millegrain decoration

Caliber RA 6", curved baguette-shaped, in German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 18 jewels

Formerly part of the collection of Sir Bhupindra Singh, Maharajah of Patiala

dimensions 6.5 cm × 6 cm

Vacheron Constantin Heritage

Collection

N° 10939





女士吊坠表

江诗丹顿公司

1919 年

瑞士日内瓦

4.6 厘米 × 2.8 厘米

江诗丹顿典藏部藏

N° 10175

◎铂金表壳，镶有明亮式切割钻石、玫瑰型切割钻石、珠镶钻石及种子式装饰，银质表盘，附有皮绳。RA 5" 黄铜镀金圆形机芯，配备横杆擒纵系统、双金属截断式摆轮、平游丝及简易调速器，共使用 15 颗宝石轴承

◎威尔海姆·A. 博林特别定制的表，他是为俄国和瑞典王室服务的主要珠宝商

Vacheron Constantin, Lady's pendant watch

Geneva (Switzerland), 1919

Platinum, brilliant-cut diamonds, rose-cut diamonds, leather cord, silvered dial bead-set diamonds, millegrain decoration

Caliber RA 5", round, in gilt brass, lateral lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 15 jewels, winding and setting by turning the bezel

Special order for Wilhelm A. Bolin,

Master Jeweler at the Russian and Swedish courts

dimensions 4.6 cm × 2.8 cm

Vacheron Constantin Heritage Collection

N° 10175





胸针表

尼通

约 1925 年

瑞士日内瓦

高 6.2 厘米，宽 3.35 厘米，
厚 0.8 厘米

日内瓦艺术与历史博物馆藏

AD 2507

◎该表为铂金镶钻表壳和胸针，三层玻璃表盘，两层镌刻浅浮雕，蓝钢指针；内置造型机芯，采用杠杆式擒纵系统，双金属螺丝平衡摆轮，蓝钢宝玑上绕游丝

Niton, brooch watch

Geneva (Switzerland), ca. 1925

Case in platinum with diamonds,
matching brooch; dial with
three glasses, two with bas-relief
engraving, blued steel hands

Shaped movement with lever
escapement, bimetallic balance with
screws, Breguet overcoil balance
spring in blued steel

h. 6.2, w. 3.35, thk. 0.8 cm

Geneva Museum of Art and History

AD 2507



胸针表

高路云公司（美国）

约 1925 年

瑞士比尔和日内瓦

高 7.58 厘米，宽 2.52 厘米，

厚 0.88 厘米

日内瓦艺术与历史博物馆藏

H 2007-19

◎该表为铂金表壳，镶嵌天然蓝宝石、合成蓝宝石和钻石，银质表盘，表冠镶嵌凸圆形蓝宝石；配备镍钢机芯，装饰变形条纹，采用直线杠杆式擒纵系统，截断式双金属平衡摆轮，宝玑上绕游丝

Gruen Watch Co. (USA), Brooch watch

Bienne and Genève (Switzerland), ca. 1925

Platinum case, natural sapphires, synthetic sapphires and diamonds, silver dial, crown with sapphire cabochon

Movement in nickel steel, *fausses côtes* decoration, straight-line lever escapement, bimetallic cut balance, Breguet overcoil balance spring

h. 7.58, w. 2.52, thk. 0.88 cm

Geneva Museum of Art and History

H 2007-19



怀表

爱德华·科恩

约 1930 年

瑞士日内瓦

高 5.5 厘米，直径 4.33 厘米，

厚 0.73 厘米

日内瓦艺术与历史博物馆藏

H 2006-117

◎该怀表为铂金表壳，镶钻白金时标和指针；内置精钢桥架式机芯，采用杠杆式擒纵系统，未切削双金属平衡摆轮，宝玑上绕游丝，17 颗红宝石轴承

Edward Koehn, Pocket watch

Geneva (Switzerland), ca. 1930

Platinum case, markers and hands

in white gold set with diamonds

Movement with steel bridges,

lever escapement, bimetallic uncut

balance, Breguet overcoil balance

spring, 17 jewels

h. 5.5, diam. 4.33, thk. 0.73 cm

Geneva Museum of Art and History

H 2006-117





女士腕表

江诗丹顿公司

1917 年

瑞士日内瓦

2 厘米 × 1.8 厘米

江诗丹顿典藏部藏

N° 10174

◎铂金表壳，镶有祖母绿、明亮式切割钻石和 8/8 式切割钻石，使用封闭式镶嵌雕刻祖母绿、爪镶钻石及珠镶钻石工艺，带有种子式装饰，银质表盘。RA 6" 12/12 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1917

Platinum, emerald, brilliant-cut diamonds, single-cut diamonds, silvered dial, collet-set engraved emerald, claw-set diamonds, bead-set diamonds, millegrain decoration
Caliber RA 6" 12/12, round, in German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 18 jewels
dimensions 2 cm × 1.8 cm
Vacheron Constantin Heritage Collection
N° 10174





女士腕表

江诗丹顿公司

1916 年

瑞士日内瓦

5.2 厘米 × 3.2 厘米

江诗丹顿典藏部藏

N° 11143

◎铂金透雕和雕花表壳，镶有缟玛瑙和 8/8 式切割钻石，使用珠镶钻石工艺，浮雕图案描绘“诱惑”的含义，银质表盘。RA 7" XXI 14/12 德国银镀铬圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 17 颗宝石轴承

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1916

Platinum, onyx cameo, single-cut diamonds, silvered dial openworked and engraved case, bead-set diamonds, scene representing the temptation

Caliber RA 7" XXI 14/12, round, in rhodium-plated German silver, lever escapement, cut bimetallic compensation balance, flat balance-

spring, simple adjustment index, 17 jewels
dimensions 5.2 cm × 3.2 cm
Vacheron Constantin Heritage Collection
N° 11143



女士腕表

江诗丹顿公司

1916 年

瑞士日内瓦

2.1 厘米 × 0.7 厘米

江诗丹顿典藏部藏

N° 11506

○ 铂金和钻石表壳，银质表盘，附有缎带。RA 8" 15/12 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1916

Platinum, diamonds, silvered dial, ribbon strap

Caliber RA 8" 15/12, round, in rhodium plated German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 18 jewels

dimensions 2.1 cm × 0.7 cm

Vacheron Constantin Heritage Collection

N° 11506

· 装饰风艺术

· Art Deco



“Hermétique” 怀表

亨利·布朗克

约 1925 年

瑞士日内瓦

高 5.23 厘米，宽 3.78 厘米

日内瓦艺术与历史博物馆藏

AD 2655

◎该怀表为银镀金珐琅表壳；桥架式圆形机芯，杠杆式擒纵系统，双金属螺丝平衡摆轮，蓝钢平游丝

Henri Blanc, “Hermétique” pocket watch

Geneva (Switzerland), ca.1925

Gilded silver case with enamel

Circular movement with bridges, lever escapement, bimetallic balance with screws, flat balance spring in blued steel

h. 5.23, w. 3.78 cm

Geneva Museum of Art and History

AD 2655



埃及风格座钟

杰克-桂利穆兄弟

1925 年

瑞士日内瓦

高 12 厘米，宽 8 厘米，深 0.9 厘米

日内瓦艺术与历史博物馆藏

AD 4449

◎该座钟为银镀金钟壳，装饰几何螺旋线和埃及面具，正面装饰一颗切面海蓝宝石，内填珐琅，镀金金属钟盘，风格化阿拉伯数字时标；内置“8 天”动力机芯，采用杠杆式擒纵系统，精钢游丝；机芯以一块镀金金属板固定，并可置于托架之上。边缘带所有者的标记“JGF”

Jacot-Guillarmod Frères, Table clock “à l’Egyptienne”

Geneva (Switzerland), 1925

Case in gilded silver, decor of geometric spirals and an Egyptian mask, set with faceted aquamarine on front, champlevé enamel, gilt metal dial, stylized Arabic numerals “8-day” movement, lever escapement, steel balance spring, movement held in a frame fitted to a gilded metal plate

“JGF” maker’s mark on the edge

h. 12, w. 8, d. 0.9 cm

Geneva Museum of Art and History

AD 4449



小挂钟

伊姆霍夫

约 1930 年

瑞士拉绍德封

高 19.7 厘米，直径 15.5 厘米，

厚 3 厘米

日内瓦艺术与历史博物馆藏

AD 6316

◎该挂钟为黑色大理石和镀金黄铜圆形钟壳，带挂圈，机刻雕花珐琅钟盘，切削珐琅黄铜指针，“8天”动力机芯，杠杆式擒纵系统，精钢游丝

Imhof, Small hanging clock

La Chaux-de-Fonds (Switzerland),
ca. 1930

Round case in black marble and
gilded brass with hanging ring;
guilloché and enamel dial, enameled
cut-out brass hands; “8-day”
movement, lever escapement, steel
balance spring

h. 19.7, diam. 15.5, thk. 3 cm

Geneva Museum of Art and History
AD 6316



座钟

欧米茄公司

约 1925 年

瑞士比尔

高 11 厘米，宽 10.5 厘米，厚 2 厘米

日内瓦艺术与历史博物馆藏

AD 8113

◎该座钟为铜镀金掐丝珐琅钟壳；内置“8天”动力机制，杠杆式擒纵系统，精钢游丝

Omega, Table clock

Bienne (Switzerland), ca. 1925

Case in gilded copper and cloisonné enamel

“8-day” mechanism, lever

escapement, steel balance spring

h. 11, w. 10.5, thk. 2 cm

Geneva Museum of Art and History

AD 8113



8 天座钟

江诗丹顿公司

1926 年

瑞士日内瓦

9.2 厘米 × 3 厘米 × 8 厘米

江诗丹顿典藏部藏

N° 10547

◎黄铜、白金和漆面表壳，表盘镶有玛瑙、青金石、绿松石、软玉、蛋白石和玫瑰型切割钻石。RA 19" 黄铜镀银圆形机芯，具有 8 天动力储存和星座时标功能，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、宝玑游丝及简易调速器，共使用了 17 颗宝石轴承

Vacheron Constantin, Desk clock

8 days

Geneva (Switzerland), 1926

Brass, white gold, lacquer, agate, lapis lazuli, turquoises, nephrite, opals, rose-cut diamonds

Caliber RA 19" - 8 days, Astral, round, in rhodium-plated brass, lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, simple adjustment index, 17 jewels

dimensions 9.2 cm × 3 cm × 8 cm

Vacheron Constantin Heritage Collection

N° 10547



男士腕表

江诗丹顿公司

1979 年

瑞士日内瓦

3 厘米 × 2.5 厘米

江诗丹顿典藏部藏

N° 10150

○银镀金表壳，镶有祖母绿形切割钻石。该腕表是 Kallista（在希腊语中是“完美无瑕”的意思）腕表的复制品。这款独一无二的作品由法国艺术家雷蒙德·莫列蒂（1931—2005）设计。原件镶有 118 颗无瑕 D 级的祖母绿形切割钻石，共计 130 克拉。表带由重达 1 公斤的黄金打造而成

Vacheron Constantin, Gentleman's wristwatch

Geneva (Switzerland), 1979

Silver-gilt, emerald-cut zircons

Replica of the wristwatch named

Kallista, meaning “the most

beautiful” in Greek. This unique

piece was designed by the French

artist Raymond Moretti (1931-2005).

