

04 CADEIRNOS

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CULTURA: HISTÓRIA & PATRIMÓNIO DE AVEIRO

06

EM TORNO DAS GEMINADAS: O CONTRIBUTO DO DIAGNÓSTICO ARQUEOLÓGICO PARA A REQUALIFICAÇÃO DA IGREJA DE SANTO ANTÓNIO E CAPELA DE SÃO FRANCISCO (AVEIRO)

RICARDO COSTEIRA DA SILVA
PAULO MORGADO
SÓNIA FILIPE

22

PATRIMÓNIO, CULTURA E IDENTIDADE NA CELEBRAÇÃO DOS 200 ANOS DA FUNDAÇÃO DA FÁBRICA DA VISTA ALEGRE

RICARDO JORGE GOMES

42

TESOUROS DO MUSEU DE AVEIRO/SANTA JOANA NA HISTÓRIA DOS ÓCULOS ANTIGOS

MARIA DO SAMEIRO BARROSO

60

JOÃO AUGUSTO MARQUES GOMES CONTRIBUTOS PARA O ESTUDO DE UM EMINENTE REPRESENTANTE DA HISTORIOGRAFIA AVEIRENSE

CARLA FISCHER SERÓDIO

80

SOB O SIGNO DA OBSERVÂNCIA: MODELOS DE SANTIDADE FEMININA NA PRODUÇÃO HAGIOGRÁFICA AVEIRENSE

GILBERTO CORALEJO MOITEIRO

92

A BACIA HIDROGRÁFICA DO RIO VOUGA: AS ALTERAÇÕES NATURAIS E ANTRÓPICAS NA FAIXA NOROESTE DE PORTUGAL

JOANA MARGARIDA RIBEIRO MARQUES

AVEIRO

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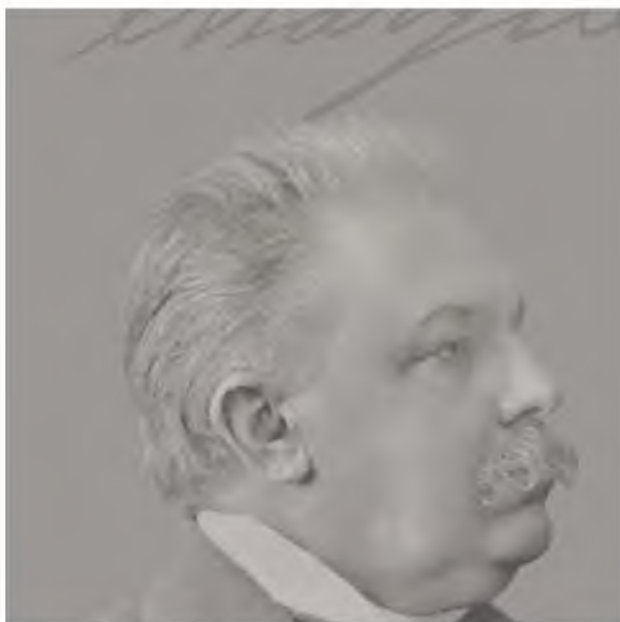
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TESOUROS DO MUSEU DE AVEIRO/SANTA JOANA NA HISTÓRIA DOS ÓCULOS ANTIGOS

Os óculos, um dos inventos mais úteis para a vida quotidiana, eram raros até o século XVIII. Os investigadores tinham que recorrer, essencialmente, a fontes literárias e iconográficas para estudar os primeiros exemplares. O contributo da Arqueologia tem sido fundamental para a recuperação dessas preciosidades do passado. Uma intervenção arqueológica no Museu de Aveiro na década de 30 do século XX trouxe à luz quatro pares de óculos que pertenceram às freiras do Convento de Jesus de Aveiro e que são os mais antigos até agora conhecidos em Portugal. Dois quadros portugueses também trazem valiosos contributos para o estudo da história dos óculos no Convento de Santa Joana (1452-1490), patrona do Museu e da cidade de Aveiro.



TREASURES FROM THE MUSEUM OF AVEIRO/SAINT JOANA IN THE HISTORY OF ANCIENT SPECTACLES

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Spectacles, one of the most beneficial invents for everyday life, were rare findings until the eighteenth century. Researchers resorted to literary and iconographic sources to study the earliest specimens. The contribution of Archeology has been essential in recovering such preciosities from the past. An archaeological intervention in the Museum of Aveiro facilities in the 30s of the twentieth century has brought to light four pairs of spectacles belonging to the nuns of the Convent of Jesus of Aveiro, the earliest known in Portugal. Two Portuguese paintings also bring valuable insights into the study of the history of eyeglasses in the Convent of Santa Joana (1452-1490), patroness of the Museum and of the city of Aveiro.



Du nom et
 en l'onneur
 de dieu ar
 ateur et
 seigneur
 de toutes
 choses et du benoist son filz ihesu
 crist et du saint esprit et de toute
 la sainte trinite et de la vierge
 marie et de touz les saints et sam
 tes qui sont en la grace de dieu.
 Je gascon par la grace de dieu sur
 nomme plebus Conte de foys

seigneur de Beaum qui tout mo
 temps me suis delite par especial
 en trois choses l'une est en amours
 l'autre est en armes et l'autre si est
 en char. **E**t car des deux
 offices il ya en trop de meilleurs
 maistres que ie ne suis. Car trop
 de meilleurs cheualiers ont este
 que ie ne suis. **E**t ausi de
 meilleurs cheualiers d'amours ont
 en trop de gens que ie n'ay pour
 ce seroit grant merite se ien par
 loie mais ie venent a deux offices



