

This pdf is a digital offprint of your contribution in M. Van Strydonck, J. Reyniers & F. Van Cleven (eds), *Relics @ the Lab: An Analytical Approach to the Study of Relics*, ISBN 978-90-429-3667-6.

The copyright on this publication belongs to Peeters Publishers.

As author you are licensed to make printed copies of the pdf or to send the unaltered pdf file to up to 50 relations. You may not publish this pdf on the World Wide Web – including websites such as academia.edu and open-access repositories – until three years after publication. Please ensure that anyone receiving an offprint from you observes these rules as well.

If you wish to publish your article immediately on open-access sites, please contact the publisher with regard to the payment of the article processing fee.

For queries about offprints, copyright and republication of your article, please contact the publisher via [peeters@peeters-leuven.be](mailto:peeters@peeters-leuven.be)

Interdisciplinary Studies in Ancient Culture and Religion 20

# RELICS @ THE LAB

AN ANALYTICAL APPROACH TO  
THE STUDY OF RELICS

EDITED BY

MARK VAN STRYDONCK, JEROEN REYNIERS  
AND FANNY VAN CLEVEN



PEETERS  
LEUVEN – PARIS – BRISTOL, CT  
2018

## CONTENTS

Introduction. . . . .	1
Mark VAN STRYDONCK	
1. Red Fabrics in the Relic Assemblage of Turku Cathedral. Aki ARPONEN, Ina VANDEN BERGHE and Jussi KINNUNEN	3
2. The <i>Corpi Santi</i> under the Government of Pius VI, Materiality as a Sign of Identity: First Approaches to Novohispanic Cases. . . . .	21
Montserrat A. BÁEZ HERNÁNDEZ	
3. Medieval Iberian Relics and their Woven Vessels: The Case of San Ramón del Monte (†1126) Roda de Isabena Cathedral (Huesca, Aragon) . . . . .	43
Ana CABRERA-LAFUENTE, María Judith FELICIANO and Enrique PARRA	
4. Behind the Saint Guidon Shrine, a Multidisciplinary Approach of the Relics . . . . .	77
Mathilde DAUMAS, Philippe LEFÈVRE, Jean-Pol BEAUTHIER, Jean-Pierre WERQUIN, Mark VAN STRYDONCK, Serge VAN SINT JAN, Marcel ROOZE, Frédéric LEROY and Stéphane LOURVAN	
5. The Reliquary of Saint Dymphna: Dating Wood and Bones	91
Kristof HANECA and Marjan BUYLE	
6. Multidisciplinary Study of the Reliquary Contents Attributed to the Bishop Jacques de Vitry (12-13th C. AD) .	109
Caroline POLET, Aurore CARLIER, Lucie DOYEN, Fiona LEBECQUE, Caroline TILLEUX, Benoît BERTRAND, Jean-Bernard HUCHET, Jonathan BRECKO, Mathieu BOUDIN and Mark VAN STRYDONCK	

7. Sanctity Via the Light of Science: Radiographic Images of Ceroplastic Reliquaries . . . . .	133
Gabriela SÁNCHEZ REYES, José Luis VELÁZQUEZ and Ana Lucía MONTES MARRERO	
8. The Relics of Saint Odilia in Abbey Mariënlof (Kerniel, Belgium) . . . . .	155
Jeroen REYNIERS, Mathieu BOUDIN, Kim QUINTELIER and Mark VAN STRYDONCK	
9. The Relic Treasure of Herkenrode, an Online Data Base. . . . .	205
Fanny VAN CLEVEN, Shirin VAN EENHOOGHE, Frieda SORBER, Mark VAN STRYDONCK, Ina VANDEN BERGHE and Marit VANDENBRUAENE	
10. A Box Full of Surprises. Relics Excavated in St. Rumbold's Cathedral (Mechelen, Belgium). . . . .	213
Fanny VAN CLEVEN, Ina VANDEN BERGHE, Mathieu BOUDIN, Alexia COUDRAY, Joke BUNGENEERS, Veerle HENDRIKS, Marc MEES, Kim QUINTELIER, Gerrit VANDEN BOSCH, Marina VAN BOS, Maaïke VANDORPE, Mark VAN STRYDONCK, Lieve WATTEEUW and Ignace BOURGEOIS	
11. The Veneration of Harlindis and Relindis and the Enigmatic Content of their Relic Shrines. A Story about Ashes, Bones, Fabrics, Needles, Ivory and 'Unexpected' Substances . . . . .	267
Mark VAN STRYDONCK, Mathieu BOUDIN, Katrien HOUBEY, Caroline POLET, Anja NESKENS and Fanny VAN CLEVEN	
12. Interdisciplinary Study of the 15th Century C.E. Medieval Russian Icon of Our Lady Deksiokratusa "Mylostivaja" ("The Gracious") (Dendrochronology, Radiocarbon Dating, Chemical and Physical Analysis, Historical and Cultural Studies) . . . . .	317
Konstantin VORONIN and Mariya KABANOVA	
Bibliography . . . . .	325
Contributors . . . . .	349

## THE RELICS OF SAINT ODILIA IN ABBEY MARIËNLOF (KERNIEL, BELGIUM)

Jeroen REYNIERS, Mathieu BOUDIN,  
Kim QUINTELIER and Mark VAN STRYDONCK

### INTRODUCTION

In abbey Mariënlof in Kerniel (Borgloon) the shrine of Saint Odilia (Fig. 8.1) is preserved. This cult object dates from the thirteenth century and was made for the Order of the Holy Cross (the Crosiers) in Huy near Liège. Due to the French Revolution at the end of the eighteenth century, the monastery in Huy had been demolished and the shrine was moved to several places. First it was taken by Lambertus Hayweghen to his home in Borgloon.<sup>1</sup> In the second quarter of the nineteenth century it was placed in the Saint Odilia altar in the Church of Saint Pantaleon in Kerniel. In 1933 it got its final destination, namely the sacristy of Cistercian abbey Mariënlof in Kerniel.<sup>2</sup>



Fig. 8.1. Relic shrine of Saint Odilia, 1292. Kerniel, Abbey Mariënlof  
(© KIK-IRPA, Brussels).