The original is set with 118 flawless

D color emerald-cut diamonds

totaling 130 carats. The frame was

crafted from a gold ingot weighing

1 kg

dimensions 3 cm × 2.5 cm

Vacheron Constantin Heritage
Collection

N° 10150



女士腕表

江诗丹顿公司

1953 年

瑞士日内瓦

27 厘米 × 4.05 厘米

江诗丹顿典藏部藏

N° 10195

◎ 18K 黄金表带，镶有圆形切割红宝石、明亮式切割钻石和 8/8 式切割钻石，使用齐顶镶红宝石、齐顶镶钻石、珠镶钻石工艺，银质表盘。8" - 153 黄铜镀铑圆形机芯，配备铍合金摆轮、宝玑游丝及简易调速器，共使用了 17 颗宝石轴承

Vacheron Constantin, Lady's wristwatch

Geneva (Switzerland), 1953

18K yellow gold, circular-cut rubies, brilliant-cut diamonds, single-cut diamonds, silvered dial, flush-set rubies, flush-set diamonds, bead-set diamonds

Caliber 8" - 153, round, in rhodium-plated brass, lateral lever escapement, beryllium balance, "Breguet" balance-spring, simple adjustment index, 17 jewels

dimensions 27 × 4.05 cm

Vacheron Constantin Heritage

Collection

N° 10195



三 表壳制作大师

从 17 世纪开始，表壳工艺师们就致力于使用表壳来保护表内机械。他们将钟表的各部分组装在一起，并将表壳中间部分、表圈和表背提前做好，保证它们与机芯的大小完全一致。

对于早期机芯，除了少数表壳是用水晶或宝石（玛瑙、紫晶）做成以外，多数表壳是用金属（铜、黄铜、金和银）制成的。

尽管如此，表壳制作师也会使用诸如皮革、玳瑁、鲨鱼皮、兽角、象牙和木材等材料制作单层、双层乃至三层表壳。为了服务于其功能，钟表的“外壳”不仅要求坚固，还要反映时代的流行审美风格。

玳瑁的使用曾盛行于 17 世纪晚期和 18 世纪下半叶，在 19 世纪早期和晚期又回归到人们的视野。

外层表壳也用琥珀、各种木材、鸡血石、兽角和象牙等制成。这些不同寻常的材料赋予了钟表鲜明的个性，使它们与那些用金属制成或装饰有珐琅、镶有珠宝的钟表相比显得卓尔不群。

到了 20 世纪早期，玛瑙、青金石等硬石的使用，则让表壳的材质范围进一步扩大。后来在 20 世纪 70 年代，这些石材亦被用来制作腕表的表盘。

3.Master Casemaker

Right from the start of the 17th century, case assemblers devoted their attention to the part of the watch intended to protect and clothe the mechanism. They assembled the parts of the watch, preparing the case middle, the bezel and the back in such a way as to fit the movement to the exact size.

Aside from cases made of rock crystal or stones (agate, amethyst) chosen to house certain early movements, most watch cases were made of metal (copper, brass, gold and silver).

Nonetheless, case assemblers also used materials such as leather, tortoiseshell, shagreen, horn, ivory and wood to craft single, double or triple cases. In order to serve its function, the “sheath” of a timepiece had to be not only sturdy, but also able to receive an aesthetic finish corresponding to the prevalent style of the era.

Tortoiseshell was in vogue in the late 17th century and the latter half of the 18th century, before coming back in style during the first and last quarters of the 19th century.

Outer cases were also made in amber, various types of wood, heliotrope, horn or ivory. These unusual materials endowed such watches with a distinctive character that set them apart from their counterparts made in metal, adorned in enamel or set with precious stones.

In the early 20th century, the use of hard stones, such as agate or lapis lazuli, provided a further chance to renew the range of cases. These stones later found their place on wristwatch dials in the 1970s.



利摩日风格珐琅装饰怀表

亨利·勒格朗·鲁瓦和迪福（珐琅工艺师）

约 1880 年

瑞士日内瓦

高 7.2 厘米，直径 5 厘米，厚 1.6 厘米

日内瓦艺术与历史博物馆藏

E 201

◎该怀表为铜质和金质表壳，白底深棕色珐琅漆，金质表圈、吊坠和挂环，铜胎珐琅漆表盘；内置黄铜和精钢 3/4 夹板机芯，采用杠杆式擒纵系统，截断式双金属螺丝平衡摆轮，平游丝

Henry Le Grand Roy, Dufaux (enamelers), Pocket watch with Limoges-style enamel decoration

Geneva (Switzerland), ca.1880

Case in copper and gold, dark brown enamel painted white, bezel, gold pendant and ring, dial in enamel painted on copper

3/4 plate movement in brass and steel, lever escapement, bimetallic cut balance with screws, flat balance spring

h. 7.2, diam. 5, thk. 1.6 cm

Geneva Museum of Art and History

E 201



怀表

马可公司和百达翡丽公司

约 1890 年

美国纽约和瑞士日内瓦

高 6.88 厘米，直径 4.92 厘米，

厚 1.9 厘米

日内瓦艺术与历史博物馆藏

H 2004-15

◎该怀表为嵌绿松石金质铸造表壳，镀金表盘上嵌松石色半球形珐琅，橙色浮雕珐琅时标和蛇形指针；内置精钢桥架式机芯，采用杠杆式擒纵系统，双金属螺丝平衡摆轮，蓝钢宝玑上绕游丝

Marcus & Co., Patek Philippe,

Pocket watch

New York (USA), Geneva

(Switzerland), ca. 1890

Case in cast gold, turquoises; gilded dial, half pearls of turquoise enamel, orange enameled markers in relief, matching snake hand

Movement with steel bridges, lever escapement, bimetallic balance with screws, Breguet overcoil balance spring in blued steel

h. 6.88, diam. 4.92, thk. 1.9 cm

Geneva Museum of Art and History

H 2004-15



八角形怀表

杜桑公司

约 1920 年

瑞士日内瓦

高 8 厘米，宽 5.34 厘米，厚 2.27 厘米

日内瓦艺术与历史博物馆藏

H 2004-12

◎该怀表为黄金铸造表壳，经雕镂和镌刻加工，珠纹打磨凹槽表壳，刻面水晶，珐琅表盘；内置精钢桥架式机芯，带有“日内瓦波纹”装饰，采用杠杆式擒纵系统，双金属螺丝平衡摆轮，蓝钢宝玑上绕游丝

Touchon & Co., Octagonal pocket watch

Geneva (Switzerland), ca. 1920

Case in cast yellow gold, chased and engraved, circular-grained cover, faceted crystal, enamel dial

Movement with steel bridges, “Côtes de Genève” decoration, lever escapement, bimetallic balance with screws, Breguet overcoil balance spring in blued steel

h. 8, w. 5.34, thk. 2.27 cm

Geneva Museum of Art and History

H 2004-12



超薄怀表

瑞士日内瓦

约 1925 年

卡地亚公司（经销商）和欧洲钟表公司（制表商）

高 6.04 厘米，直径 4.81 厘米，

厚 0.56 厘米

日内瓦艺术与历史博物馆藏

H 2008-39

◎该怀表为水晶石表壳，金胎内填珐琅，铂金吊坠和挂环，机雕银质表盘，蓝钢指针；内置镀铑精钢材质 3/4 夹板机芯，采用瑞士杠杆式擒纵系统，共使用 19 颗宝石轴承，抛光螺丝，双金属螺丝平衡摆轮，拉考托 135 型号机芯

Cartier (retailer), European Watch and Clock Company (watchmaker), Extra-thin pocket watch

Geneva (Switzerland), ca. 1925

Case in rock crystal, champlevé enamel on yellow gold, platinum pendant and ring, dial in silver guilloché, hands in blued steel

3/4 plate movement, rhodiumized steel, Swiss lever escapement, 19 jewels, polished screws, bimetallic balance with screws, calibre Lecoultré No.135

h. 6.04, diam. 4.81, thk. 0.56 cm

Geneva Museum of Art and History

H 2008-39



怀表

江诗丹顿公司

1924 年

瑞士日内瓦

直径 5 厘米

江诗丹顿典藏部藏

N° 10944

◎ 18K 黄金和翡翠表壳，镶有 8/8 式切割钻石，表壳采用镂雕工艺雕刻，使用封闭式镶嵌钻石和珠镶钻石工艺，银表盘。RA 16" - 162 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1924

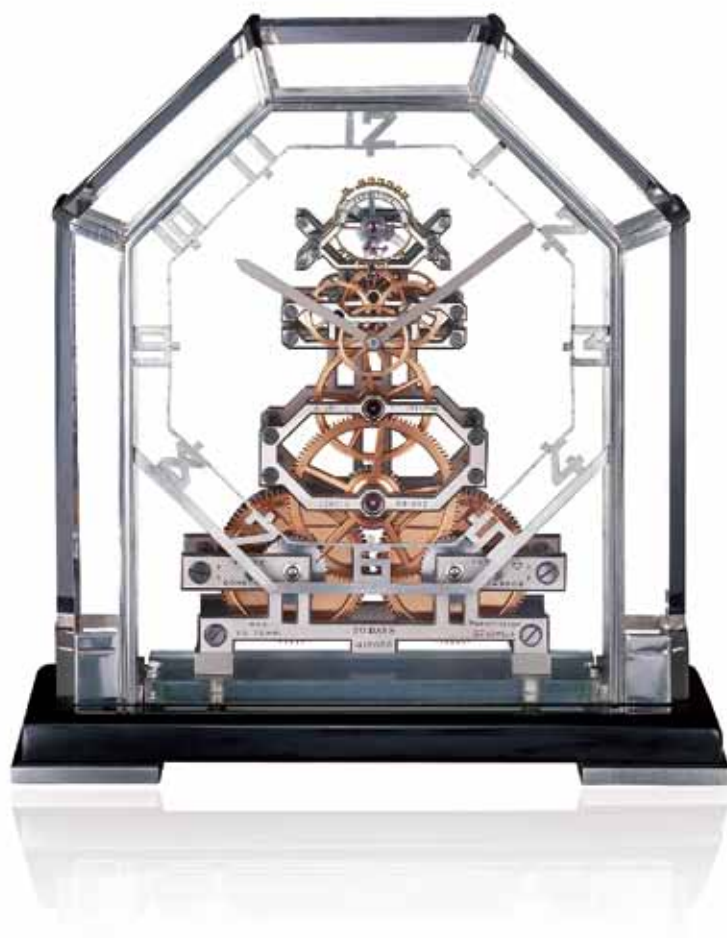
18K yellow gold, jade, single-cut diamonds, silvered dial

Jade case with glyptic intaglio engraving, collet-set diamonds, bead-set diamonds

Caliber RA 16" - 162, round, in German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 18 jewels diam. 5 cm

Vacheron Constantin Heritage Collection

N° 10944



水晶镂空艺术时钟

江诗丹顿公司

1933 年

瑞士日内瓦

18.5 厘米 × 15.7 厘米 × 6 厘米

江诗丹顿典藏部藏

N° 11508

◎水晶钟罩，黑漆底座，磨砂钢小时刻度。具有 30 天动力储存功能，德国银机芯，配备双金属截断式自动补偿摆轮、恒力杠杆式擒纵系统、宝玑游丝及简易调速器，共使用 27 颗宝石轴承

◎曾在 1939 年苏黎世展会上展出

Vacheron Constantin, Skeleton

clock, 30 days, constant force

Geneva (Switzerland), 1933

Rock crystal, black lacquered base, brushed steel hour track

30 day power reserve, in German silver, cut bimetallic compensation

balance, constant force lever

escapement, "Breguet" balance-

spring, simple adjustment index,

2 barrels, 27 jewels

Clock presented at the National

Exhibition of Zurich in 1939

dimensions 18.5 cm × 15.7 cm × 6 cm

Vacheron Constantin Heritage

Collection

N° 11508



· 造型表壳腕表

虽然钟表表壳的首要功能是紧密包裹内部的机械装置以避免其沾染尘土，但“钟表设计”的概念却源于一种愿望，即将制表师的独特技术与为其锦上添花的艺术相结合。一块钟表的表壳能否从一个简单的装饰物变成一件艺术创造，取决于其设计的质量。比例、曲率、表盘的形状和直观性、表耳或表冠的大小，每个细节都是充分预先设计的结果。

早期腕表的表壳、表圈和表盘都呈圆形，它们的设计源自与之相对应的怀表。然而，腕表是用来展示的，而不是放在口袋里的。腕表很快变成了装饰品和地位的象征。作为其主人个性的反映，它的设计要与着装以及一系列的体育运动、职业和个人活动相匹配。

腕表的形状从早期的圆形迅速发展为后来的椭圆形、八角形、长方形或方形。1912年出现的江诗丹顿酒桶形表，结合了矩形和椭圆形，突破了传统的样式。它那无限的设计潜力（拉长款、短款、花式形状款等）说明了那个时代的一种新的自由。得益于国际制表业的交流，日内瓦的制表业可以密切关注时尚的趋势和变化，成为钟表

· Shaped Cases

While the primary function of a watch case is to fit closely around the mechanisms inside and thus protect them from dust, the concept of “watch design” stemmed from a wish to combine technical expertise – the true signature of a watchmaker’s craft – with aesthetic beauty which magnifies this talent. A watch case is transformed from a simple decorated object to an artistic creation by the quality of its design. Proportions, angles of curvature, shape and visibility of dials, the size of lugs or crowns: each detail is the result of extensive preliminary planning.