Ex Museo Petri Dubrovsky

Introduction

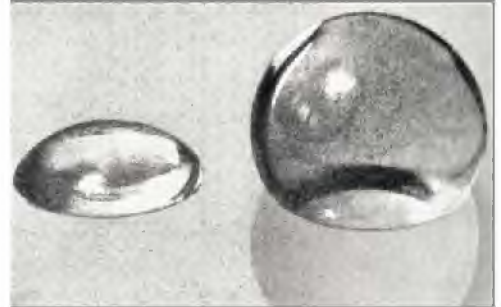
Spectacles appeared after the period corresponding to the so-called “Renaissance of the twelfth century” in the monastic context as a response to the need for reading developed by copyists in schools and monasteries. Profound changes had occurred in the social structure such as the population concentrating in the cities, improvements in the economy, construction of cathedrals and the foundation of universities. As the product of medieval experimental science, inventions such as the mechanical clock and spectacles appeared at the end of the thirteenth century (Lindberg, 2088, pp. 336-337). The name of the inventor is unknown.

Thirty known miniatures depicting people wearing spectacles from the collections of outstanding museums and libraries stand as treasures of monastic life that have come down to us (Pflugck, 1958, p. 34). Spectacles also appear in manuscripts from the nobility. A French manuscript, Ms. 27 (87.MR.34), fol. 3, by an unknown author, from c. 1430–1440, Brittany, France, belongs to a hunting book and depicts Gaston Phebus, Count of Foix (1331-1391), dictating (possibly his hunting adventures) to a scribe² (Fig. 1). This essay will focus on the treasures of Portuguese monastic life, disclosing rarities in the History of Ancient Spectacles.

²Available at <https://www.getty.edu/art/collection/object/105TDR>, accessed 30 April 2023.

1. Ms. 27 (87.MR.34), fol. 3. Gaston Phébus, Count of Foix, Dictating to a Scribe, 1430–1440, Brittany, France. Unknown author, Getty Museum (Free download).

2. On the right: Reading Stone after Roger Bacon (c. 1200). On the left: Reading Stone after Alhazen (c. 1000). In Greeff, 1958, p. 12.



Optics and experimental science

Since the reign of Charlemagne (742-814), founder of the Holy Roman Empire and his relevant cultural role in the "Carolingian Renaissance", ordering the construction of schools next to the cathedrals, the first European universities emerged.

The Western world and the Byzantine Empire had already been in contact with Islam and Islamism, founded by the Prophet Mohammed (c.571-632) in Mecca, Arabia. From the beginning of the 7th century AD, the Arabs conquered Persia and part of the Byzantine Empire that lost Egypt, Syria and Palestine. In AD 710, they crossed the Strait of Gibraltar and conquered the Christian kingdoms of Southern Spain and Portugal. In scientific terms, the Arabs had conquered Greek-speaking provinces, making remarkable advances in mathematics, philosophy and medicine. At the end of the eighth century AD, a "House of Wisdom" was founded in Baghdad, and an academy with a library, where Greek science and philosophy were translated into Arabic. The contact with the Arabs provided a convergence of cultures and an exchange of knowledge and experiences, resulting in remarkable discoveries (Hannam, 2010, pp. 19-23).

Optics was one of the fields to which the Arabs brought significant contributions, as well as the development of experimental science (Hunke, 1997, p.101). Their physical-optical theories have dominated European science up to modern times. Roger Bacon (c. 1214-c. 1292), a Franciscan Friar from Oxford University, enunciated the founding principles of experimental science in his work *Opus Majus*:

"I now wish to unfold the principles of experimental science since, without experience, nothing can be sufficiently known. For there are two modes of acquiring knowledge, namely, by reasoning and experience. Reasoning draws a conclusion and makes us grant the conclusion but does not make the conclusion certain, nor does it remove doubt so that the mind may rest on the intuition of truth unless the mind discovers it by the path of experience; since many have the arguments relating to what can be known, but because they lack experience they neglect the arguments, and neither avoid what is harmful nor follow what is good" (Bacon, *Opus Majus* Vol. II, 1962, p. 583).

Roger Bacon's knowledge about optics is based on the work *Opticae Thesaurus* by the Arab Alhazen mathematician, astronomer and physicist Alhazen (Hasan Ibn al-Haytham c. 965 – c. 1040) (Hunke, 1997, p. 93). Reading magnifiers, were plano-convex lenses of rock crystal or beryl, designated as *lapis ad legendum*, (Reading Stone) (Fig. 2) are mentioned in the Minnesang German medieval poetry in the second half of the thirteenth century (On this subject, see Barroso, 2022, pp. 198-261), meaning that they were currently used. They were lenses of beryls or rock crystal, which increased the size of the letters, enabling reading to people over forty years old suffering from presbyopia, as explained by Roger Bacon:



2a. Detail from Death of the Virgin Mary. Engraving by Martin Schongauer (1450-1491). In Pflugk, 1958, pp. 26-28, fig. 1.

If a man looks at letters or other small objects through the medium of a crystal or of glass or of some other transparent body placed above the letters, and it is the smaller part of a sphere whose convexity is toward the eye, and the eye is in the air, he will see the letters much better and they will appear larger to him. For in accordance with the truth of the fifth rule regarding a spherical medium beneath which is the object or on this side is its center, and whose convexity is toward the eye, all conditions are favorable for magnification, since the angle is larger under which the object is seen, and the image is larger, and the position of the image is nearer, since the object is between the eye and the center. Therefore this instrument is useful to the aged and to those with weak eyes. For they can see a letter, no matter how small, sufficiently enlarged (Bacon, *Opus Majus* Vol. II, 1962, pp. 574-5).