<sup>1</sup> Fontaine 2010, 192.

<sup>2</sup> On the history of this object, read: Van Lieshout 1935, 15-91; Reyniers 2014, 136-148.

During the past centuries the shrine was opened regularly. Several bones were taken out and placed in separated shrines or were given to other monasteries and churches. In 1949 a last official opening took place. During this event two Crosiers received relics from the shrine (see below) and brought them to their monastery in the city Diest (since 2013 in the city Maaseik). What they found or what they placed back inside the shrine is only known by a handwritten description of Father André Ramaekers o.s.c.<sup>3</sup> An expanded inventory, documented with photos, was not elaborated.

During the research project of the Saint Odilia shrine at the KU Leuven in 2014-2015<sup>4</sup>, it was discovered that the seal on the upper panel of the shrine had been broken. With the permission of the Cistercian nuns in abbey Mariënlof, the Bishop of Hasselt Patrick Hoogmartens and the *Topstukkenraad* of the Flemish government, the shrine was officially opened on March 9, 2016 for an inventory campaign and interdisciplinary investigation.

This article starts with the contextualisation of the Order of the Holy Cross and their relic devotion to Saint Odilia in history. Then, the opening of the shrine in 2016 will be discussed, focusing on the content. During that investigation the bones and objects were studied and several samples were taken to the laboratory of the Royal Institute for Cultural Heritage (KIK-IRPA) in Brussels for radiocarbon dating. The earlier studied relics with radiocarbon dating of Saint Odilia in the Monastery in Maaseik will be compared with those of Kerniel. This article ends by placing the anthropological and technical results back into the historical context, to create a better understanding of the start of the Saint Odilia cult at the end of the thirteenth century in Huy.

<sup>3</sup> This document was digitized by Father Bert Graus o.s.c. in the monastery of Diest and sent to Jeroen Reyniers on November 21 2012. We would like to thank Father Bert for this interesting information. A transcription can be read in: Reyniers 2012-2013, 74-76.

<sup>4</sup> This project took place at Illuminare-Centre for the Study of Medieval Art (KU Leuven), thanks to the Professor Jean-Jacques Comhaire Fund of the King Baudouin Foundation. Jeroen Reyniers lead this project under the supervision of prof. dr. Jan Van der Stock and prof. dr. Lieve Watteeuw.

## THE ORDER OF THE HOLY CROSS AND SAINT ODILIA

It is generally agreed that Theodorus of Celles (°?-† 18 August 1236)<sup>5</sup> founded the Order of the Holy Cross in the beginning of the thirteenth century.<sup>6</sup> This devout man went on the third crusade with the Bishop of Liège, Radulf of Zähringen (1167-1191), and after the fall of Acco in 1191, Theodorus came in contact with the regular canons of the Holy Sepulcher.<sup>7</sup> When he arrived again in Liège, he met Mary of Oignies (°1177-†1213), a popular mystic from the diocese of Liège.<sup>8</sup> Theodorus received the papal charge to preach a crusade with Saint Dominic against the Albigens and after his return, he acquired a small chapel in Huy from the Bishop of Liège, Hugo of Pierrepont (°ca. 1165-†1229). It was situated just outside the city walls and the place bore the name *Clair-Lieu* or *Clarus locus*, referring to the earlier miracle of Saint Theobald on that property.<sup>9</sup> From this moment onwards Theodorus and his four companions preached in the cities. In 1216 Pope Innocent III (°ca 1160-†1216) acknowledged the existence of this order, where he also assembled the older community of the Cruciferi in Italy, Creta and Cyprus. Further he argued that Theodorus and his companions follow the rule of Saint Augustine and to live in a monastic community, by which these priests became regular canons. On January 26 1248 the Bishop of Liege, Henry of Guelders (1247-1274), gave the Crosiers of Huy the permission to build a church.<sup>10</sup> Most likely the convent also became a hospital, where they helped poor and sick people, leprous plague victims and pilgrims.<sup>11</sup> Pilgrims were very important and the function of hospitality improved in pilgrimage to Huy. *Clair-Lieu* also became a destination for pilgrims with the arrival of the relics of Saint Odilia at the end of the thirteenth century.

<sup>5</sup> He was prior general from 1277 until his death in 1298. See: van de Pasch 1959, 98-99; Janssen & Winkelmolen volume 6 2002, 1357.

<sup>6</sup> Janssen 2010, 25-38.

<sup>7</sup> Janssen 2010, 33.

<sup>8</sup> Van Rooijen 1936, 97. The life of this mystic is also preserved in a fifteenth century manuscript from the convent in Huy. See: Depaire volume 2 1969-1970, 32.

<sup>9</sup> Russelius 1635, 56; Van Rooijen 1936, 123-130; Janssen 2010, 33.

<sup>10</sup> Van Rooijen 1961, 54-61 and 199 (appendix 1, no. 4).

<sup>11</sup> Van den Bosch 1970, 173-180.