The cases, bezels and dials of early wristwatches were circular in shape, their design being based on that of their pocket watch counterparts. However, they were made to be shown and not hidden away in a pocket. The wristwatch soon became an accessory and status symbol. A reflection of its owner’s personality, it was chosen to match clothing styles as well as a whole range of sporting, professional and personal activities.

The wristwatch rapidly evolved from its early round shape to become oval, octagonal, rectangular or square. The tonneau-shaped watch, a combination of rectangle and oval that appeared in Vacheron Constantin’s range in 1912, represented a genuine break with tradition. Its unlimited design potential (elongated,

short, fancy, etc.) was an illustration of the newfound freedom of the era. Thanks to its international network, Geneva watchmaking was able to keep close track of the trends and changes in fashion and to establish itself as a pioneer in watchmaking design and development by reacting immediately to clients' expectations and even anticipating them.

设计时尚的翘楚，并且根据客户的期望迅速作出回应，甚至提前预测客户的需求。



酒桶形男士腕表

江诗丹顿公司

1912 年

瑞士日内瓦

2.89 厘米 × 4.95 厘米

江诗丹顿典藏部藏

N° 10594

◎ 18K 黄金表壳，银质表盘。RA 11" N78 “Amérique” 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 17 颗宝石轴承。江诗丹顿于 2012 年庆祝其酒桶型腕表诞生 100 周年

Vacheron Constantin, Tonneau-shaped gentleman's wristwatch

Geneva (Switzerland), 1912

18K yellow gold, silvered dial

Caliber RA 11" N78 “Amérique”,

round, in German silver, lever

escapement, cut bimetallic

compensation balance, flat balance-

spring, simple adjustment index,

17 jewels

Vacheron Constantin celebrated the 100th anniversary of the Tonneau

Wristwatch in 2012

dimensions 2.89 cm × 4.95 cm

Vacheron Constantin Heritage

Collection

N° 10594



1972 系列腕表

江诗丹顿公司

1972 年

瑞士日内瓦

1.8 厘米 × 3.7 厘米

江诗丹顿典藏部藏

N° 10603

⊙ 18K 白金表壳，银质表盘。7" - 1052 黄铜镀铬椭圆形机芯，配备杠杆式擒纵系统、双臂环摆轮、平游丝及简易调速器，共使用 22 颗宝石轴承

⊙ 在 1972 年巴黎庆典上，法国工业与科学发展部部长弗朗索瓦-格扎维埃·奥托利授予江诗丹顿“法兰西荣誉奖”。这一荣誉是为了褒奖江诗丹顿与巴黎顶级珠宝商合作推出的产品。作为参加庆典的礼物，江诗丹顿制造出限量版 1972 系列腕表，每一款腕表都印有艺术家让·卡尔祖名为《逝去的时光》的石版画。让·卡尔祖在 1972 系列腕表出品完成以后，公开毁掉了母版

Vacheron Constantin, "1972" wristwatch

Geneva (Switzerland), 1972

18K white gold, silvered dial
Caliber 7" - 1052, oval, in rhodium-plated brass, lateral lever escapement, two-arm annular balance, flat balance-spring, simple adjustment index, 22 jewels

In a ceremony that took place in Paris in 1972, the French Minister François-Xavier Ortoli awarded the "Prestige de la France" distinction to Vacheron Constantin. This honor was intended to reward the Manufacture for its collaboration with talented Parisian jewelers. As

a tribute of this ceremony, Vacheron Constantin created the "1972" wristwatch in a limited edition. Each model was accompanied by a lithograph entitled *Le Temps qui passe* by artist Jean Carzou, who then publicly destroyed the lithographic stone once production of the "1972" was completed dimensions 1.8 cm × 3.7 cm
Vacheron Constantin Heritage Collection
N° 10603

· 精致的袖珍计时器

钟表外壳的异形和装饰性自 16 世纪后期流行至 17 世纪中叶，从 1775 年一直到 19 世纪又风靡一时。当时的日内瓦珐琅贸易兴盛，吸引着欧洲最优秀的工匠，使这里成为了这种表无可争议的制作中心，这座城市也从而奠定了其作为钟表工业之都的地位。制表师们打造出精巧极致的珠宝手表、问表或其他自鸣表、奇妙的音乐和自动人偶报时表，以及雕刻繁缛的超薄机芯，这些机芯上的装饰从现代透雕或镂空装饰的表中可以窥见一二。

装饰型钟表的形状灵感取自各种物品，尤其是植物、动物、日常生活用品、乐器和各种符号。同时，戒指形表也成了人们在传统珠宝之外的新选择；约从 1810 年至 1820 年，制表师为制作戒指表创造了厚度合适且能与其他构件合理搭配的机芯。

· Tiny Timepieces, Precious Objects

The fashion for shaped watches or ornamental watches, all the rage in the latter third of the 16th century through to the mid-17th century, reappeared in 1775 and lasted into the 19th century. Geneva, which by then had a flourishing enamelling trade, attracted the finest artisans of Europe and became the undisputed production centre for these watches. The city thereby established its industry as a watchmaking capital. Watchmakers miniaturised watches to extremes, creating perfect jewellery watches, repeater and other striking watches, whimsical musical and automaton objects, as well as richly engraved ultra-thin movements featuring decorations echoed in modern skeleton or openworked watches.

The shapes adopted for ornamental watches were inspired by a broad range of subjects, particularly flora, fauna and everyday objects, musical instruments and various symbols. Ring-watches meanwhile provided an alternative to traditional jewellery: around 1810-1820, watchmakers were able to find exactly the right thickness together with the optimal layout of the movement organs required to create perfect models of this kind.



袖珍筒形表

克里斯托·莫里坎

约 1790 年

瑞士日内瓦和英国伦敦

长 11.26 厘米，直径 2.54 厘米，

机芯直径 2 厘米

日内瓦艺术与历史博物馆藏

H 2008-135

◎ 该表为蛇纹石和压纹雕镂黄金表盒，珐琅表盘；配备黄铜框架式机芯，采用冕状轮擒纵系统和芝麻链，黄铜平衡摆轮，精钢游丝，银质游丝微调装置，雕花镂空摆轮夹板

Christ Moricand, Case with watch

Geneva (Switzerland), London

(England), ca.1790

Serpentine, yellow gold embossed and chased, enamel dial

Brass movement frame, crown wheel escapement, chain fusée, brass balance, steel balance spring, silver rosette, engraved and pierced balance-cock

l. 11.26, diam. 2.54, diam. mvt. 2 cm

Geneva Museum of Art and History

H 2008-135



带表和自动人偶的八宝盒

瑞士日内瓦

约 1800 年

长 7.7 厘米，宽 3.18 厘米，

厚 7.62 厘米

日内瓦艺术与历史博物馆藏

H 2008-131

◎该表为玫瑰金及其他彩金表壳，装饰有内填珐琅和珐琅微绘；外盒分为三格：左格内安装一个饰有彩金及珐琅工艺的自动人偶爱神丘比特，他正在用研轮打磨他的箭；右格内置一枚表

Sectioned box with watch and automat

Geneva (Switzerland), ca. 1800

Case in pink gold, colored golds, champlevé enamel and enamel miniatures

The box is divided into three compartments; the left compartment of the box contains an automaton in different golds and enamel, featuring Cupid sharpening his arrow on a grindstone; the right compartment contains a watch.

l. 7.7, w. 3.18, thk. 7.62 cm

Geneva Museum of Art and History

H 2008-131



拨杆式报时戒指表

传为皮埃尔·西蒙·古努伊卢所制
约 1810—1820 年

瑞士日内瓦

戒面高 3.2 厘米，宽 2.26 厘米，
厚 0.93 厘米

高 2.78 厘米，厚 2.83 厘米，
直径 2.01 厘米

日内瓦艺术与历史博物馆藏
H 2004-10

◎ 该表为金质表壳，采用镌刻、镂雕和镂空加工工艺，装饰半球形珍珠和内填珐琅，画珐琅和内填珐琅偏心表盘；采用镰钩式擒纵系统，铃式二问报时装置位于底夹板上，由拨杆启动，四臂镂空平衡摆轮，镶嵌钻石，平游丝

Pierre Simon Gounouilhou (attributed), Watch-ring with ticking repeater

Geneva (Switzerland), ca. 1810-1820

Gold case, engraved, chased,
pierced, half pearls, champlevé
enamel, off-center dial in painted
and champlevé enamel

Virgule escapement, quarter
repeater with bell mounted on base
plate activated by a catch, visible
balance with four spiral arms, set
with diamonds, flat balance spring
h. 3.2, w. 2.26, thk. 0.93 cm (head)

h. 2.78, thk. 2.83, diam. 2.01 cm

Geneva Museum of Art and History
H 2004-10



袖珍表

约 1835—1850 年

瑞士日内瓦

表壳直径 1.57 厘米，

机芯直径 2 厘米

日内瓦艺术与历史博物馆藏

H 2012-236

◎该表为金质表壳，机雕银质表盘；
配备黄铜镀金桥架式机芯，工字轮擒
纵系统

Miniature watch

Geneva (Switzerland), ca. 1835- 1850

Gold case, dial in engraved and
guilloché silver

Movement with gilded brass
bridges, cylinder escapement, blued
steel

diam. case 1.57, diam. mvt. 2 cm

Geneva Museum of Art and History

H 2012-236



“日内瓦之球” 胸针表

传为路易·雅凯所制

约 1890 年

瑞士日内瓦

直径 1.8 厘米，通高 4.3 厘米

日内瓦艺术与历史博物馆藏

H 2006-119

◎该表为金质表壳，内填珐琅，明亮式切割钻石；表圈设有上链和时间调校装置

Louis Jaquet (attributed), “Boule de Genève” brooch watch

Geneva (Switzerland), ca. 1890

Gold case, champlevé enamel, brilliant-cut diamonds

Bezel winding and setting system
diam. 1.8, h. total 4.3 cm

Geneva Museum of Art and History
H 2006-119



戒指表

马塞尔·康斯坦·巴斯塔尔

约 1910 年

瑞士日内瓦

高 2.7 厘米，长 2.32 厘米，

深 2.44 厘米

日内瓦艺术与历史博物馆藏

2008 年由玛丽·玛德莱娜·巴斯塔尔捐赠

H 2008-140

◎该表为金质表壳，采用机雕金胎透明珐琅工艺，切面圆形钻和切面圆形蓝宝石，镀银表盘；内置德国银椭圆形桥架式机芯，表面珍珠圆点打磨，采用杠杆式擒纵系统，未截断双金属螺丝平衡摆轮，平游丝，快慢针

Marcel Constant Bastard, Montre-ring

Geneva (Switzerland), ca. 1910

Gold case, transparent enamel on guilloché gold, faceted round diamonds, faceted round sapphires; silvered dial

Oval movement with bridges, nickel silver with circular-grained surface, lever escapement, bimetallic uncut balance with screws, flat balance spring, index

h. 2.7, l. 2.32, d. 2.44 cm

Geneva Museum of Art and History

H 2008-140, donated by Marie

Madeleine Bastard, 2008

· Automaton and Musical Mechanisms

At the turn of the 18th and 19th century, Geneva-based watchmaking reached new peaks in terms of precision, while various markets were developed, mainly in Turkey and Asia – with the shiniest and most precious objects often destined for the Chinese market. This was therefore an opportune moment to offer customers even more ingenious and sophisticated curiosities and amusing artefacts, in which jewellery and artistic crafts were associated, resulting in precious snuffboxes, music boxes and singing birds. The Rochat brothers, masterful technicians and watchmakers based in Geneva, created masterpieces of horological perfection including a fascinating cage with three singing birds.