Reading magnifiers were already mentioned by Alhazen and even before by Arabic authors but translated into the European languages as looking glasses and mirrors (Benfeghoul, 2022, pp. 259-315) (**Fig.2**).

Rare specimens of these earliest visual aids evolved into monocular lenses mounted in a metal frame and handle and to earliest spectacles, which consisted of riveting two monocular lenses. Instead of being put on the manuscripts and moved while reading, they were perched at the base of the nose. Literary evidence indicates their appearance around 1285 (Delcorno, 1974, p. 75). The first representation of rivet spectacles in painting appeared in 1352, abounding throughout European art after that date. A detail from the engraving "The death of Mary" by Martin Schongauer (1450-1491) depicts a man reading a manuscript with the help of a pair of rivet spectacles directly put on a manuscript, amplifying the letters (Pflugk, 1958, pp. 26-28) (**Fig. 2a**)

3. Pinkheimer's spectacles c. 1520-1530. In Pflugk, 1958, p. 20, fig.4.



4a. Detail of the fresco by Tommaso da Modena (1326-1379) in the Convent of San Niccolò, Sala del Capitolo, Treviso. In Appuhn, 1958, pp. 2-8, fig. 3.



4. Parts of rivet glasses of the oldest form (Type I) made of beechwood, straight handle, grooved and slotted frame. The parts are each 56 mm long and 2mm thick. The rivet has broken off. The glasses are missing. In Appuhn, 1958, pp. 2-8, fig. 1.



The earliest spectacles in Europe

Magnifiers and spectacles appear in wills since they were expensive, rare and valuable objects. In 1853, Léon, Marquis de Laborde, curator of the Louvre Museum of Antiques, and general director of the archives of the Empire from 1807 to 1869 published the inventories of nobles from 1399 to 1589, considering their helpfulness as they contained information about objects in everyday life, focusing on the Middle Ages and the Renaissance (Laborde, 1853, Introduction, pp. VII-X).

Sometimes magnifiers and spectacles (bericles) were decorated with silver and gold and kept in cases (Laborde, 1853, pp. 163-164).

In 1867, the spectacles of the German lawyer, humanist and prominent Renaissance figure Willibald Pinkheimer (1470-1530) from Nürnberg, discovered behind the panelling of his study room, were the earliest known to us (von Horst Appuhn, 1958, pp. 2-8). They were leather pince-nez (*Bügelbrille*) (Fig.3).

A pair of leather spectacles with plano-convex glass lenses + 3.00 diopter in a gold setting, which belonged to Friedrich II, King of Denmark (1534-1588), were also known (Lundsgaard, 1929, p. 98).

The archaeological intervention in the Wienhausen Convent in 1953 in the Lüneburg Heath in Germany discovered two complete and nine incomplete rivet spectacles from the fourteenth century, the earliest that have come to our sight. The convent, founded in 1221 for nuns of the Cistercian Order, preserves a valuable collection of pre-Gothic religious art and a vast archive from which we can reconstruct its past and the nun's everyday life.

During the choir's archaeological work, in the autumn of 1953, objects covered with dust were found among the planks of the choir. Findings from monastic life included countless figures of saints, prayer books and religious song lyrics, candles, rosaries and pilgrim objects. Items from everyday life, such as rattles, knives, scissors, painted shells, brushes, wax tablets and a set of eyeglasses, some even with custom-made leather cases, were also found. Most are from the fifteenth century. Some manuscripts and miniatures are possibly from the early fourteenth century, and others from the sixteenth and seventeenth centuries.



5. Type II linden wood riveted glasses with bent stem and frame still slotted. The parts are 69 and 63 mm and 2mm thick. Left lens: green-sighted with large air bubbles. Spherometry Right lens: dark yellow with a green tint, maximum refractive index +3,0 diopter. Spherometry 1. Flat surface, 2 surfaces + 3,00 diopter d. 1,4 mm Ø 34mm. In Appuhn, 1958, pp. 3-8, fig. 7.

6a. Detail of the painting from the Altar of the Church of Bad Wildungen from 1404 by the German Gothic painter Konrad von Soest (1370-1422). in Appuhn, 1958, pp. 3-8, fig. 5.

6. Type III Lindenwood riveted glasses. The two parts are 64 and 67 mm long and 3.5 mm thick. The glasses have a yellowish tinge. Left lens: Spherometry Right lens: dark yellow with a green tint, maximum refractive index +2,75 +3,25 diopter. Spherometry 1. Flat surface, 2 surfaces + 2,25+3,25 diopter d. 1,4 mm Ø 33mm. In Appuhn, 1958, pp. 2-8, fig. 6.

Rivet spectacles, until then known just from paintings, were classified into three typologies according to their evolution, although precise dating is impossible.

All are made of wood and are surprisingly light. From Type I up to Type III, the handle of the monocle gradually curves to fit better over the nose, the two lenses continuing to be joined by the rivet.

Type I (**Fig.4**) corresponds to two monocles of different rivet spectacles made of beech tree wood. The rivets are broken. The left is decorated with engraved circles. Lenses are missing. These fragmented rivet spectacles are similar to the earliest depicted in the Fresco by Tommaso da Modena in 1352 (**Fig. 4a**).

Type II are linden wood riveted glasses with bent stems and slotted frames. The parts are 69 and 63 mm and 2 mm thick. The rivet is broken. Left lens: green-sighted with large air bubbles. Spherometry Right lens: dark yellow with a green tint, maximum refractive index +3,0 diopter. Spherometry: 1. Flat surface; 2 surface + 3,00 diopter d. 1,4 mm Ø 34mm (**Fig 5**).