In 1277 the new, fourth prior general of the order had been chosen.<sup>12</sup> Joannes Rijck van Cuyck received the task to govern the order during the fourth quarter of the thirteenth century. He occupied a prominent position and in the eighteenth century he still had been remembered as a magnificent ruler (*vir prudentia, animi fortitudine, virtute magnus*).<sup>13</sup> In this context the devotion of Saint Odilia arose in the mother house (*Hoc magistro S. Odiliae et fodalium allata sunt sacra corpora*).<sup>14</sup>

The legend and cult of saint Odilia must be understood in context of the popular devotion of the martyrs Saint Ursula and the eleven thousand virgins. This cult had an important impact on the European continent during the Middle Ages.<sup>15</sup> When a pagan prince asked Ursula's hand in marriage, she accepted his offer, but he had to give her three years of freedom in return, implying a virginal life devoted to God. In addition, she got ten companions and each person received a ship with thousand female disciples. After a trip of three years, the strong wind brought them to the Rhine where they had an intermediate stop in Tiel for provisioning. In Cologne they set a second time foot ashore and then Ursula received a vision during the night. An angel reported her about the trip to Rome and about the end of her life during her return in Cologne. As soon as the virgins arrived by boat in Basel, they continued the trip to Rome on foot. When their visit in the capital of Christianity ended, they planned their trip backwards to Brittany, passing Basel and Cologne. As soon as the virgins anchored in the latter city, the bloodthirsty Huns started to kill the group and the king asked Ursula to marry him, but she refused and so she became a martyr as well. From then on Cologne got the astonishing interest to venerate these martyrs. The cult for these tortured women even increased in 1106, at the moment that the walls of the city of Cologne were strengthen against the troops of Henry V.<sup>16</sup> By coincidence many bones had been found during the excavation of the canals just outside the city walls, near the churches

<sup>12</sup> van de Pasch 1959, 98-99; Janssen & Winkelmolen volume 6 2002, 1357.

<sup>13</sup> Fisen 1747, 375.

<sup>14</sup> Fisen 1747, 375.

<sup>15</sup> An interesting study was composed by Legner: Legner 2003. The following description of the legend is largely based on the published text of Montgomery 2010.

<sup>16</sup> Strait 1974, 30-33.



of the Holy Apostles, Saint George, Saint Kunibert and Saint Ursula. The people of Cologne identified them as the bodies of the eleven thousand virgins, instead of the bones from a Roman cemetery, and so many Roman bones/relics received a place in the churches of the city.

The Order of the Holy Cross promoted Saint Odilia as a close associate of Saint Ursula and as an outstanding person among others. She would protect the order as long as the Church would exist. The Crosiers identified this saint as the daughter of king Maromeus and the aunt of Saint Helena. Saint Odilia also became popular outside the walls of the city Huy, caused by her healing power against bad eyesight.

The University library of Liège preserves the oldest legend of Saint Odilia.<sup>17</sup> It is a translation story of 1467 and most likely a copy after a lost text of 1291. It states that Saint Odilia once appeared during a night in 1287 before Johannes of Eppa<sup>18</sup>, a Crosier canon from the Parisian monastery of the Holy Cross. Johannes was unlettered and received the task to go to Cologne and to find Saint Odilia's bones underneath the pear tree in Arnulphus' garden. The next day Johannes described his vision to his Prior, but the Prior refused him the permission to leave the convent. After Johannes' second vision, the Prior of the convent gave permission for his journey.<sup>19</sup> He travelled together with a companion from Paris to Cologne in June 1287.<sup>20</sup> When they arrived in Cologne, they visited the church of Saint Gereon.<sup>21</sup> Afterwards they went to the house of Arnulphus,

<sup>17</sup> Liège, University Library, Ms. 135C: *Historia de translatione beatae virginis et martyris Odiliae* (1467), fol. 131r-134r; *Analecta Bollandiana* 1884, 20-28.

<sup>18</sup> Janssen & Winkelmolen volume 6 2002, 1210. There is not much information about this monk. He is only mentioned in Paris in 1259 and he was in 1294 in Cologne for a third time. See: Hermans volume I.1 1858, 55.

<sup>19</sup> In the following editions of Odilia's life, like Banelius' publications, the writers always mention that Odilia had to appear three times before Joannes, before he received permission to leave the convent. See: Banelius 1616, without pagination.

<sup>20</sup> The name of this companion is mentioned for the first time by Banelius as Ludovicus a Campis. Banelius 1621, 68.

<sup>21</sup> The hagiographer tried to add many inconspicuous links between the translation of Saint Odilia's relics and the Order of the Holy Cross. He mentioned correctly that Saint Odilia was buried at another place than the other virgins. Most likely, this church had been chosen because it was founded by Saint Helena, the patron saint of the Order of the Holy Cross. See: Schäfke 1984, 10 and 22.

a noble citizen of Cologne, living close to this church. He asked permission to exhume the sarcophagus of Saint Odilia, but the landlord refused. It was Arnulphus' wife who persuaded her husband to let them start (*Experire dumtaxat, et sub piro nostra foveam fiery permitte, tibi que polliceor de proprio dotalitio virgultorum damna recompensare*). When Johannes and his companion started their search under the pear tree in the garden, they bumped on a marble tomb with a description on it, referring to the person inside. Then Johannes and Arnulphus went to the palace of the Archbishop of Cologne, Sifredus (1275-1297), to announce the event. The Archbishop was surprised and drummed up the clerics and the devoted citizens to walk in litany to the garden. Sifredus and the other people proceeded to the hole underneath the pear tree and opened the sarcophagus, where a sweet odor emerged and all the sick and weakened people recovered. This already implies its first miracle and it proves Odilia's sanctity. A sick person in the close environment of the garden got well when the sweet smell reached her room. She ran into the garden to tell the people that she recovered with the help of God and started a thanksgiving prayer to God and Odilia. The Archbishop elevated the relics of the marble tomb and placed them in a wooden shrine, afterwards sealed with red ribbon. The Archbishop wrote an official document to record this happening and the shrine was placed in the sacristy of the Saint Peter's church.

A few days later Johannes started his return with the relics to Huy and stopped in the Cistercian nunnery *Vetus Vinetum* in Vivegnis.<sup>22</sup> In this monastery another miracle happened, thanks to the presence of Odilia's remains: a paralyzed nun was cured of her sickness after touching the relics. The next day Johannes passed Liège and finally arrived in Huy in the evening. The shrine was placed in the church of Saint Peter in the suburb of the city.<sup>23</sup> Afterwards the monks of the Order of the Holy Cross came to the church with candles and lights and sung *Alleluia*. The religious carried the coffin on their

<sup>22</sup> This abbey is situated in the present province Liège, roughly 44 km separated of the city Huy. It was founded in 1238. Berlière 1928, 212-217.