The reduction in size of the movement contributed to the craze for automata and musical watches: miniaturisation gave free rein to creative talent that broke free of customary technical constraints. Building on their knowledge of automaton clocks, that were already being made in the 14th century, watchmakers developed animated figures (carpenters, blacksmiths, spinstresses, musicians, knights and tightrope walkers) enacting various movements and activated by a pusher on the pendant. The most common scenes involved one or two protagonists striking the time on bells, of which the sound was produced by a repeater mechanism controlling hidden

· 钟表上的自动人偶与音乐装置

在 18 世纪、19 世纪之交，以日内瓦为中心的制表业在精准度方面达到新的高峰，同时也在开拓世界各地的市场，主要在土耳其奥斯曼帝国和亚洲——其中最珍贵而精美的产品往往销往中国。由此，为客户提供更为巧妙复杂、新奇有趣的产品成为重点，这些产品将珠宝和工艺品结合在一起，于是我们便看到了珍贵的鼻烟盒、八音盒和报时鸟。技艺精湛的机械师与制表师罗卡特兄弟以日内瓦为中心，创作出钟表制作史上的完美杰作，其中一件为带三只鸣叫小鸟的笼式报时表。

机芯尺寸的减小对自动人偶钟表与音乐钟表的流行起到了推波助澜的作用：小型化意味着可以打破过去的技术藩篱，为人们的创造力提供了自由。基于 14 世纪以来就已获得的自动人偶钟的知识，制表匠们创造出了各色生动活泼的形象（木匠、铁匠、妇人、乐师、骑士与走钢丝的人），可以做各种动作，由垂坠上的按键来启动。最常见的场景是一两个人物敲击钟铃报时，发出的声音由一个打簧的机械装置控制，内部的音锤敲击位于双层表背内部或表壳中部的音簧。

许多自动人偶钟表里也包含一个小型音乐装置。从 1800 年至 1840 年，瑞士生产了大批装有表的望远镜和鼻烟盒，这些产品大受欢迎。

hammers acting on gong-springs located inside the dome (double back cover) or the case middle.

A number of automaton watches also comprised a tiny music box. Opera glasses and snuffboxes also reached their peak of popularity in Switzerland, a country where considerable numbers of them were made between 1800 and 1840.



竖琴形音乐表

约 1810 年

瑞士日内瓦

高 8.4 厘米，宽 5.4 厘米

日内瓦艺术与历史博物馆藏

H 2005-28

◎该表为金质表壳，装饰彩色珐琅（音乐奖杯）和珍珠，白色珐琅表盘，精钢指针；内置黄铜镀金桥架式机芯，采用机轴擒纵系统，镂空和镌刻摆轮夹板，车床旋切夹板柱，音乐机制带可奏出旋律的音筒

Harp-shaped watch with music mechanism

Geneva (Switzerland) ca. 1810

Gold case, multicolored enamels (musical trophies), pearls; dial in white enamel, steel hands

Movement with gilded brass bridges, verge escapement, balance-cock pierced and engraved, turned pillars, music mechanism with pins and tuned notes

h. 8.4, w. 5.4 cm

Geneva Museum of Art and History

H 2005-28



二问报时自动人偶怀表

皮盖梅朗公司

约 1815 年

瑞士日内瓦

高 7.39 厘米，直径 5.49 厘米，

厚 1.97 厘米

日内瓦艺术与历史博物馆藏

H 2003-139

◎该怀表为黄金、彩金和机雕银质表壳，采用镌刻和雕镂工艺，内填珐琅图案为临摹让-巴蒂斯特·乌德里（巴黎，1686—1755）的油画作品《犬吠天鹅》；配备黄铜镀金二分之一夹板机芯，活动发条盒，工字轮擒纵系统，精钢擒纵轮，黄铜三臂平衡摆轮，报时机制通过按下吊坠启动

Piguet & Meylan, Quarter repeater pocket watch with automatons

Geneva (Switzerland), ca. 1815

Case in gold, colored golds and silver guilloché, engraved and chased, champlevé enamel *Chien aboyant contre un Cygne* after Jean-Baptiste Oudry (Paris, 1686-1755)

Half-plate movement in gilded brass, free barrel, cylinder escapement, steel escapement wheel, three-arm balance in brass, repeater activated by pressing the pendant

h. 7.39, diam. 5.49, thk. 1.97 cm

Geneva Museum of Art and History

H 2003-139



报时音乐怀表

皮盖梅朗公司

约 1820 年

瑞士日内瓦

高 7.45 厘米，直径 5.35 厘米，
厚 2 厘米

日内瓦艺术与历史博物馆藏

N 755

◎该怀表为金质表壳，黄铜镀金镌刻表盖；配备黄铜镀金和精钢材质 3/4 夹板机芯，（26 簧片）音板，按钮式双音簧二问报时装置，采用工字轮擒纵系统，铜质圆形平衡摆轮，蓝钢平游丝，蓝钢快慢针，现代摆轮夹板

Piquet & Meylan, Repeater pocket watch with music

Geneva (Switzerland), ca. 1820

Gold case, guilloché, cover in engraved and gilded brass

3/4 plate movement in gilded brass and steel, musical plate (26 notes) strikes in passing, quarters on two spring gongs on demand by a pushbutton, cylinder escapement, copper circular balance, flat balance spring in blued steel, index assembly in blued steel, modern balance-cock

h. 7.45, diam. 5.35, thk. 2 cm

Geneva Museum of Art and History

N 755



二问报时自动人偶怀表

罗伯特和库瓦西耶

约 1800 年

瑞士日内瓦

高 8.5 厘米，直径 5.58 厘米，
厚 2.45 厘米

日内瓦艺术与历史博物馆藏

H 2003-143

◎该怀表为金质、彩金和银质材质表壳，采用镌刻和镂雕工艺，珐琅漆和内填珐琅表盘；配备圆筒形夹板柱框架式机芯，镰钩式擒纵系统，三臂平衡摆轮，平游丝，日内瓦摆轮夹板，黄铜镀金铰链防尘罩；铃式报时机制通过按下吊坠启动，“爱神铁匠”自动人偶通过表肩上的定位销启动

Robert & Courvoisier, Quarter repeater pocket watch with automatons

Geneva (Switzerland), ca. 1800

Gold case, colored golds, engraved
and chased silver, champlevé and
painted enamel

Movement frame with cylindrical
pillars, virgule escapement, three-
arm balance, flat balance spring,
Geneva balance-cock, hinged dust
cover in gilded brass

Striking on a bell activated by
pressing the pendant, the automats
("Amours forgerons") activated by
a catch on the case-middle.

h. 8.5, diam. 5.58, thk. 2.45 cm

Geneva Museum of Art and History

H 2003-143





笼式小鸟报时表

罗沙兄弟

约 1814 年

瑞士日内瓦

高 27.1 厘米，深 9.8 厘米

日内瓦艺术与历史博物馆藏

H 2003-136

◎该作品为金质八角形鸟笼，侧板装饰珐琅微绘，镶嵌钻石，内填珐琅，白色珐琅表盘，宝玑指针；采用黄铜机芯，工字轮擒纵系统，三臂平衡摆轮，平游丝，双铃报时机制。小鸟机芯使用黄铜八角形夹板，芝麻链和凸轮机制；小鸟可整点自鸣和并按需求报整点时间

Rochat Frères, Cage with three singing birds and striking watch

Geneva (Switzerland), ca. 1814

Octagonal cage, side panels

painted on enamel, gold, diamond, champlevé enamel; watch dial in

white enamel, Breguet-type hands

Brass movement, cylinder

escapement, three-arm balance, flat

balance spring, striking on two bells

Birds movement: octagonal

brass plate, chain fusée and cam

mechanism, the birds move and

sing automatically on the hour and

on demand

h. 27.1, d. 9.8 cm

Geneva Museum of Art and History

H 2003-136



音乐鼻烟盒

让-路易·里什泰(珐琅)、费迪南·奥贝尔(机芯)和安德烈·马尼安(金银器)

约 1820 年

瑞士日内瓦

宽 6.16 厘米, 长 10.22 厘米,

厚 3.57 厘米

日内瓦艺术与历史博物馆藏

H 2004-11

◎该鼻烟盒为彩金外壳, 采用镌刻、雕镂和机雕工艺, 上面板饰珐琅微绘, 临摹威廉·汉密尔顿(1751—1801)作品《傍晚》, 并环镶珍珠; 配备黄铜机芯, 凸轮音乐机制

Jean-Louis Richter (enamel),
Ferdinand Aubert (movement),
André Magnin (goldsmith),
Musical snuffbox

Geneva (Switzerland) ca. 1820

Colored golds, engraved, chased
and guilloché, upper plate in
painted enamel, surround of pearls,
Evening after William Hamilton
(1751-1801)

Brass movement, music mechanism
with pins

w. 6.16, l. 10.22, thk. 3.57 cm

Geneva Museum of Art and History

H 2004-11

四 珐琅大师

珐琅艺术在公元前 1500 年就很受埃及法老的青睐，并且自此一直出现在各色装饰物件中。珐琅工艺与金饰和雕刻工艺联系紧密（因为它们师承同门），珐琅自 16 世纪开始被用于装饰手表。应用技术的多样性也创造出了各种各样的珐琅作品，包括内填珐琅、利摩日画珐琅、镂空珐琅彩绘、珐琅包金镶嵌、珐琅镶嵌玻璃、用以增强宝石效果的透明珐琅等。

这些不同的技法被工匠们熟练掌握，在当时他们既是金匠，也是珐琅工艺师。到了约 1630 年，微绘珐琅的发明催生出一个特别的行业，由法国的金匠让·图坦（1578—1644）总结出工艺程序，真正的珐琅微型画在当时凹状表壳上开始得到应用。这段时间也正是著名珐琅工艺师皮埃尔·于奥（1612—1680）定居在日内瓦的时期。

艺术家用可玻璃化的颜料在罩有不透明白色珐琅的金底上绘制：这实际上已经不再是在珐琅内绘制（绘出像浮雕一样的厚度），而是在珐琅上绘制（平面绘画）。手表的扁平形状使得人们可以在表壳的两面包括其内侧施以珐琅，其中表

4. Master Enameller

The art of enamel work, very popular with the pharaohs of Egypt as of 1500 BC, has consistently embellished the most diverse decorative pieces. Closely associated with goldsmithing and engraving (with which it shared the same ornamentalist sources), enamel work was applied to decorating watches from the 16th century onwards. The diversity of the techniques employed led to a wide variety of creations, including champlevé enamels, Limoges painted enamels, translucent or opaque painting on openworked cases, *ronde-bosse* (encrusted) enamelled gold, *émail en résille sur verre* (network enamel on glass), translucent enamels used to reproduce the effect of precious stones.

These diverse techniques were mastered at the time by the same artisans who were both goldsmiths and enamellers. In around 1630, the invention of miniature enamel painting led to the formation of a specialised profession: thanks to a procedure developed by the French goldsmith Jean Toutin (1578-1644), authentic miniature paintings adorned all sides of the basin-shaped cases in use at the time. It was at this time that the famous enameller Pierre Huaud (1612-1680) settled in Geneva.

The artist used vitrifiable colours to paint on a gold base coated with a layer of opaque white enamel: this was in fact no longer

painting in enamel (painting in relief with a certain thickness), but instead painting on enamel (flat painting). The flat shape of the watches made it possible to enamel both sides of the case as well as its inside back, while the slightly curved surfaces of the case and dial were adorned with miniature painted scenes.

From the late 16th century onwards, Geneva was recognised for its production of high-quality enamels. The fashion for enamelled watches reached its peak in the 18th and 19th centuries and illustrates the ongoing interaction between decorative creativity and the progress of precision mechanical watchmaking. A high degree of technical and artistic mastery has been maintained right the way through to the present day and is still expressed through several techniques in addition to miniature enamel painting: *champlevé* enamel, *paillonné* enamel, *cloisonné* enamel.

With *champlevé* and *cloisonné* techniques, the contours of the enamelled pattern are visible on the surface. In the first, the engraver traces his pattern on a sheet of gold, carving out the hollows that will be filled with enamel.