Type III rivet spectacles are made of linden wood. The rivet on the glasses was replaced upon its finding. The two parts are 64 and 67 mm long and 3.5 mm thick. The glasses have a yellowish tinge. Left lens: Spherometry: Right lens: dark yellow with a green tint, maximum refractive index +2,75 +3,25 diopt. Spherometry: 1. Flat surface; 2 surface + 2,25+3,25 diopter d. 1,4 mm Ø 33mm (**Fig. 6**) They have a parallel in the painting from the Altar of the Church of Bad Wildungen from 1404 by the German Gothic painter Konrad von Soest (1370-1422). It is the

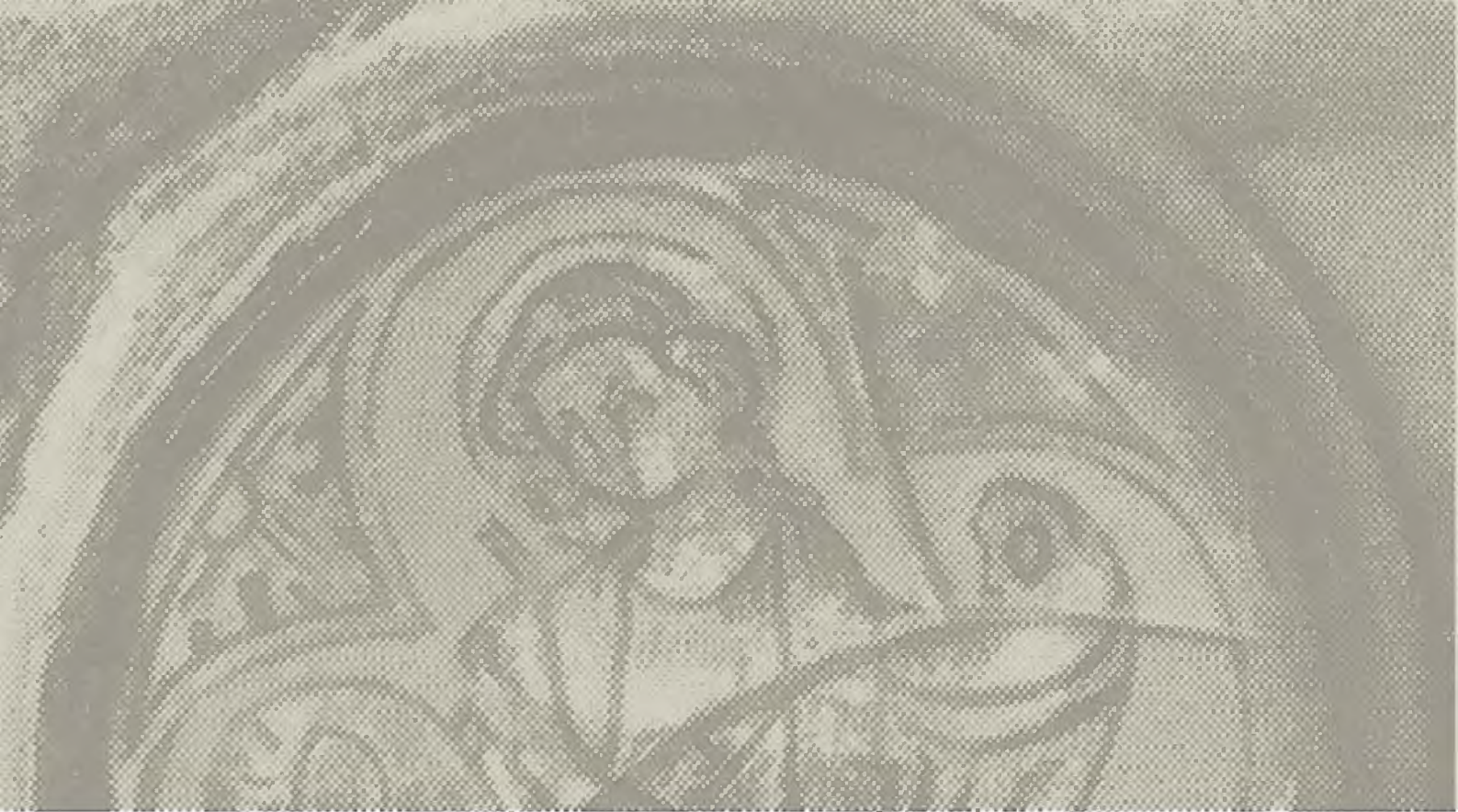
first depiction of spectacles in paintings from the North of the Alps (**Fig. 6a**) (von Horst Appuhn, 1958, pp. 2-8).

The study of a small oak wood Gothic casket, housed in the Lüneberg Museum, close to the Wienhausen monastery, helped to date the eyeglasses more precisely by comparing their style with other objects from the same period. The lid bears an image of Christ as the World's Judge enthroned in an almond-shaped glory. The apocalyptic animals, considered symbols of the four evangelists and therefore hold scrolls with their names, belong to this image taken from the Revelation of St. John.

Sparse carvings on the walls indicate frames with two recessed panels each, covered by precious small lattices, representing soldiers with swords and round shields in a uniform cast of pewter and gilded, between four-petaled flowers, laurel and oak branches.

Four slightly curved glass panes with the evangelists' symbols (on the reverse glass painting) decorate the four corners of the casket (**Fig.7**).

The glass panes are cut lenses that could be used in spectacles before the back was painted. Their size, thickness and irregularities correspond to the pieces found in Wienhausen, especially the Type II rivet spectacles. The convex tops of the glasses were measured with the Spherometry: top left (Angel - Matthew) +3.5 diopters (**Fig. 7a**), bottom left (Leo-Markus) +2+3 diopters, lower right (Taurus-Lukas) +3 diopters, upper right (eagle-Johannes) + 2.5+3 diopters). The undersides cannot be measured because the glasses are firmly cemented to the wood.