<sup>23</sup> The church already existed in the thirteenth century. An archival source revealed that an altar of the Holy Cross was present in the seventeenth century. Most likely it was already present earlier. The same source mentions a bust of Saint Odilia on the altar, which is now in the treasury of the collegial church in Huy. It is not impossible an older bust with relics was present on the same altar before. See: Demaret 1924, 55-56; Mardaga 1990, 101; Lemeunier 2012, 31.



Fig. 8.2. Procession of the relics in 1287 on the shrine of Saint Odilia (© KIK-IRPA, Brussels).

shoulders from the church of Saint Peter to the monastery of the order. The depiction on the reliquary of 1292 represents this procession (Fig. 8.2) at the moment it processed between the church of Saint Peter and the church of Our Lady in Huy.<sup>24</sup> A woman was carried to the procession by people. The weakness of her body created problems with walking. On the wooden chest of 1292 she is depicted as a veiled woman, leaning on a simple wooden supporter. After she touched the shrine, she cured immediately.

Finally the bones reached their destination in the Crosier monastery, just outside the city walls, where the cult for this saint arose.

#### THE RELICS OF SAINT ODILIA BETWEEN 1292 AND 1949

A historical study of the Crosier monastery in Huy and the impact of their Odilia cult on that place are difficult to retrieve, due to the lack of archival documents. At the end of the eighteenth century the monastery had been demolished and the archival documents were transported to Germany. To this day, the historical sources are missing.<sup>25</sup> Despite this restriction, an overview can still be made with

<sup>24</sup> Liège, University Library, Ms. 135C: *Historia de translatione beatae virginis et martyris Odiliae* (1467), fol. 134r; *Analecta Bollandiana* 1884, 28.

<sup>25</sup> On the precarious situation at the end of the eighteenth century in the Crosier monastery in Huy, see: Fontaine 1951, 6-42.

the help of other preserved documents and published texts dealing with the Crosiers in Huy.

The relics of Saint Odilia arrived in 1287 in the Crosier monastery in Huy. Five years later they received a place in a painted reliquary (Fig. 8.1), whereby the inauguration date is known by a copy of a now lost text, found in the document of 1440 (or 1443?) by prior general Henricus van Nijmegen.<sup>26</sup> He opened the shrine in the fifteenth century and inventoried what was inside.

Since the arrival of the relics in the monastery, many pilgrims had been visiting the church which made it already too small as place of worship. A new church had to be built, that was ready and consecrated in 1322.<sup>27</sup>

New information on the relics appeared in the beginning of the fifteenth century, at the moment when a reform of the order took place.<sup>28</sup> During the third day of the general chapter, the reliquary of Saint Odilia was opened and many miracles happened.<sup>29</sup> The suspicion arises that someone removed the head of Odilia on that occasion, due to Banelius who mentioned the head outside the shrine in 1414.<sup>30</sup> After the miracles of the chapter, they celebrated a mass in Odilia's honor and thereupon the shrine processed in the city. In 1419 Odilia's feast day was still celebrated on October 21, the feast day of Saint Ursula, and labeled as a *duplex*, but Father Petrus of Amsterdam in Huy preached twenty years later for a focus on her veneration and he promoted her own feast day.<sup>31</sup> This resulted afterwards in a change of her feast day to that of July 18.<sup>32</sup>

<sup>26</sup> *Lan de grasce MCCXCII fut mis le corps sainte Odilie en che fierte per que Dieux fist mult de miracles [...]*. A transcription and study was made by Van Lieshout: Van Lieshout 1935, 15-19.

<sup>27</sup> van de Pasch 1959, 105.

<sup>28</sup> Van den Bosch 1968, 30-44.

<sup>29</sup> Russelius 1635, 92; Hermans volume I.1 1858, 95; Van Lieshout 1935, 29; Van Rooijen 1946, 133-134.

<sup>30</sup> A noblewoman called Mechtildis donated a necklace of gold, silver and jewels to the bust. In 1446 a new bust in silver was provided by van Nijmegen. See: Van Lieshout 1935, 33-35.

<sup>31</sup> Van Asseldonk 1944, 24-25; Van Asseldonk 1945, 24-25. Petrus of Amsterdam wrote a sermon about Saint Odilia, which is preserved in: Liège, Grand Séminaire, 6M7; Petrus of Amsterdam, *Sermo de translacione virginis Odilie* (1439), fol. 85r-98r. The *Grand Séminaire* also preserves a copy of this text: Liège, Grand Séminaire, 6N2; Petrus of Amsterdam, *Sermo de beata Odilia* (ca. 1450), fol. 293r-301v.

<sup>32</sup> Van Asseldonk 1959, 26-32.

The same Petrus of Amsterdam wrote in his sermon of 1439 that he endorsed the presence of the relics, which he identified as much more costly than the most expensive gold and more magnificent than jewels (*felicem ecclesiam dixerim que tali thesauro locupletatur, que omni auro preciosior, gemmis preclarior merito iudicatur*).<sup>33</sup> That is the reason why the monks wanted to protect the shrine and guarded it.<sup>34</sup> These descriptions clearly display the importance and the role of the saint for the order. Further, Petrus also describes the place of the relics in the church, located in the tabernacle of the main altar (*tabernaculi in quo sunt vasa sancta puellarum*).<sup>35</sup>

In 1440 or 1443<sup>36</sup>, the prior general of the order, Henricus of Nijmegen<sup>37</sup> opened the wooden shrine officially on November 13, in the presence of John of Heinsberg (1419-1455), the Bishop of Liege.<sup>38</sup> He ordered a new reliquary for Odilia's bones, deriving from Tournai. When the prior general had the opportunity to examine the inside of the object, he found next to the Odilia relics, bones of Odilia's sisters in another relic purse. After the translation, Henricus of Nijmegen composed a charter in which he described its deeds, the delegation of present people and the description of 1292. While the shrine was open, Jan Van Hatten also received a relic and brought it later to Deventer where it was kept for a long time in an arm reliquary.<sup>39</sup>

Paquay believed that the thirteenth century shrine also got a place in the new reliquary, in consequence of the good condition of the object nowadays.<sup>40</sup> However, the charter of Van Nijmegen rejects his idea, which moves forward that the relics of Odilia, Ida and Imma and the thirteenth century description were transferred from the one,

<sup>33</sup> Liège, Grand Séminaire, 6M7: Petrus van Amsterdam, *Sermo de translacione virginis Odilie* (1439), fol. 97r.