Between 1800 and 1850, Geneva developed decorative motifs crafted in black and white *champlevé* enamel on gold, in order to renew the appeal of watches, jewellery and other precious objects from the *Fabrique*. This represents further proof that Geneva, despite its reputation for austerity, has always known

壳和表盘上略带弯曲的平面特别适合用珐琅微绘装饰。

自 16 世纪后期起，日内瓦被公认为是上乘珐琅制品的产地。珐琅表的流行在 18 世纪和 19 世纪达到了顶峰，说明了装饰艺术的创新和精密机械制表的进步两者不断的相互作用。高度的艺术与技术成就一直延续至今，除了微绘珐琅以外，还有几项技法也反映出这些成就：内填珐琅、金属箔片嵌饰珐琅、掐丝珐琅。

使用内填珐琅和掐丝珐琅工艺，珐琅图案表面上的轮廓清晰可见。雕刻工艺师首先在金片上勾勒出图案，再刻出空槽并在其中施以珐琅。

1800 年至 1850 年，为了使出自工坊的手表、珠宝和其他奢侈品更具吸引力，日内瓦开发了一种新的装饰图案，即金胎黑白内填珐琅。这种表现形式进一步证明，尽管日内瓦是以简朴而名声在外的，但他们也知道怎样创造出更具吸引力的财富：成功的关键在于掌握一套优秀的、纯粹的、有序的审美标准。在作品的不同位置上使用不同的颜色和技法：在黑色背景上绘制白色的珐琅，在压花金属上施以珐琅，在雕花金胎上则绘制珐琅图案，并且用黑色珐琅勾边，用透明瓷漆增强效果。

在掐丝珐琅技法中，工艺师用一条细金丝在首次烧制的珐琅层上做出装饰图案的轮廓，用这种方法分出不同区域，并用珐琅填充。

用于施珐琅的胎通常用金属（铜、铁、金）制成，在有图案的一面先涂一层白色珐琅，用来维持后续烧制过程中金属丝的形状。无论用什么样的珐琅技法，工艺师都要用一支极细的画笔蘸取极其微量的珐琅颜料。选中的颜料则是根据传统的配方用玻璃和金属氧化物混合而成。上第一种颜色后，作品要在约 800℃ 的状态下烧制。然后上第二种颜色，再次被烧制，需要重复操作五至七次。

根据设计和使用颜色数量的不同，有的珐琅器会被烧制超过 20 次。在烧制的过程中作品上的颜料会发生巨大的变化：颜色变浓、收缩甚至燃烧起来。在这个阶段，珐琅工艺师的经验至关重要。他们了解每一种颜色需要采取不同的加工步骤，并且他们一生都在不断摸索着各个步骤的关键所在。

绘制完成以后，图案被多层透明珐琅（透明瓷漆）保护，通过多次高温烧制来固定颜色的位置——这是最后一道特别需要技术的工序。透明的保护层提高了颜色的饱和度和亮度，并凸显出

how to portray wealth in attractive ways: the keys to this success being mastering a sense of good measure and pure, uncluttered aesthetic lines. Other techniques flatter the polychrome nature of the compositions: painting on white enamel against a black background, enamelling on *repoussé* metalwork, as well as motifs in engraved gold, framed by black enamel and enhanced only by *fondant* or flux.

In the *cloisonné* technique, the enamelling artisan forms the contour of the decorative motif by applying a thin gold wire sealed to a primary layer of enamelling by a first firing in the kiln: the *cloisons* (partitions) formed in this way are then ready to be filled with enamel.

The base for enamel painting is always in metal (copper, iron, gold) coated with a first layer of white enamel on the motif side and an enamel backing, which maintains the form of the metal plate during the successive firing operations. Whatever enamel technique is chosen, the enameller will use a very fine brush to apply a minute quantity of enamel in the chosen colour. The latter is obtained by mixing glass and metal oxide according to traditional alchemist's formulae. After a first application of colour, the object will be fired at about 800°C. The craftsman then adds a second colour, which again must be fired, and repeats the operation up to five to seven times.

Depending on the complexity of the design and the number of colours used, the enamel may require firing more than 20 times. During the firing process the colours change considerably: intensifying, shrinking and even burning. At this stage the enameller's experience is crucial. He knows that each colour may need to be processed differently and throughout his life he will keep searching for the keys to each different step.

Once the painting is ready, it protected by successive layers of translucent enamel (the *fondant* or flux), fixed in place by several firings at high temperatures – the final and particularly delicate step. The translucent layers enhance the intensity and brightness of the colours and emphasize the subtlety and depth of the work.

The use of *paillons* began in Geneva in the 18th century and really took off in the following century. A *paillon* is a tiny sliver of gold, silver or platinum used to adorn the backs of watches and decorate snuffboxes and jewellery with either a fine border or a complete motif. This technique is also featured in the ornamentation of many French, English and Chinese objects. Geneva's enamellers distinguished themselves in this art of miniature cutting-out processes, which, together with their mastery of enamels, served to achieve some truly extraordinary effects. Placed on enamel with a tiny brush, they are then held in place by a tiny touch of glue, and then fused in place by a gentle firing at low temperature that fixes the ornament to the surface. The *paillons* are then protected by a colourless and transparent layer of enamel (flux or *fondant*). Gemlike *paillons* played a *trompe l'oeil* role by creating the illusion of rubies, emeralds and diamonds.

作品的精妙和内涵。

金属箔片嵌饰珐琅的应用始于 18 世纪的日内瓦，在 19 世纪被广泛使用。金属箔片是指一小片金、银或铂金，用以装饰表背，也用来装饰鼻烟盒和珠宝饰品，有的作为精美的花边，有的是整个图案。在法国、英国和中国，很多物品都使用这项工艺来装饰。日内瓦的工艺师们以金属箔片切割手艺精湛而著称，再加上他们大师级的珐琅工艺，使他们的作品呈现出非同寻常的效果。用一把小小的刷子把金属箔片粘到珐琅上，用少量胶固定，然后用低温文火烧制，将装饰和表层熔合在一起。最后用无色透明的珐琅层（透明瓷漆）保护这些金属箔片。为了制造出红宝石、绿宝石和钻石般的效果，金属箔片嵌饰珐琅在其中起到了画龙点睛的作用。

· 珐琅微绘

· Enamel Painted Miniatures



珐琅微绘怀表

瑞士日内瓦制表师弗罗芒蒂

珐琅工艺师于奥兄弟（阿米·于奥和
小皮埃尔·于奥）

约 1680 年

英国伦敦

高 4.7 厘米，直径 3.97 厘米，
厚 2.42 厘米

日内瓦艺术与历史博物馆藏

H 2011-95

◎该怀表为金质表壳，黄铜镀金胎珐琅彩，表盘中央装饰珐琅微绘《弥涅尔瓦与墨丘利》，背面为黄铜指针；配备黄铜镀金框架式机芯，采用冕状轮擒纵系统，黄铜平衡摆轮，芝麻链，黄铜游丝微调装置，雕花夹板柱和导链

“Les Frères Huault” (Amy
Huault, Pierre II Huault) Geneva
(Switzerland), enamellers;
Fromanteel, watchmaker, Pocket
watch

London (England), ca. 1680

Gold case, gilded brass multicolored
enamel; dial with enamel miniature
painting *Minerva and Mercury*
(center), brass hand (rear)

Movement frame in gilded brass,
crown wheel escapement, brass
balance, chain fusée, brass rosette,
chased pillars and chain guide
h. 4.7, diam. 3.97, thk. 2.42 cm

Geneva Museum of Art and History
H 2011-95





年历镂空微绘怀表

弗朗索瓦·当唐

约 1700 年

瑞士日内瓦

高 7.46 厘米，直径 5.78 厘米，

厚 4.22 厘米

日内瓦艺术与历史博物馆藏

H 2008-137

◎该怀表为黄铜镀金和金质钉饰玳瑁表壳，摆轮夹板装饰年轻女性肖像的珐琅微绘，蜜蜂形摆锤，上面罩嵌玻璃底盖，珐琅涡卷装饰表盘，12 时位置设年历显示窗口；配备镀金黄铜框架式机芯，埃及式夹板柱，采用冕状轮擒纵系统，芝麻链，环形摆轮和摆锤

François Dentand, Pocket watch with calendar display and visible balance-cock

Geneva (Switzerland), ca.1700

Case in gilded brass and studded gold scales; visible balance-cock with enamel miniature of a young woman, pendulum in the form of a bee, protected by a back fitted with a glass

Dial with enamel cartouches, date display at 12 o'clock in a cut-out window

Movement frame in gilded brass, Egyptian pillars, crown wheel escapement, chain fusée, circular balance and pendulum

h. 7.46, diam. 5.78, thk. 4.22 cm

Geneva Museum of Art and History

H 2008-137





珐琅微绘怀表

皮盖梅朗公司，珐琅工艺师让-弗朗索瓦-维克托·迪普

约 1820 年

瑞士日内瓦

高 7.86 厘米，直径 5.65 厘米，

厚 1.86 厘米

日内瓦艺术与历史博物馆藏

H 2003-138

◎该怀表为金质表壳，装饰透明珐琅和珐琅微绘，周围镶嵌半球形珍珠，抛光金质内填珐琅表盖，珐琅表盘，蓝钢指针；配备黄铜镀金镌刻大夹板机芯，采用精钢和蓝钢双重擒纵系统，圆形平衡摆轮，蓝钢平游丝。该怀表是为中国市场定制的

Piguet & Meylan, Jean-François-Victor Dupont (enameler),

“Chinese” repeater pocket watch

Geneva (Switzerland), ca. 1820

Gold case with flinqué, champlévé

and painted enamel, surround of

half pearls, cover of champlévé

enamel on polished gold; enamel

dial, blued steel hand

Movement with large plate in gilded

and engraved brass, steel and blued

steel, duplex escapement, circular

balance, flat balance spring in blued

steel

h. 7.86, diam. 5.65, thk. 1.86 cm

Geneva Museum of Art and History

H 2003-138





珐琅微绘怀表

播威公司，瑞士弗勒里耶（机芯）和日内瓦（珐琅工艺）

约 1840 年

高 8 厘米，直径 5.69 厘米，厚 1.52 厘米

日内瓦艺术与历史博物馆藏

H 2003-144

◎该怀表为金质表壳，装饰内填珐琅和珍珠，珐琅微绘花卉上罩透明珐琅；珐琅表盘，黄金和蓝钢材质指针；配备黄铜镀金镌刻机芯，黄铜镀金镌刻表桥，采用精钢和蓝钢双重擒纵系统，镜面抛光精钢圆形平衡摆轮，蓝钢平游丝。该怀表是为中国市场定制的

Bovet, "Chinese" pocket watch, Fleurier (Switzerland)(movement) Geneva (enamel), ca. 1840

Gold case, champlevé enamel and pearls, sous fondant painted enamel; hands in yellow gold and blued steel

Brass movement entirely engraved and gilded, steel and blued steel; engraved bridges in gilded brass, duplex escapement, circular balance in mirror-polished steel, flat balance spring in blued steel

h. 8, diam. 5.69, thk. 1.52 cm

Geneva Museum of Art and History H 2003-144



珐琅微绘怀表

播威公司，瑞士弗勒里耶（机芯）
和日内瓦（珐琅工艺）

约 1835—1840 年

高 8.45 厘米，直径 5.9 厘米，
厚 1.76 厘米

日内瓦艺术与历史博物馆藏

1939 年古斯塔夫·卢普于日内瓦捐赠

M 911

◎该怀表为金质珐琅微绘风景表壳，金胎珐琅吊坠和悬挂环圈，白色珐琅表盘，蓝钢梨形指针；配备抛光蓝钢桥架式机芯，采用工字轮擒纵系统，发蓝夹板底和发条盒，哑光银质齿轮，使用钥匙上链。该怀表是为中国市场定制的

Bovet, "Chinese" pocket watch, Fleurier (Switzerland)(movement)

Geneva (enamel), ca. 1835-1840

Case in gold and enamel, pendant
and suspension ring decorated with
enamel painted on gold; dial in
white enamel, pear-shaped hands in
blued steel

Movement with bridges in blued
and polished steel, cylinder
escapement, blued plate bottom
and barrel, gears in brushed silver,
winding by key

h. 8.45, diam. 5.9, thk. 1.76 cm

Geneva Museum of Art and History
M 911, donated by Gustave Loup,
Geneva, 1939



珐琅微绘怀表

制表师穆利尼耶和珐琅工艺师亨利·勒格朗·鲁瓦

约 1850 年

瑞士日内瓦

直径 3.7 厘米，厚 0.85 厘米

日内瓦艺术与历史博物馆藏

H 2005-122

◎该怀表为金质表壳，装饰内填珐琅和珐琅微绘（日内瓦风光，大教堂，莫勒河和萨莱沃山，背景为勃朗峰），金质表盘经雕镂和镌刻加工；配备黄铜镀金桥梁式机芯，采用工字轮擒纵系统，黄铜镀金圆形平衡摆轮，蓝钢游丝