7. Lid of the Gothic box from the Lüneburg Town Hall, made around 1330. The carved relief of the Judges of the Worlds surrounds the Evangelists' symbols, painted in the style of early Gothic enamel behind eyeglasses. The lid is an upper level. Below, a strip decorated with gilded pewter reliefs depicting fighting knights and soldiers in the round medallions. In Appuhn, 1958, pp. 62-65, fig. 1.



7a. Broken lens on the case. The reverse glass painting in gold, blue, red and black depicts an angel as a symbol of Matthew the Evangelist. The glass (in original size) is plano-convex with a refractive index of 3.5 ptr. In Appuhn, 1958, pp. 62-65, fig. 3.

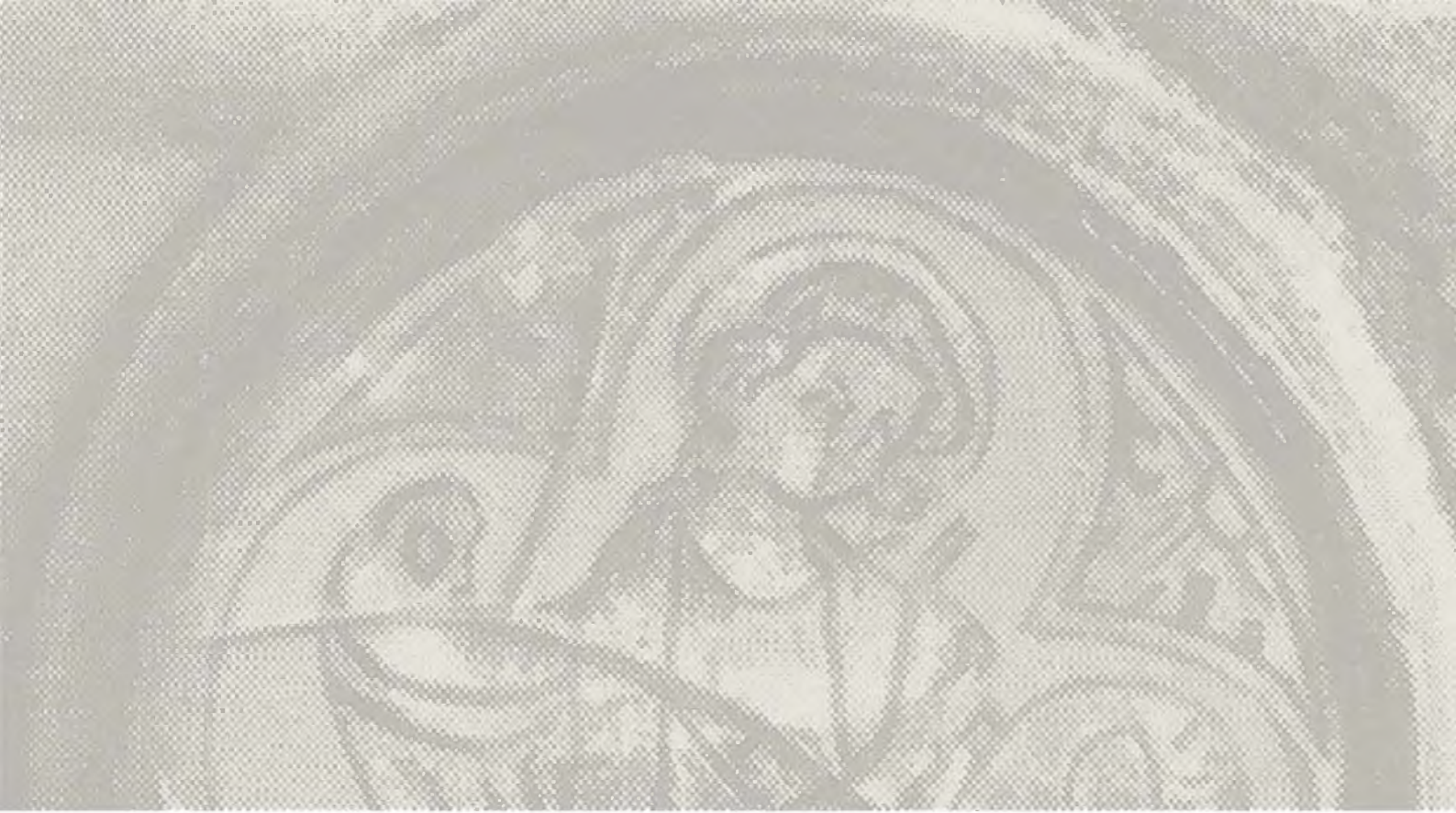


8. Leather spectacles from the Germanisches National Museum in Nuremberg, Germany Museum (c. 1500) in Pfluck, 1958, pp. 17-21, fig.1.



The casket was dated 1330. The rivet spectacles would be from the same time, earlier than the painting by Thomas of Modena from 1352 (Appuhn, 1958, pp. 62-65).

These were the earliest known spectacles. Their discovery provided better knowledge about the materials employed in their fabrication. In the paintings, it was impossible to figure out the material, considered ivory or bone. Although made of wood, they were light but difficult to hold in place, frequently falling to the ground and getting broken. The lenses were of transparent glass. The differences between the left and right lenses from Type II and III were determined by the empirical fabrication method since optometry was introduced much later by Benito Daça de Valdes (1591-1634), known as the Father of Optometry (Valdes 1623).