<sup>34</sup> *Beati qui excubant ad postes tabernaculi in quo sunt vasa sancta puellarum*. Van Asseldonk 1959, 40.

<sup>35</sup> Liège, Grand Séminaire, 6M7: Petrus of Amsterdam, *Sermo de translacione virginis Odilie* (1439), fol. 97v.

<sup>36</sup> According to Van Lieshout it happened in 1443, but it was recently mentioned by George as 1440, based on a copy he found in the archives in Liège. Van Lieshout 1935, 20-22; George 2013a, 84-85.

<sup>37</sup> He was prior general from 1433 until his death in 1451. During this period many convents were founded. See: van de Pasch 1960, 18-20; Janssen & Winkel-molen volume 6 2002, 1200-1201.

<sup>38</sup> Van Lieshout 1935, 19-36.

<sup>39</sup> Banelius 1621, 143-144; Van Lieshout 1935, 35-36; Heere 1953, 36-39.

<sup>40</sup> Paquay 1932, 65.

the older shrine of 1292, to another, the new one of Tournai.<sup>41</sup> From that moment the place of the wooden devotional object from 1292 is in a state of uncertainty. It could have received a place in the sacristy in 1440, but more likely the empty chest moved to the new built altar of Saint Odilia, where a benefice started to exist, situated in the nave of the church.<sup>42</sup>

Around April 1482, the city Huy had been afflicted by the plague.<sup>43</sup> In the monastery sixteen canons died from this disease and the relic shrine of Saint Odilia, in all probability the shrine of Tournai, was processed in the city by four presbyters. Next in the procession line was the bust of Saint Odilia, followed by the relics of Saint Ida and Imma. In this context the existence of a shrine of Odilia's sisters is mentioned for the first time. Finally the plague ended in 1483 and the people of the city were convinced that it was caused by Saint Odilia's help. Afterwards, the main altar with the shrine became more decorated by people who were healed from their sickness.<sup>44</sup>

Around 1532 the rank of Saint Odilia in the breviary changed to the highest (*totum duplex*), probably established by prior-general Thomas of Gouda<sup>45</sup> (°?-†1537).<sup>46</sup> This resulted in the acceptance of Saint Odilia as one of the official patron saints of the order by the

<sup>41</sup> *Transposuimus patronage nostrae Odiliae reliquias de antique quadam capsula quondam facta Leodii cum quodam scripto Gallico in aliam novam, factam in civitate Tornacensi omni pulchritudine adornatam, una cum ceteris reliquiis venerandis, in eadem antiqua capsula seorum involutis repertis, quas de iam dictae virginis Odiliae sororibus fuisse non dubitamus.* Van Lieshout already noticed Paquay's error. Van Lieshout 1935, 26-27.

<sup>42</sup> Alain Dierkens noticed a 'bi-polarisation' of reliquaries, namely the devotion to a second, empty reliquary like the Mosan shrines in Aix-la-Chapelle (12th century), Gerpennes (13th century) and the shrines of Saint Ode (13th century). See: Dierkens 1999, 248-249. The information about the Odilia altar is limited. Joannes Vinchin (Joannes Blondi) was elected on January 17, 1441 as the rector of this new Odilia altar. See: Banelius 1621, 139-144; Stiennon 1951, 47 (no. 8) and 66.

<sup>43</sup> Banelius 1616, without pagination. He was informed by this catastrophe by the *Sermo de S. Odilia* of Arnoldus of Clothingen (?-†1512) which he found in the convent when he composed his book. This work is not preserved.

<sup>44</sup> Banelius 1616, without pagination. Another bust of Saint Odilia was donated by a woman of Trier in 1483. Banelius 1621, 123-126.

<sup>45</sup> His election as prior general happened in 1529 and he held office until his death in 1537. See: van de Pasch 1960, 30-31; Janssen & Winkelmolen volume 5 2002, 740.

<sup>46</sup> Van Asseldonk 1945, 24.

general chapter in 1600.<sup>47</sup> From that moment Odilia, Helena, Augustine and Quiriacus were the patron saints.

In 1602 prior general Herman Haas (°?-†1618) gave a rib of Saint Odilia to the capuchins of Huy.<sup>48</sup> During his reign (1602-1618) an inventory of the relics on the main altar was composed.<sup>49</sup> It states an Odilia reliquary at the right side and an Ida and Imma shrine on the left. Nothing is mentioned of its contents, though the shrine of Ida and Imma kept bones of Saint Ignatius.

In 1620 the general chapter in Huy decided that the feast of Saint Odilia would be venerated on the Sunday between 14 and 20 July and this practice is still customary today.<sup>50</sup> The same period, Augustinus Neerius<sup>51</sup> (°1570-†1648), the new prior general, promoted the patron's cult intensively.<sup>52</sup> He opened the reliquaries of Saint Odilia and of Ida and Imma in the attendance of prominent monks and people from the city Huy on September 13 1622.<sup>53</sup> Neerius found the relics, a *schedula* with a description *Sancta Odilia, Virgo et Martyr* and the text of van Nijmegen. Until the next Sunday the mortal remains stayed in the sacristy and afterwards they were wrapped in new textile. After a procession they received a place in a new niche at the two sides of the high altar. It is this prior general who sent a rib of Saint Odilia to the canons of the Saint Peter's church in Douai.<sup>54</sup> He also placed the relics of Saint Odilia in a new reliquary in 1630, an object with the value of 3350 guildens of Brabant.<sup>55</sup>

The contents of the Odilia shrine were reduced and in all likelihood only a few openings and the spread of relics to other convents and churches are documented. This idea can be demonstrated by the

<sup>47</sup> Reijners 1998, 109-110; Janssen 2010, 96.