**Moulinié (watchmaker), Henry
Le Grand Roy (enameler), Pocket
watch**

Geneva (Switzerland), ca. 1850

Gold case, champlevé enamel and enamel painting (view of Geneva, the Cathedral, the Môle, the Salève, Mont-Blanc in background); gold dial, chased and engraved

Movement with gilded brass bridges, cylinder escapement, circular balance in gilded brass, blued steel balance spring
diam. 3.7, thk. 0.85 cm

Geneva Museum of Art and History

H 2005-122



珐琅微绘日内瓦风景手镯
珐琅工艺师亚伯拉罕·康斯坦丁
约 1825 年
瑞士日内瓦
长 22 厘米，宽 3.1 厘米；
铭牌：高 4.9 厘米，宽 5.8 厘米，
厚 3.1 厘米

BJ 514
日内瓦艺术与历史博物馆藏
◎ 该手镯使用雕镂和镂空金质框架，
铜胎珐琅微绘表现了日内瓦周边的怡
人风光

Abraham Constantin (enameler),
Bracelet with painted enamel
medallion showing the
surroundings of Geneva
Geneva (Switzerland), ca. 1825
Enamel painted on copper, gold
l. 22, w. 3.1 cm; medallion: h. 4.9,
w. 5.8, thk. 3.1 cm
Geneva Museum of Art and History
BJ 514



珐琅微绘瑞士风景手链

珐琅工艺师雅克·艾梅·格拉尔东

约 1840 年

瑞士日内瓦

高 3.7 厘米，长 20.3 厘米，厚 0.5 厘米

日内瓦艺术与历史博物馆藏

H 96-67

◎该手链上绘制七幅瑞士风光，从左至右为：布里恩茨湖、韦特山、日内瓦、圣马丁（霞慕尼山谷）、图恩湖、西庸城堡、泰尔礼拜堂

Jacques Aimé Glardon (enameler),

Bracelet with painted enamel medallions

Geneva (Switzerland), ca. 1840

Seven Swiss landscapes, l-r: Lake Brienz, the Wetterhorn, Geneva, Saint-Martin (Chamonix Valley), Lake Thun, Château of Chillon, William Tell chapel.

h. 3.7, l. 20.3, thk. 0.5 cm

Geneva Museum of Art and History

H 96-67



珐琅微绘日内瓦风景胸针

约 1820—1840 年

瑞士日内瓦

长 4.6 厘米，宽 3.5 厘米

日内瓦艺术与历史博物馆藏

E 0435

◎ 该表为铜胎珐琅微绘日内瓦和勃朗峰风光，雕镂和镂空金质框架

Brooch with painted enamel medallion, view of Geneva and Mont Blanc

Geneva (Switzerland), ca. 1820 -1840

Enamel painted on copper, gold mounting, chased and openwork

l. 4.6, h. 3.5 cm

Geneva Museum of Art and History

E 0435



珐琅微绘怀表

江诗丹顿公司

1952 年

瑞士日内瓦

直径 4.6 厘米

江诗丹顿典藏部藏

N° 10186

◎ 18K 黄金和珐琅表壳，银质表盘。
日内瓦式珐琅微绘《猎鹿图》，由卡
洛·博鲁兹绘制，原画作者为保罗·布
利尔（原画藏于巴黎卢浮宫）

◎ 17"-439 黄铜镀铬圆形机芯，配备
杠杆式擒纵系统、双金属截断式摆
轮、宝玑游丝及鹅颈式调速器，共使
用 17 颗宝石轴承

◎ 卡洛·博鲁兹（1899—1978）是一
位微型画家，自 1951 年以后定期
为江诗丹顿工作，以大师们的作品为
素材制作微型珐琅画

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1952

18K yellow gold, enamel, silvered
dial

Case back with enameled miniature
painting using the Geneva-
technique by Carlo Poluzzi

Painting *The Deer Hunt* by Paul Bril
(Paris, Musée du Louvre)

Caliber 17"- 439, round, in rhodium-
plated brass, lever escapement, cut
bimetallic compensation balance,
"Breguet" balance-spring, "swan's
neck" micrometric regulator,
17 jewels

Carlo Poluzzi (1899-1978) the
miniaturist, who started working
regularly for Vacheron Constantin
in 1951, creating enamel miniatures
of the great masters
diam. 4.6 cm

Vacheron Constantin Heritage
Collection

N° 10186



女士猎装吊坠表

江诗丹顿公司

1854 年

瑞士日内瓦

直径 3.5 厘米

江诗丹顿典藏部藏

N° 10460

© 18K 黄金和内填珐琅线刻表壳，中央饰有日内瓦式珐琅微绘，珐琅表盘。13" A 黄铜镀金圆形机芯，配备工字轮擒纵系统、三臂环摆轮、平游丝及简易调速器，4 个孔镶嵌宝石，使用钥匙上链和设定

Vacheron Constantin, Lady's Pendant watch

Geneva (Switzerland), 1854

18K yellow gold, enamel, enamel dial

Case decorated with line engraving, Champlevé enamel, the centre with enameled miniature painting using the Geneva-technique
Caliber 13" A, round, in gilt brass, cylinder escapement, three-arm annular balance, flat balance-spring, simple adjustment index,

4 holes with jewels, key winding and setting
diam. 3.5 cm
Vacheron Constantin Heritage Collection
N° 10460

• 金属箔片嵌饰珐琅

☒ Paillonné Enamel



嵌饰珐琅怀表

维斯兄弟和默尼公司

约 1790 年

瑞士日内瓦

高 6.48 厘米，直径 4.76 厘米，

厚 2.13 厘米

日内瓦艺术与历史博物馆藏

2003 年费尔南·奥尔特拉马尔夫妇
于日内瓦捐赠

H 2003-114

◎该怀表为镌刻金质表壳，装饰珐琅
微绘、金属箔片嵌饰珐琅和精致珍珠；
配备黄铜和精钢框架式机芯，冕状轮
擒纵系统，芝麻链，黄铜圆形平衡摆
轮，平游丝，银质游丝微调装置

Wyss Frères & Menu, Pocket watch

Geneva (Switzerland), ca. 1790

Case in engraved gold with painted,
flinqué and spangled enamel, fine
pearls

Movement frame in gilded brass
and steel, crown wheel escapement,
chain fusée, brass circular balance,
flat balance spring, silver rosette
h. 6.48, diam. 4.76, thk. 2.13 cm

Geneva Museum of Art and History
H 2003-114, donated by Mr. and
Mrs. Fernand Oltramare, Geneva,
2003





嵌饰珐琅怀表

罗曼梅里鲁公司

约 1790 年

瑞士日内瓦和康斯坦茨

高 5.64 厘米，直径 3.95 厘米，

厚 1.74 厘米

日内瓦艺术与历史博物馆藏

H 2003-0135

◎该怀表为金质表壳，装饰珐琅微绘、透明珐琅和金属箔片嵌饰珐琅；配备黄铜和精钢框架式机芯，冕状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，平游丝，银质游丝微调装置

Roman, Melly & Roux, Pocket watch

Geneva and Constance

(Switzerland), ca. 1790

Gold case with painted, flinqué and paillonné enamel

Movement frame in gilded brass and steel, crown wheel escapement, chain fusée, brass circular balance, flat balance spring, silver rosette

h. 5.64, diam. 3.95, thk. 1.74 cm

Geneva Museum of Art and History

H 2003-0135



嵌饰珐琅怀表

罗伯特

约 1800 年

瑞士日内瓦

高 7.8 厘米，直径 5.7 厘米，

厚 2.1 厘米

日内瓦艺术与历史博物馆藏

M 863

◎该怀表为铜镀金表壳，装饰珐琅微绘和透明珐琅，底盖和表圈嵌饰金银箔片，珐琅表盘；配备黄铜和精钢框架式机芯，冕状轮擒纵系统，芝麻链，黄铜圆形平衡摆轮，平游丝，银质游丝微调装置

Robert, Pocket watch

Geneva (Switzerland), ca. 1800

Case in gilded copper with miniature painting on enamel, sous-fondant, case back and bezel, gold and silver spangles, painted enamel dial

Movement frame in gilded brass and steel, crown wheel escapement, chain fusée, brass circular balance, flat balance spring, silver rosette
h. 7.8, diam. 5.7, thk. 2.1 cm

Geneva Museum of Art and History

M 863



珐琅怀表

江诗丹顿公司

1904 年瑞士日内瓦

直径 3 厘米

江诗丹顿典藏部藏

N° 11472

◎ 18K 黄金表壳，表背机刻雕花图案上饰有金属箔片嵌饰珐琅，并镶有珍珠，珐琅表盘。11"73 黄铜镀金圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、宝玑游丝及简易调速器，共使用 15 颗宝石轴承

Vacheron Constantin, Geneva Pendant watch

1904

18K yellow gold, enamel, pearls, enamel dial, case back with paillonné enamel over a guilloché pattern

Caliber 11" 73, round, in gilt brass lever escapement, cut bimetallic compensation balance, "Breguet" balance-spring, simple adjustment index, 15 jewels

diam. 3 cm

Vacheron Constantin Heritage Collection

N° 11472



内填珐琅怀表

让·莫伊利埃特

约 1830 年

瑞士日内瓦

高 5.55 厘米，直径 3.95 厘米，

厚 0.75 厘米

日内瓦艺术与历史博物馆藏

M 976

◎该怀表为雕花金胎内填珐琅表壳，
镀金铜质表盘；配备黄铜和精钢桥架
式机芯，工字轮擒纵系统，镀金黄铜
圆形平衡摆轮，抛光精钢快慢针

Jean Moilliet, Pocket watch with champlevé enamel

Geneva (Switzerland), ca. 1830

Pocket watch with champlevé
enamel

Case in multicolored champlevé
enamel on engraved gold; dial in
gilded copper

Movement with brass and steel
bridges, cylinder escapement,
circular balance in gilded brass,
blued steel balance spring, polished
steel index assembly

h. 5.55, diam. 3.95, thk. 0.75 cm

Geneva Museum of Art and History

M 976

· 内填珐琅

☒ Champlevé Enamel



蝴蝶形猎表

埃斯基维尔兄弟德绍丹公司

约 1800 年

瑞士日内瓦

长 3.7 厘米，宽 2.8 厘米

日内瓦艺术与历史博物馆藏

H 2001-28

◎该表为玫瑰金表壳，装饰内填珐琅、透明珐琅和珐琅微绘，镶嵌珍珠、凸圆形绿宝石和红宝石，其中 6 片绿宝石镶嵌于珐琅之上，白色珐琅表盘；配备框架式机芯，黄铜镀金圆筒形夹板柱，采用机轴擒纵系统和芝麻链，黄铜三臂平衡摆轮，镂空雕花摆轮，银质游丝微调装置

Esquivillon Frères & Dechoudens,
Butterfly hunter watch

Geneva (Switzerland), ca. 1800

Pink gold case with champlevé, flinque and painted enamel, pearls, cabochon-cut emeralds and rubies, six emeralds set in applique on enamel; white enamel dial

Movement frame with gilded brass cylindrical pillars, verge escapement, chain fusée, brass three-arm balance, pierced and engraved balance-cock, silver rosette

l. 3.7, w.2.8 cm

Geneva Museum of Art and History

H 2001-28





球形吊坠表

阿马尔里克兄弟

约 1800 年

瑞士日内瓦

高 3.93 厘米，直径 2.5 厘米，

机芯直径 2.51 厘米

日内瓦艺术与历史博物馆藏

H 2003-92

◎该表为金质内填珐琅表壳，珐琅表盘；配备镀金黄铜框架式机芯，圆筒形夹板柱，采用冕状轮擒纵系统，芝麻链，黄铜平衡摆轮，镂空摆轮夹板上镌刻 6 朵对称百合花

Amalric Frères, spherical pendant watch, "Ma plus Belle"