Leather spectacles

Rivet spectacles evolved to pince-nez. The bridge was cast and lowered to better fit at the base of the nose. Leather also replaced wood. The leather started to replace wood in the early fifteenth century. In the inventory from the Dukes of Burgundy, two pairs of spectacles from 1420 were made of leather. However, they were no visual aids. The lenses were of crystal, which would be plane, and would protect from the dust when riding:

Two bericles, or eyeglasses of gold and crystal, mounted on a frame of grey camel leather, which one puts on for powder in front of the eyes when one rides, at the end of which are two pearl buttons (Dukes of Burgundy. 4239.)

(Deux bericles, ou oeillez d'or, de cristal, assis sur un camelot cendré, que l'on met pour la pouldre devant les yeux quant l'on chevauche, au bout des quelx a j boutons de perles. (Ducs de Bourgogne. 4239.)
(Laborde, 1853, p. 163).

Around 1490 and 1495, leather spectacles were already available in Germany. The oldest, from c. 1500, is housed in the Germanisches National Museum in Nuremberg, Germany (**Fig. 8**). The frames are similar to Pinkheimer's spectacles from the early sixteenth century (just the bridge is thicker) and other specimens from the sixteenth century (**fig. 8**) and **fig. 10** from the seventeenth century (Pflugk, 1958, pp. 17-21).

In the mid-sixteenth century, leather spectacles produced by a spectacle-makers's guild. Horn was also used for frames, as stated by the German Meistersinger Hans Sachs (1494-1576) in his booklet printed in 1567/1568:

"I make glasses clear and light
Suiting different ages
From forty to eighty years
The vision to preserve
The frame of leather or horn.

*(Ich mach gut Brillen klar und liecht
Auff mancherley Alter gericht
Von vierzig biß auf achtzig jarn
Damit das gsicht ist zu bewarn
Die Gheuß von Leder oder Horn."*
(Apud Pflugk, 1958, pp. 17-21)

By that time, leather spectacles were also available in France, Great Britain and Spain, sometimes sold in wood cases. English leather spectacles had thinner frames and bridges.

Turtle and different metals started to replace leather in the seventeenth century. However, despite their intrusive appearance, they were sometimes used during the eighteenth century since leather was available, light, and easy to fit the face (Pflugk, 1958, pp. 17-21). Leather spectacles presumably would also be available in Portugal.



10. Portrait of Princess Saint Joana. Portuguese School c. 1472. Oil on oak wood from the Convent of Jesus in Aveiro. Inv. 1/A. Photo: Luis Pavão, 1990. © CMA – MAV/SJ



9. Facade of the Museum of Aveiro / Santa Joana. Photo: Manuel Gomes Teixeira, 2009. © CMA – MAV/SJ

The Museum of Aveiro / Santa Joana

The Museum of Aveiro (**Fig. 9**) was founded in 1911 on the premises of the Convent of Jesus, founded on May 16, 1461, by the bull of Pope Pius II (Rules of the Papal States from 1468-1464), for Dominican nuns of the Preachers Order, in a cloistered regime. Seven years later, the royal Princess Joana (1452-1490), daughter of King D. Afonso V (reigned from 1438, being six years old, to 1477, under the regency of his uncle D. Pedro, Duke of Coimbra (1392-1499), and 1477-1481), heir to the Portuguese throne, entered the convent, attracted by a life of sanctity and prayer. She was the sister of the future King D. João II (1455-1495). She was beatified by Pope Innocent XII (papacy 1691-1700) in 1693 (Pereira, 2015, pp.41-53; Braga 2020, p.14).

Her holiness, devotion and charity made her an icon of the Museum and the city of Aveiro. Princess Joana is said to have refused three marriages with European monarchs. A portrait from c. 1472 (**Fig. 10**) depicts the Princess in court attire, according to her statute, intending to represent the great lady of the state for which she was destined. The authorship was attributed to the royal painter Nuno Gonçalves (c.1420- c.1490), but recent research has refuted this conjecture. The authorship of the painting is unknown, being currently attributed to the Portuguese school of Portuguese painters and standing as one of the best produced in Portugal in the second half of the 15th century (Christo, 2015, pp. 105-112).

After the liberal wars, the "General Ecclesiastical Reform" in 1834 led to the closure of all convents, monasteries, colleges, hospices and houses of all religious orders. The county bishops ran the nuns' institutions until the death of the last nun, which marked the date of definitive closing. All assets were incorporated into the goods of the National Treasury (Braga 2020, 8). In 1911, the Museum of Aveiro was founded in the Convent facilities.

Spectacles

³Available at <http://www.matriznet.dgpc.pt/MatrizNet/Objetos/ObjetosConsultar.aspx?IdReg=1102334> accessed 1 May 2023

⁴Available at <http://www.matriznet.dgpc.pt/MatrizNet/Objetos/ObjetosConsultar.aspx?IdReg=1102334> accessed 1 May 2023

Archaeological excavations in the Museum of Aveiro in the 30s of the twentieth century have brought four pairs of spectacles to light. Possibly, these pieces belonged to the nuns of the Convent of Jesus in Aveiro, which became part of its collection at the time of the creation of the Museum³. A leaflet found with the spectacles, confirmed that they belonged to the nuns (Fig.11):

Curiosities of convent life.

Lunettes - coin - bezel rings - and glasses of nuns from the Jesus Convent.

The nuns in the choir probably used them to read the musical scores when singing (Fig. 12). Princess Saint Joana also used to sing in the choir. She grabbed capable breviaries for the choral office from her father, King D. Afonso V, who gave her money to buy a breviary from the Dominican Convent of Benfca in Lisbon (Gaspar, 2015, pp. 29-35).

The spectacles from the Wienhausen Convent were also found in the choir. With its beautiful reading pulpit and tiled walls, the refectory would also be a place where spectacles would be used (Fig. 13).