<sup>48</sup> Banelius 1621, 3; van de Pasch 1960, 38.

<sup>49</sup> Liège, University Library, Ms. 188, Vandenberch: *Monumenta Patriae Leodiensis* (17th century), page 896; Hermans volume 2 1858, 528; Van Lieshout 1935, 43-44.

<sup>50</sup> Ramaekers 1984, 43.

<sup>51</sup> Neerius was prior general in Huy from 1619 until his death in 1648. van de Pasch 1960, 39-40; Janssen & Winkelmolen 2002, 1186-1187.

<sup>52</sup> Ramaekers 1984, 43-45.

<sup>53</sup> Van Lieshout 1935, 36-46.

<sup>54</sup> Rayssius 1628, 156-158.

<sup>55</sup> Van Lieshout 1935, 46. The order asked the significant smith Henri Libert in Namur for this assignment in 1629, but he was not able to finish it in terms of the agreement. Afterwards goldsmith Aymond Voes of Liège fulfilled the promise. Colman 1966, 61; Poskin & Stokart 1982, 186-187.



work of Abrosius de Warem who published his *Eburonum Huensium sacrarium, eorumque diva sartenisis* in 1659. In this work, de Warem listed the relics of the churches in Huy and it clearly moves forward that almost every place of worship owned a relic of Saint Odilia and/or her sisters.<sup>56</sup> The spread of these relics is not mentioned in any preserved document.

In the seventeenth and eighteenth century many publications describe the interior and the cult objects in the Crosier monastery of Huy.<sup>57</sup> Boussingault reports in 1672 that all the relics of Saint Odilia in the Crosier convent were captured in the shrine of 1630.<sup>58</sup> de Saumery also noticed some other, unknown relics in the sacristy of the convent: *Il y a beaucoup de Chasses de Vermeil en d'Argent où sont renfermées plusieurs précieuses Reliques.*<sup>59</sup> It is in this period that prior general Fisen gave three relics of Saint Odilia to the priory of Brandenburg on May 14 1752.<sup>60</sup>

In August 1789 the Liege upheaval started, which brought unrest in and around the cities. The prior general of the convent in Huy, Jacques Dubois (°1730-†1796),<sup>61</sup> decided to move the important archival documents and *preciosa* to a safer place in Duisburg in October 1792.<sup>62</sup> What happened with the relics is groping in the dark. Fréson found out that the shrine of 1630 was brought to the collegial church of Our Lady in Huy and it was transported, together with several other objects — in all likelihood also the shrine of Ida and Imma — to Altona in Denmark.<sup>63</sup> The relics of Odilia also moved to Denmark, most likely half stayed in the shrine of 1630 and the other half was placed in the shrine of 1292, together with the documents. Meanwhile the thirteenth century shrine stayed inside the monastery, until Father Lambertus

<sup>56</sup> de Warem 1659, 81-128.

<sup>57</sup> An overview of these descriptions is published in: Reyniers 2013, 189-191 (attachment 2).

<sup>58</sup> Boussingault 1672, 71.

<sup>59</sup> de Saumery 1740, 62.

<sup>60</sup> van de Pasch 1960, 64.

<sup>61</sup> He was prior general from 1778 to 1796. van de Pasch 1960, 66-70; Janssen & Winkelmolen volume 4 2002, 573-574.

<sup>62</sup> Wilmotte s.d., 34-41.

<sup>63</sup> Fréson 1906, 172. According to Daris the shrines were confiscated by the French in 1792 or 1796. Daris 1867, 390.



Hayweghen (°1751-†1835)<sup>64</sup> transported it and the wooden shrine of Ida and Imma to his house in the city Borgloon.

Several years before Hayweghen's death, he donated both shrines to the church of Saint Pantaleon in Kerniel in 1828. In this village and church the veneration to Odilia existed much longer, caused by the Crosiers of Kerniel, whose monastery, the cloister of Colen (now abbey Mariënlof)<sup>65</sup>, was only several hundred meters from the parish church. These Crosiers were pastors of the church between 1486 and 1810.<sup>66</sup> Hayweghen's gift to the church had been accepted by magister Arnoldus Barret, vicary capitulary of the diocese of Liege.<sup>67</sup> He endorsed to start a research on the bones and it occurred in the presence of Hayweghen, Schuermans (priest of Kerniel), Wagemans (priest of Borgloon) and Beelen.<sup>68</sup> In addition the magister ordered the church of Kerniel to give the half of the bones of Odilia and her sisters back to the city Huy.<sup>69</sup>

During this division most likely several bones were taken out of the shrine so that it became easier in later times to spread relics of Saint Odilia to other places. This idea was already mentioned by Van Lieshout when he discussed a bone he found without a *schedula*: *In latere tijden werden te Kerniel nog relieken weggegeven. Zoo herinneren we ons in 'n gesprek vernomen te hebben van pater Emond, dat de toenmalige pastoor van Kerniel, de Jong, hem tot zijn verwondering 'n reliek gaf van Odilia, zonder eenig schriftelijk gegeven als waarborg voor de authenticiteit.*<sup>70</sup>

In 1840 the king of the Netherlands, Willem II (°1792-†1849) decided to establish the Order of the Holy Cross again. It was Henricus Van den Wijmelenberg<sup>71</sup> (°1800-†1881) who became the

<sup>64</sup> Van Lieshout 1935, 72; Steinmetz 1982, 21-22; Janssen & Winkelmolen volume 5 2002, 801-802.

<sup>65</sup> Marcus 1972, 4-12.

<sup>66</sup> Brouette & Grauwels 1976, 255.