Geneva (Switzerland), ca.1800

Gold case with champlevé enamel; enamel dial

Movement frame in gilded brass, cylindrical pillars, crown wheel escapement, chain fusée, brass balance, pierced and engraved balance-cock (six symmetrical lilies)

Diam. movement: 2.51 cm

h. 3.93, diam. 2.5 cm

Geneva Museum of Art and History

H 2003-92



内填珐琅怀表

江诗丹顿

约 1830 年

瑞士日内瓦

高 6.3 厘米，直径 4.4 厘米，厚 1 厘米

日内瓦艺术与历史博物馆藏

M 820

◎该怀表为金质表壳，装饰黑白内填珐琅；配备镀金黄铜和精钢桥架式机芯，双音簧二问报时装置，采用工字轮擒纵系统，玫瑰金圆形平衡摆轮，平游丝，快慢针

凹槽镌刻 “Vacheron à Genève

Echappement à cylindre, roue trempée quatre trous en rubis Aiguilles”

（瓦士伦制于日内瓦，工字轮擒纵系统，4 颗红宝石）

Vacheron Constantin, Quarter repeater pocket watch

Geneva (Switzerland), ca. 1830

Gold case, black and white champlevé enamel

Movement with bridges in gilded brass and steel, quarters struck on two spring gongs, cylinder escapement, circular balance in pink gold, flat balance spring, index
Cover engraved “Vacheron à Genève Echappement à cylindre, roue trempée quatre trous en rubis Aiguilles”

h. 6.3, diam. 4.4, thk. 1 cm

Geneva Museum of Art and History
M 820



内填珐琅怀表

查尔斯·维亚尼耶

约 1835 年

瑞士日内瓦

高 5.65 厘米，直径 4.3 厘米，

厚 1.3 厘米

日内瓦艺术与历史博物馆藏

M 465/b

◎该怀表为金质雕花表壳，装饰内填珐琅和珐琅微绘；配备黄铜和精钢桥架式机芯，工字轮擒纵系统，镀金黄铜圆形平衡摆轮，蓝钢游丝

Charles Vuagnière, Pocket watch

Geneva (Switzerland), ca. 1835

Gold case with champlévé and painted enamel sous fondant, engraved gold

Movement with brass and steel bridges, cylinder escapement, circular balance in gilded brass, blued steel balance spring

h. 5.65, diam. 4.3,

thk. 1.3 cm

Geneva Museum of Art and History

M 465/b



晚装礼服怀表

哈斯、内沃公司

约 1925 年

瑞士日内瓦

高 5.57 厘米，直径 4.57 厘米，

厚 0.84 厘米

日内瓦艺术与历史博物馆藏

H 2003-96

◎该怀表为雕花黄金表壳，装饰黑色、粉红色和绿色内填珐琅及透明珐琅，磨砂银质表盘，黄金镶贴时标；配备镀铑精钢桥架式机芯，装饰变形条纹，日内瓦印记，采用直线杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑上绕游丝

Haas, Neveux & Cie, Pocket watch “de smoking”

Geneva (Switzerland), ca. 1925

Yellow gold case, black, pink and green champlevé enamel, engraved yellow gold, all sous fondant; brushed silver dial, yellow gold applique markers

Movement with rhodiumized steel bridges, *fausses côtes* decoration, Geneva Seal, straight-line lever escapement, bimetallic compensation balance, Breguet overcoil balance spring
h. 5.57, diam. 4.57, thk. 0.84 cm
Geneva Museum of Art and History
H 2003-96



晚装礼服怀表

哈斯、内沃公司和瓦兰钟表公司（机芯）

约 1925 年

瑞士日内瓦

高 5.5 厘米，直径 4.57 厘米，

厚 0.9 厘米

日内瓦艺术与历史博物馆藏

H 2003-95

◎ 该怀表为金质表壳和蓝色珐琅表底，装饰内填珐琅花卉，喷砂银质表盘，镶贴金质时标，小秒针位于 6 时位置；配备镀铬精钢桥架式机芯，装饰变形条纹，采用直线杠杆式擒纵系统，双金属截断式自动补偿摆轮，宝玑上绕游丝

Haas, Neveux & Cie, Valant Watch Co., (movement), Pocket watch "de smoking"

Geneva (Switzerland), ca. 1925

Gold case, back in blue enamel, floral decor in champlevé enamel; dial in sanded silver with applique gold markers, small seconds at 6 o'clock

Movement with rhodiumized steel bridges, fausses côtes decoration, straight-line lever escapement, bimetallic compensation balance, Breguet overcoil balance spring
h. 5.5, diam. 4.57, thk. 0.9 cm
Geneva Museum of Art and History
H 2003-95



内填珐琅怀表

江诗丹顿公司

1824 年

瑞士日内瓦

直径 5.5 厘米

江诗丹顿典藏部藏

N° 11324

◎黄金和内填珐琅表壳，描绘意大利地图，银质表盘。21" 黄铜镀金圆形机芯，配备工字轮擒纵系统、三臂环摆轮、平游丝及简易调速器，4 个孔镶有宝石，使用钥匙上链和设定

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1824

Yellow gold, enamel, silver dial

Champlevé enameled case depicting the map of Italy

Caliber 21", round, in gilt brass, cylinder escapement, three-arm annular balance, flat balance-spring, simple adjustment index, 4 holes with jewels, key winding and setting
diam. 5.5 cm

Vacheron Constantin Heritage Collection

N° 11324



内填珐琅怀表

江诗丹顿公司

1913 年

瑞士日内瓦

5.75 厘米 × 4.4 厘米

江诗丹顿典藏部藏

N° 11286

◎ 18K 黄金和黑色内填珐琅线刻表壳，采用锤揲工艺覆有一层透明的珐琅涂层，镀金表盘。RA 17" UM 德国银圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、平游丝及简易调速器，共使用 18 颗宝石轴承

◎ 这种文艺复兴式的珐琅装饰是由日内瓦装饰工坊使用的，在 19 世纪末由雕刻家弗朗索瓦·里雄发明

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1913

18K yellow gold, enamel, gilt dial

Black champlevé enameled case, pounced ornament technique under flux

Caliber RA 17" UM, round, in German silver, lever escapement, cut bimetallic compensation balance, flat balance-spring, simple adjustment index, 18 jewels

This Renaissance-style decoration in enamel was created in the workshop

of the Genevan decorator and engraver François Richon at the end of the 19th century

dimensions 5.75 cm × 4.4 cm

Vacheron Constantin Heritage Collection

N° 11286



古铜小座钟

珐琅工艺师贝尔特·施密特-阿拉尔
约 1930 年

瑞士日内瓦

高 11.3 厘米，宽 7.9 厘米，
深 5.3 厘米

日内瓦艺术与历史博物馆藏

H 99-103

◎该座钟装饰蓝色内填珐琅（侧面和上部为绿松石色珐琅），以及铜胎掐丝珐琅（黑色、金色、蓝色、绿松石色、紫色和棕色）

◎ 1999 年克洛德·施密特先生于日内瓦遗赠

Berthe Schmidt-Allard (enameler),

Table clock in patinated copper

Geneva (Switzerland), ca.1930

Blue champlevé enamel (turquoise on sides and top), back decorated with cloisonné enamel on copper (gold, black, blue, turquoise, violet, brown)

h. 11.3, w. 7.9, d. 5.3 cm

Geneva Museum of Art and History

H 99-103, legacy of M. Claude

Schmidt, Geneva 1999



怀表

江诗丹顿公司

1905 年

瑞士日内瓦

直径 4.7 厘米

江诗丹顿典藏部藏

N° 10655

◎黄金和掐丝珐琅表壳，透明瓷漆下描绘蓟草图案，银质表盘。RA 17" XXI bas 德国银镀铑圆形机芯，配备杠杆式擒纵系统、双金属截断式自动补偿摆轮、宝玑游丝及简易调速器，共使用 18 颗宝石轴承

◎该表曾于 1906 年米兰国际博览会上展示

Vacheron Constantin, Pocket watch

Geneva (Switzerland), 1905

Yellow gold, enamel, silver dial

Cloisonné enameled case with

thistle pattern under flux

Caliber RA 17" XXI bas, round, in

rhodium-plated German silver,

lever escapement, cut bimetallic

compensation balance, "Breguet"

balance-spring, simple adjustment

index, 18 jewels

Watch presented at the International

Exhibition of Milan in 1906

diam. 4.7 cm

Vacheron Constantin Heritage

Collection

N° 10655



鸣谢

感谢首都博物馆出版此书，并感谢首都博物馆在与日内瓦艺术与历史博物馆合办、江诗丹顿协办的同名展览（2015年4月24日至8月12日）中所做的努力。

感谢首都博物馆馆长郭小凌先生和副馆长杨文英女士的真诚合作。

我们还要对帮助筹备《日内瓦：时光之芯——瑞士钟表文化之源》展览的下列众人致以最诚挚的谢意：塞利娜·多丹、文森特·赫尔格、埃娃·马、菲奥娜·马、格蕾丝·郭，利西亚内·布朗谢、杰拉尔丁·哈穆迪-卡利基亚。

感谢安妮·巴兹内、加布里埃尔·米诺-马托特、丹尼尔·胡格南、安吉洛·卢伊和罗伯托·帕皮斯等人的大力协助。

感谢阿林·米歇尔和纪尧姆·拉普等人的大力支持。

感谢杰拉德·帕克莱、素帕猜·瓦塔那卡诺克泰姆、帕特里克·莫加尔、劳伦·拉马和马克西姆·迪辛格等人在首都博物馆进行的制表相关技艺的展示。

Acknowledgements

The authors are grateful to the Capital Museum China which hosted this publication, accompanying the exhibition bearing the same title and held at the Capital Museum, China , April 24th – August 12th 2015 and organized by the Capital Museum, China, Museum of Art and History, Geneva in collaboration with Vacheron Constantin, Geneva.

Their sincere gratitude to Ms. Yang Wenying, Vice Director and Mr. Guo Xiaoling, Director of Capital Museum.

We would like to extend our warmest thanks to the many people who have helped in preparing the “Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture” catalogue and exhibition:

Céline Daudin, Vincent Helg, Jérôme Meier, Eva Ma, Fiona Ma, Grace Guo, Lysiane Blanchet, Géraldine Hamouni-Calicchia.

Anne Baezner, Gabrielle Mino-Matot, Daniel Huguenin, Angelo Lui and Roberto Papis for their friendly and efficient assistance.

Aline Michel and Guillaume Rapp, for their contribution.

Gérard Paquelet, Supachai Wattananoktham, Patrick Maugard, Laurent Ramat, Maxime Dischinger for their participation in demonstrations of watchmaking and artistic crafts at the Capital Museum, China.

参考书目

多梅内克·弗莱雄：《精通时间——从日晷到腕表的计时器历史：发现、发明和制表技艺的进步》，弗拉马里翁出版社，巴黎，瑞士高级制表基金会，日内瓦，2012年版，456页。

格里高利·加迪内蒂、多梅内克·弗莱雄：《钟表业，天文学的孩子》，瑞士高级制表基金会，日内瓦，2013年版，88页。

弗朗格·柯罗尼：《江诗丹顿的秘密——250年不间断的历史：自1755年起的名表图录》，弗拉马里翁出版社，巴黎，2005年版，335页。

卡罗尔·朗伯莱、洛雷特·科恩：《江诗丹顿的世界》，日内瓦、洛桑、Scriptar，江诗丹顿，1992年版，415页。
阿尔弗雷德·沙皮伊、欧仁·雅凯、G.阿尔伯特·伯纳：《瑞士钟表技术的历史：从起源到今日》，1945年版，270页。
阿尔弗雷德·沙皮伊、古斯塔夫·卢普：《中国钟表》，1919年版，272页。

图录

多梅内克·弗莱雄：《复杂功能钟表的世界》，日内瓦，钟表博物馆，2001年版，第119页。

埃丝特勒·法莱和安托万·西莫南：《瑞士钟表学院：专业技术的代表作》，纳沙泰尔，2010年版，第565页。

亚历山大·菲耶特、埃丝特勒·法莱、安妮·贝茨纳·埃塔莉：《工业装饰和设计：日内瓦的应用艺术》，绍莫吉出版社，巴黎，2010年版，559页。

埃丝特勒·法莱：《日内瓦钟表：工艺的魔力，珐琅的宝库》，阿赞出版社，巴黎，2011年版，143页。

《江诗丹顿的宝库：自1755年开始的制表传奇》，阿赞出版社，巴黎，2011年版，212页。

Selected bibliography

Dominique Fléchon, *The Mastery of Time : A History of Timekeeping, from the Sundial to the Wristwatch: Discoveries, Inventions, and Advances in Master Watchmaking*, Flammarion, Paris, Fondation de la Haute horlogerie, Geneva, 2012, 456 p.