The Museum also keeps a remarkable library of books from the 1500s and 1800s, mainly religious (Christo, 2015, pp. 105-112), for which reading lenses and spectacles would be helpful over the centuries.

All spectacles had round lenses and no temples. Three are pince-nez. One keeps intact lenses. The other is a pair of nose clip glasses with preserved lenses, one being broken.

The Inv. Nr.- 55/L has a frame front, leather bridge, and no lenses (Fig. 14). The Inv. Nr. - 56/L has a frame front, leather bridge, and no lenses. The rims next to the part that rests on the nose are bent inwards for better support since eyeglasses had no temples at the time. (Fig. 14a). The Inv. Nr. 57/L. has a frame front, leather bridge and transparent glass intact lenses. They are bi-concave negative lenses; -5 diopters (Fig. 14b).

In the early seventeenth century, pince-nez evolved to nose clip glasses (Greeff, 1929, pp. 24-26). The Inv. Nr. 54/L. are nose pinch glasses with a frame front and bridge of silver-plated copper and transparent glass lenses. The right lens is broken. It is a bi-concave positive lens 1 diopter. The frame comprises a single silver-plated laminated copper wire that forms the bridge, continues laterally to form both hoops and closes them at the top with a hook system⁴ (Fig. 15).

The pince-nez are similar to the earliest from the sixteenth century (Fig. 3 and 8) and are from leather. However, further evidence is required regarding the context in which the spectacles were found or the relationship to other objects in the Museum to ascertain a precise date.

Pince-nez were in use from the end of the 15th century until the mid-eighteenth century, although their use sporadically lasted until the mid-eighteenth century.

Metal-rimmed glasses began to be used in the early seventeenth century. The oldest specimens are similar to the glasses from the Museum of Aveiro. Their shape evolved until they were fitted with temples in the mid-eighteenth century (Greeff, 1929, pp. 27-31).

Note: Graduation of lenses from N.º inv. MA. 57/L and N.º de inv. MA. 54/L. determined by Sr. António, Ótica Nascimento.



12. Choir of the Convent of Jesus in Aveiro. © CMA – MAV/SJ

13. Refectory of the Convent of Jesus in Aveiro, Fifteenth/sixteenth centuries. Pl. 39. Photo: José Rubio, sd. © CMA – MAV/SJ



11. Leaf from the inventory. © CMA – MAV/SJ



14. Leather spectacles. H: 4,6 cm, W: 9,2 cm. No lenses. Inv. Nr. - 55/L. Inv. Nr. - 55/L. © CMA – MAV/SJ

14a. Leather spectacles. H: 5 cm, W: 10 cm. No lenses. Inv. Nr. - 56/L. © CMA – MAV/SJ

14b. Leather spectacles. H: 4,6 cm, W: 10 cm. Lenses: Transparent glass. Inv. Nr. 57/L. © CMA – MAV/SJ



15. Wireframe spectacles from silver-plated copper. Lenses: transparent glass, the right lens is broken; Inv. Nr. 54/L. © CMA – MAV/SJ



Saint Joana's ceremony of taking the habit

⁵Available at https://baroqueart.museumwnf.org/database_item.php?id=monument;bar;pt;mon11;31;pt accessed 15 May 2023

⁶<https://www.facebook.com/museuaveiro/posts/pfbid02jtJU76kLg4PmP-6VEFbMJf7JNfxYbJGZtW-FfENfZtwzupxMw628Y-9VkjBoa957Udl> accessed 15 May 2023.

⁷John 7:53–8:11 available at <https://bible.oremus.org/?passage=John%207:53%E2%80%938:11&version=nrsv> accessed 16 May, 2023

⁸Philadelphia Museum of Art available at <https://philamuseum.org/collection/object/102202> accessed 16 May, 2023.

The Museum houses 477 paintings dating from c. 1472 to the early twenty-first century, with religious paintings from the 15th to the 18th centuries as its central thematic core (Christo, 2015, pp. 103-112). A set of baroque paintings in naive style, from 1729, by the painter Emanuel Ferreira e Sousa (dates of birth and death unknown) from c.1734 commissioned by the Monastery depict scenes from Princess Santa Joana's life, with clothing from the 18th century.⁵

One of these paintings from c.1734 depicts the Princess Saint taking the habit of the Dominican Order on January 25, 1475, against the will of her father and brother, the court and most of the kingdom's people. The prioress, D. Brites Leitão, carried out the ritual of cutting her hair, attended by D. Mícia Alvarenga and the Novices' Mistress. Princess Joana's jewels and the three crowns she refused are lying on the floor⁶. On the right, a nun is holding a book and wearing spectacles (Fig. 16). The nun looks older than the others. Spectacles are needed to correct presbyopia, a condition that affects all types of eyes in people from their early forties onwards. It is caused by the loss of elasticity of the eye lens, which reduces accommodation, resulting in difficulty focusing on nearby objects (Allen 1972, 365). The frames are black.