<sup>67</sup> Honhon and Van Lieshout published the official document, see: Honhon 1887, 220; Van Lieshout 1935, 140-141 (attachment 5).

<sup>68</sup> Van Lieshout 1935, 140-141.

<sup>69</sup> Daris 1867, 390; Van Lieshout 1935, 140-143 (attachment 5 and 6); Steinmetz 1982, 7; Janssen 2010, 305.

<sup>70</sup> Van Lieshout 1935, 83.

<sup>71</sup> He became the commissary general of the order until 1853. Janssen & Winkelmolen volume 1 1999, 850-851.

first head of the new Order of the Holy Cross. The order took steps to get their shrines back, but priest Schurmans of Kerniel refused their request. By way of compensation, Cornelius Wilhelmus Aloysius de Bruijn<sup>72</sup> (°1819-1883) received several relics of Odilia, which he divided between the convents in Sint-Agatha, Diest, Maaseik and Uden.<sup>73</sup> In 1897 relics of Odilia, Ida and Imma received a place in metal shrine in the church of Saint Odulphus in Borgloon, where the authenticity of the bones was accepted in 1897.<sup>74</sup> The same church preserves a tooth that is dedicated to Saint Odilia.<sup>75</sup>

In 1910 Daniëls and Jaminé, two members of the *Commissions royales d'Art et d'Archeologie*, visited the church of Kerniel.<sup>76</sup> They stated the disastrous condition of the thirteenth century shrine of Saint Odilia in the church. It resulted in the replacement of the shrine to the presbytery of the same parish, which was considered to be a better depository. The chest with the relics of Ida and Imma stayed in the church, but disappeared when a fire destroyed the Saint Odilia altar in 1966.

Four years later, in 1914, the abbot general of the Cistercian order, Amadeus de Bie (°1844-†1920) opened the shrine and packed each bone in a white linen sack and sealed it afterwards. After this official happening de Bie left a paper inside the shrine box.<sup>77</sup> Most likely he opened the shrine to make an inventory to protect the shrine and its content, caused by the fact that the First World War had started and in less than a week, German troops had entered the city of Kerniel.<sup>78</sup> Hundreds of German soldiers arrived and introduced strict rules. Luckily the village was saved from demolition, fires and murder. Without any problem the Odilia reliquary with the relics in it stayed undamaged in the presbytery.

<sup>72</sup> Since 1841 he had been Crosier. Janssen & Winkelmolen volume 1 1999, 103-104.

<sup>73</sup> Van Lieshout 1935, 83-85.

<sup>74</sup> The shrine is preserved in the sacristy of the church. Van Lieshout 1935, 81-82 and 142-147 (attachments 7-9). The documents are inside the shrine.

<sup>75</sup> Van Lieshout 1935, 83; Geukens 1977, 19-20.

<sup>76</sup> Daniëls 1910, 286-287.

<sup>77</sup> Van Lieshout and a description in the chronicle of Diest have mentioned this information. See: Van Lieshout 1935, 3-5, 55 and 139-140 (attachment 4).

<sup>78</sup> A first group of six soldiers arrived on August 5, the next day hundreds. Verelst & Van Laere 1997, 424-426.

Father Henri Van Lieshout o.s.c. published in 1935 his expanded study on the Odilia shrine. On the first pages he writes of his ability to open the shrines and to document their contents. He noticed three bundles of relics in the Ida and Imma shrine and in the shrine of Saint Odilia were two relics purses.<sup>79</sup> It is also around this period, most likely with the help of Henri Van Lieshout, that the shrine moved for a last time, this time to the Cistercian abbey Mariënlof in Kerniel.<sup>80</sup>

After the death of Father Van Lieshout, rector in abbey Mariënlof, the preparations were made by the Crosiers to receive relics of Saint Odilia for the order.<sup>81</sup> An official opening took place in 1949 in the attendance of Mgr. Simenon, canon Janssen, priest Vandeveldde of Kerniel, prior Ramaekers o.s.c. of the monastery in Diest, Marcel Colson o.s.c. from the same convent, E.P. Peeters, rector of the cloister Colen in Kerniel and doctor Vroninks from Borgloon. Father Ramaekers discussed the happening and the interior of the shrine intensively in a handwritten text.<sup>82</sup>

Two bundles were discovered.<sup>83</sup> In the first bag two thigh bones were present which were not from the same person and also a vertebra and some small unidentifiable bone fragments. According to doctor Vroninckx the thigh bones belonged to a male skeleton.

In the second relic bag was kept another thigh bone, this time of a woman, a shinbone and a few bone fragments. It is unclear from which bag the tree kneecaps, the gray bones, some parts of the foot, a shoulder blade, ribs and some small parts of the vertebra come from, discussed by Ramaekers. The Crosiers selected twelve bones: a kneecap, a shoulder blade, several ribs and a few small parts of the vertebra. Eight of them were placed in a rectangular showcase, the rest in a beaker. All the other relics were placed back into the thirteenth century shrine. A new official document was written and

<sup>79</sup> Van Lieshout 1935, 2-3.

<sup>80</sup> Until the end of the eighteenth century it was a monastery of the Order of the Holy Cross. Since 1822 Cistercian nuns have inhabited the cloister. Marcus 1972, 13-30.

<sup>81</sup> Salman 1989, 15.

<sup>82</sup> See footnote 3.

<sup>83</sup> Van Lieshout also found two bags of relics when he opened the shrine in the 1930s. Van Lieshout 1935, 3.

laid in the shrine.<sup>84</sup> Afterwards it was closed and sealed with the seal of Ludovicus Josephus Kerkhofs, Episcopal of Liege.

Afterwards the bones and the documents that were found inside the shrine were taken by the Crosiers to Webbekom, a city nearby Diest. On Sunday July 24 the relics processed through Diest and were brought to the Crosier monastery.<sup>85</sup> The old document from 1440 was shown to the people in procession. Afterwards the relics were placed in a new shrine of Saint Odilia, copied after the one in Kerniel (Fig. 8.3).<sup>86</sup> Every year on the patron feast of Saint Odilia (July 18) the shrine was placed in the Crosier's church. The shrine stayed until 2013 in this convent in Diest. Afterwards, when the Priory was closed, the archive and the shrine were transported to the Crosier monastery in Maaseik.