Gregory Gardinetti, Dominique Fléchon, *Horology, a child of astronomy*, Fondation de la Haute horlogerie, Geneva, 2013, 88 p.

Franco Cologni, *Les secrets de Vacheron Constantin : 250 ans d'histoire ininterrompue : catalogue de montres depuis 1755*, Flammarion Editions, Paris, 2005, 335 p.

Carole Lambelet, Lorette Coen, *The world of Vacheron Constantin*, Genève, Lausanne, Scriptor, Vacheron Constantin, 1992, 415 p.

Alfred Chapuis, Eugène Jaquet, G. Albert Berner. *Histoire et technique de la montre suisse de ses origines à nos jours*, 1945, 270 p.

Alfred Chapuis, Gustave Loup, *La montre chinoise*, 1919, 272 p.

Catalogues

[Dominique Fléchon] *L'univers des montres à complications*, Genève, Musée de l'horlogerie et de l'émaillerie, 2001, 119 p.

Estelle Fallet, Antoine Simonin, *Dix écoles d'horlogerie suisses. Chefs d'œuvres de savoir-faire*, Neuchâtel, 2010, 565 p.

Alexandre Fiette, Estelle Fallet, Anne Baezner et alii, *Décor, design et industrie. Les arts appliqués à Genève*, Somogy Editions, Paris, 2010, 559 p.

Estelle Fallet, *L'horlogerie à Genève. Magie des métiers, trésors d'or et d'émail*, Hazan Editions, Paris, 2011, 143 p.

Treasures of Vacheron constantin. A legacy of watchmaking since 1755, Hazan Editions, Paris, 2011, 212 p.

图片版权

- © 日内瓦艺术与历史博物馆
- © 施密特和穆勒设计公司，舍扎尔·圣·马丁
- © 日内瓦宗教改革国际博物馆
- © 日内瓦图片中心
- © 日内瓦图书馆
- © 欧仁·雅凯，《日内瓦阁楼工匠》，比尔，1942
- © 江诗丹顿
- © 江诗丹顿 / 图片来自费拉齐尼·布歇摄影工作室
- © 江诗丹顿 / 图片来自多梅内克·科阿

Photographic credits

- © Musée d'art et d'histoire - Museum of Art and History, Geneva
- © Schmid & Muller Design, Chézard Saint Martin
- © Musée international de la Réforme - International Museum of the Reformation, Geneva
- © Centre d'iconographie Genevoise - Geneva Iconography Center© Bibliothèque de Genève, Geneva Library
- © Eugène Jaquet, Les cabinetiers genevois, Bienne, 1942
- © Vacheron Constantin
- © Vacheron Constantin / photograph by Studio Ferrazzini Bouchet Photographies
- © Vacheron Constantin / photograph by Dominique Cohas

真诚的合作

一提起钟表，人们就会自然而然地想到瑞士；一提起瑞士的钟表，就想到日内瓦的制表业。的确，日内瓦作为世界的制表中心，有着辉煌历史和灿烂的文化，而日内瓦艺术与历史博物馆收藏着大量珍贵的计时工具，完美地体现了制表业的历史和文化。基于这样的背景，首都博物馆与日内瓦艺术与历史博物馆合作举办了此次瑞士钟表文化展，并希望将展览举办一个精彩纷呈的艺术展、一个开阔视野的科技展、一个令人深思的文化展。

自2011年9月双方初次洽谈，到《日内瓦：时光之芯——瑞士钟表文化之源》展顺利开幕，经历了三年多的时间。在此期间，双方坦诚以待，真心合作，做出了卓有成效的努力。

2013年11月，负责展览的首都博物馆副馆长杨文英女士带队亲赴瑞士，与日内瓦艺术与历史博物馆馆长让-伊夫斯·马林先生及江诗丹顿首席执行官陶睿思先生等人商谈具体的合作意向，并亲自到日内瓦艺术与历史博物馆和江诗丹顿总部，从琳琅满目的藏品中挑选最具代表性的展品。2014年底，日内瓦艺术与历史博物馆馆长马林先生来首都博物馆签署正式协议。之后，双方工作人员不辞辛劳，以认真、负责、务实的态度推进各项工作，终于使得该展览顺利举行。

相信，这只是合作的开始，双方愿共同努力，为推动中国与瑞士间的文化交流做出更大的贡献。

When the watchmaking (“horlogerie”) is mentioned, people often think of Switzerland, and Geneva in particular. As the foremost center of watchmaking in the world, Geneva has splendid history and centuries-old culture. This heritage is wonderfully reflected in the rich collection of timepieces preserved in the Geneva Museum of Art and History. It is against this background that, Geneva Museum of Art and History and Capital Museum of China are partnering to hold this exceptional exhibition of Swiss watchmaking. The fundamental objective of this partnership is to present a thought-provoking demonstration of this rich art, with all its cultural and technical connotations.

It has been more than three years since the cooperation between Capital Museum and Geneva Museum of Art and History was first discussed in September, 2011. Following great efforts made by both parties, we are delighted to open the “Geneva at the Heart of Time: The Origin of Swiss Watchmaking Culture” exhibition to the public.

In November of 2013, accompanied by the work team on this exhibition, Yang Wenying, the deputy director of Capital Museum, visited Switzerland for discussion regarding the exhibition with Jean-Yves Marin, the director of Geneva Museum of Art and History and Juan-Carlos Torres, CEO of Vacheron Constantin. During this visit, the most representative objects from the rich collections of the Geneva Museum of Art and History and Vacheron Constantin were agreed upon for the exhibition. And at the end of 2014, the formal agreement was signed between the two museums in Beijing. Since then, the work teams from both sides devoted great efforts to the organisation and promotion of this event, resulting in the successful launch of the exhibition today.

This exhibition is the first collaboration for our two museums and we look forward to further manifestations of cultural exchanges between China and Switzerland in the future.



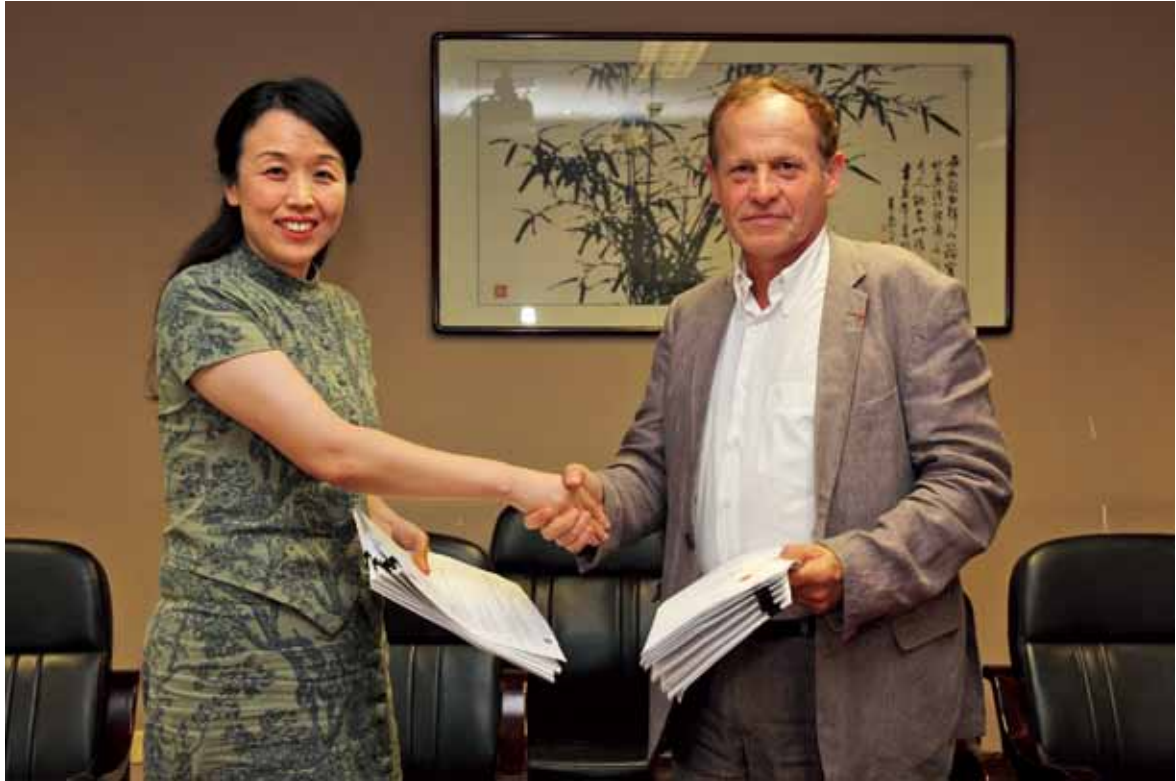
双方馆领导和策展人在日内瓦合影（从右至左：日内瓦艺术与历史博物馆馆长马林、首都博物馆副馆长杨文英、首都博物馆展览部副主任张贵余、日内瓦艺术与历史博物馆首席策展人法莱）

Directors and exhibition curators of the two sides at Geneva
From right to left: Mr. Jean Yves Marin, director of Geneva Museum of Art and History, Ms. Yang Wenying, deputy director of Capital Museum, Mr. Zhang Guiyu, vice director of Exhibition Department of Capital Museum, Ms. Estelle Fallet, chief curator of Geneva Museum of Art and History



杨文英副馆长在日内瓦艺术与历史博物馆挑选展品

Ms. Yang Wenying, deputy director of Capital Museum selecting exhibits in Geneva Museum of Art and History



首都博物馆副馆长杨文英女士与日内瓦艺术与历史博物馆馆长马林先生在首都博物馆签署展览协议

Ms. Yang Wenying, deputy director of Capital Museum and Mr. Jean-Yves Marin, director of Geneva Museum of Art and History signing the exhibition agreement

首都博物馆 书库

丁种 第叁拾伍部

日内瓦：时光之芯 瑞士钟表文化之源

首都博物馆学术委员会（首都博物馆书库 编辑委员会）

主 任 郝东晨 郭小凌

常务副主任 黄雪寅

委 员 （以姓氏笔画为序）

龙霄飞 冯 好 刘树林 孙五一

吴 明 武俊玲 武望婷 钟 梅

徐 伟 章文永 鲁晓帆

图书在版编目（CIP）数据

日内瓦：时光之芯：瑞士钟表文化之源 / 首都博物馆，日内瓦艺术与历史博物馆，江诗丹顿编. — 北京：北京美术摄影出版社，2015. 4

ISBN 978-7-80501-794-5

I. ①日… II. ①首… ②日… ③江… III. ①钟表—介绍—瑞士 IV. ①TH714. 52

中国版本图书馆CIP数据核字（2015）第076498号

责任编辑 董维东

特约编辑 杨 洋

执行编辑 鲍思佳 黄雯雯

书籍设计 张亚静

责任印制 彭军芳

日内瓦：时光之芯

瑞士钟表文化之源

RINEIWA:SHIGUANG ZHI XIN

首都博物馆 日内瓦艺术与历史博物馆 江诗丹顿 编

出 版 北京出版集团公司

北京美术摄影出版社

地 址 北京北三环中路6号

邮 编 100120

网 址 www.bph.com.cn

总发行 北京出版集团公司

发 行 京版北美（北京）文化艺术传媒有限公司

经 销 全国新华书店

印 刷 北京雅昌艺术印刷有限公司

版 次 2015年4月第1版第1次印刷

开 本 889毫米×1194毫米 1/16

印 张 19

字 数 248千字

书 号 ISBN 978-7-80501-794-5

定 价 268.00元

质量监督电话 010-58572393

责任编辑电话 010-58572703