Christ and the woman taken in adultery

The Museum of Aveiro also houses a painting depicting Christ and the woman taken in adultery by the Portuguese school of painting from 1650 to 1700 (Fig. 17). The Gospel of Saint John narrates the episode. Scribes and the Pharisees brought to the temple a woman caught in adultery⁷. The topic was recreated before the Portuguese painting by artists as the Flemish painter Pieter Brueghel the Younger, active in Antwerp) from 1564–1637/38) c. 1600 and his father Pieter Bruegel, the Elder (c.1525–1530):

In his encounter with the adulteress (John 8:7), Jesus begins to write, "Die sonder sonde is, die w..." ("He that is without sin [among you]") on the ground. For this work, Pieter Brueghel the Younger followed the composition of his father's (Pieter Bruegel the Elder) 1565 grisaille painting, now in the Courtauld Institute of Art Gallery in London.⁸

The Portuguese painting follows the scene but not in a biblical ambience. The figures wear court clothes. The predominance of reds and the golden embroidery on the tunics and cloaks, contrasting with the delicate white transparency of the cloak and the pallor of the woman, while waiting with her eyes on the ground, her more than likely sentence to be stoned, cannot help reminding me of what Reynaldo dos Santos (1880-1970), physician and pioneer of Vascular Surgery and Portuguese History of Art, wrote about the characteristics of Portuguese art, between the 15th and 16th centuries, but which seems that this painting continues into the seventeenth century: "Our painters loved colour like a jewel." In the background, doves flying in an overcast sky imbue the scene with drama and perhaps hope, or what Reynaldo dos Santos called "Portuguese sweetness" (Santos, 1957, p. 43-46).



16. Taking habit or haircut, c. 1734. Portuguese school. Oil on canvas from the Convent of Jesus, Aveiro, Inv. 233/A. Photo: José Pessoa, 1994 © CMA – MAV/SJ

17. Christ and the woman taken in adultery. Portuguese school. Oil on canvas from the Convent of Jesus, Aveiro, from 1650 to 1700. Inv. 273/A. Photo: José Pessoa, 2010. © CMA – MAV/SJ

18. A bishop wearing rivet spectacles with oval lenses. Detail for a predella of a Gothic altar. Sketch from a Museum Emperor Friedric, Berlin, catalogue, in Greeff, 1929, p. 22.

The earliest spectacles for women

In this scene, Christ is writing his teaching on the floor, and a man (or a woman?) with a cloak is moving forward, trying to read His words. He is wearing spectacles which seem to be oval. They can be round glasses, which, due to the effect of perspective, seem oval, or true oval lens spectacles. The frames are black. Looking in the distance, he (or she) would not be wearing spectacles with convex lenses but concave lenses to correct myopia. Concave optical lenses or plano-concave lenses (lenses with one concave surface and one flat surface) to rectify myopia were in use by the end of the fifteenth century (Pansier 1901, 29). However, the painter appears to have skipped the lenses.

This painting raises the question of oval lenses to shorten the round lenses and increase the width. These specimens are a rarity in the History of ancient spectacles. According to the German ophthalmologist Karl Richard Greeff (1862-1938), turtle spectacles with oval lenses fabricated between 1702 and 1714 were mentioned for the first time in 1913/1914.⁹ A much earlier sketch from 1510 by an artist from Tirol in a catalogue (Nr. 1737) of the Museum Emperor Friedric in Berlin already portrayed a bishop wearing rivet spectacles with oval lenses, held in place with his left hand in a detail for a predella of a Gothic altar (Greeff, 1929, p. 22) (Fig. 18).

Women appear two times in early inventories as owners of magnifying glasses. The first is Queen Joan of Évreux (1310-1371), the third wife of King Charles IV of France:

“For a magnifier glass encircled like an eyeglass, prized XX francs.
(Account of the will of Queen Joan of Évreux.”

(“Pour un vericle encerné en manière de lunette, prisé XX francs.
Compte du testament de la Roynne Jehanne d'Evreux.”)
(Laborde, 1853, p. 163).

The second is Archduchess Margaret of Austria (1480-1530), the first female regent in the Netherlands, Governor of the Habsburg Netherlands from 1507 to 1515 and from 1519 to 1530:

“A bericle, a garnished silver handle with a little golden lion above, to read over a book. (Inventory Margaret of Austria, no. 225”.

(“Une béricle, garnie le manche d'argent et audessus du dict manche ung petit lion donré, pour lyre surung livre. (Inventaire de Marguerite d'Autriche, no 225.”)
(Laborde, 1853, p. 164).

In the sixteenth century, illustrations of women wearing spectacles are more frequent. In the seventeenth century, women are numerous in Dutch painters' works (Weve, 1929, pp. 64-67).

⁹In Zeitschrift für ophthalmologische Optik mit Einschluß der Instrumentenkunde 1 Jg 1913/1914) Bd. 1, S. 172

Conclusion

In this essay, spectacles and paintings of people wearing spectacles in paintings from the Museum of Aveiro / Santa Joana have been showcased and analysed within the scope of what is currently known about ancient spectacles.

Of the four pairs of spectacles found, three are leather pince-nez, which were used from the late fifteenth to mid-eighteenth century. The wireframed spectacles were used from the seventeenth century to the mid-eighteenth century until temple spectacles were replaced. The leather pince-nez match the earliest items from European Museums dating back to the early sixteenth century. The pair of wireframed spectacles match the spectacles from the early seventeenth century. For a more precise dating, further evidence is required. However, these are the earliest spectacles I found, ranking among the earliest in Europe.

The paintings are characteristic of the Portuguese school of painting and date back to the early seventeenth and eighteenth centuries. The spectacles of the nun depicted in the ceremony of Saint Joana taking the habit are also pince-nez, in black colour. They could be leather spectacles. The fact that the painter depicted a nun wearing spectacles indicates that it was a known fact.

The painting of the woman taken to Jesus in adultery brings up the rare and exciting existence of oval lenses.

The fact that the oldest glasses were discovered in nun convents in Germany and Portugal is the most remarkable presence of women in the History of Ancient Spectacles, rendering visibility to nuns and their religious and intellectual work.

Emerging from a monastic context, it is not, in reality, surprising that spectacles and paintings with figures wearing spectacles appear in convents, in this case, in the Museum of Aveiro, the former cloistred Convent of Jesus.

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