Fig. 8.3. Relic shrine of Saint Odilia, 1951. Maaseik, Convent of the Crosiers (© KIK-IRPA, Brussels).

<sup>84</sup> Steinmetz published a transcription of this text in his article of 1983. See: Steinmetz 1983, 12.

<sup>85</sup> Emsee 1949, 262-264; Salman 1989, 15-16; Anonymous 1949, 1; Ramaekers 1949, 110; Colson 1951a, 38; Steinmetz 1982, 16-17. The procession happened in the presence of magister general W. Van Hees, Mgr. F. Blessing and Crosiers at home and abroad.

<sup>86</sup> Colson 1951b, 236-239.

This shrine of Diest (nowadays in Maaseik) was opened in 2015 during the research project of the KU Leuven.<sup>87</sup> Some samples were taken for radiocarbon dating and will be discussed later in this article.

The history of the relics, from its *elevatio* to the translation of a part to the Crosier monastery in Diest in 1949 was possible to be reconstructed, thanks to the many archival documents and published studies. Nevertheless, several questions stay unanswered. What happened precisely with the relics at the end of the eighteenth century? Where are the relics that were transported to Altona in Denmark? How many relics are still preserved in the collegial church of Our Lady of Huy? They latter church received in 1828 the relics of Odilia, Ida and Imma and were placed afterwards in two shrines.<sup>88</sup> An opening of these shrines could map all the relics that once belonged to the thirteenth century shrine in Kerniel.

#### THE OPENING OF THE 13<sup>TH</sup> CENTURY SHRINE IN 2016

The opening of the shrine took place on March 9, 2016 under the supervision of Patrick Hoogmartens, Bishop of Hasselt (Fig. 8.4). The opening happened in the presence of: Sister Myriam o. cist. (abbess of abbey Mariënlof), Jo Van Mechelen (priest Sint-Truiden), Katrien Houbey (Erfgoed Haspengouw), Jean-Albert Glatigny (freelance restorer and attached to KIK-IRPA), Kim Quintelier (physical anthropologist Flanders Heritage Agency), Jeroen Reyniers (art historian KIK-IRPA), Marco Bonafini (radiocarbon dating laboratory KIK-IRPA), Katrien Van Acker (photographer KIK-IRPA), Stephane Bazzo (photographer KIK-IRPA) and Saïd Amrani (KIK-IRPA). Haspengouw.TV filmed the whole event and reduced it to a documentary that is 20 minutes in length.<sup>89</sup>

<sup>87</sup> Reyniers 2015, 63-71.

<sup>88</sup> Demaret 1924, 65-66; Bolly 1975, 51; Bloem 1985, 31-36. The Odilia shrine is preserved in a small niche in the choir of the church. Demaret 1924, 65-66; Bolly 1975, 51. George noticed an inventory of 1873 mentioning the opening of both shrines. George 1984, 513-514.

<sup>89</sup> This documentary is accessible on their website: [www.haspengouw.tv](http://www.haspengouw.tv). The documentary was presented on Erfgoeddag, April 24, 2016, in Abbey Mariënlof, together with the pictures of Katrien Van Acker. Reyniers 2016.



Fig. 8.4. Opening of the shrine on March 9 2016  
(© KIK-IRPA, Brussels).

When the shrine was opened, a red, monochrome tabby silk fabric bag was discovered, together with two documents. The first document is a card (7,5 × 12,5cm) with the typed description *Kolen Abdij Rijve der H. Odilia H. 32cm – L. 80cm – Br. 22cm. 1.000.000* (Fig. 8.5). It was inserted in the shrine when it was on an exhibition in Hasselt in 1961.<sup>90</sup> Next to it lay a nineteenth century *schedula* with the description *Sancta Odilia virgo et martyr* (6 × 17cm; Fig. 8.6). On the paper's left and right side marks of red seal are present. When Henri Van Lieshout opened the shrine, the *schedula* was still hanging on one of the relic purses.<sup>91</sup>

The red silk fabric bag was closed with a red ribbon and sealed with the coat of arms of Bishop Kerkhofs (Fig. 8.7). This was added on the bag in 1949, the last time the shrine was opened (see above). Inside the red fabric several artifacts were discovered:

<sup>90</sup> The exhibition took place from June 25 to September 10, 1961 in Hasselt. *1000 jaar kerkelijke kunst in Limburg 1961*, s.d. (cat. no. 21: *Rijve der H. Odilia*).

<sup>91</sup> Van Lieshout 1935, 3.



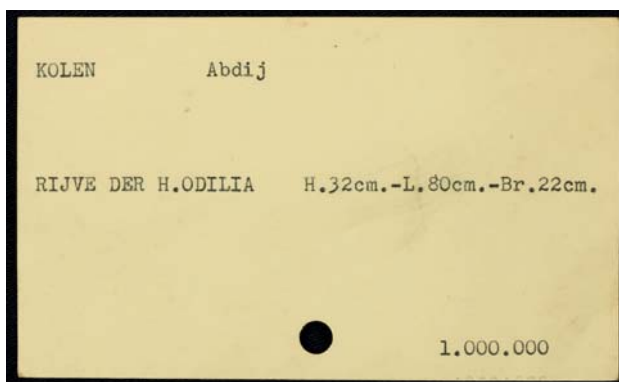


Fig. 8.5. Card with the typed description (© KIK-IRPA, Brussels).



Fig. 8.6. Nineteenth century *schedula* (© KIK-IRPA, Brussels).



Fig. 8.7. The closed red silk fabric bag with a red ribbon and sealed with the coat of arms of Bishop Kerkhofs (© KIK-IRPA, Brussels).

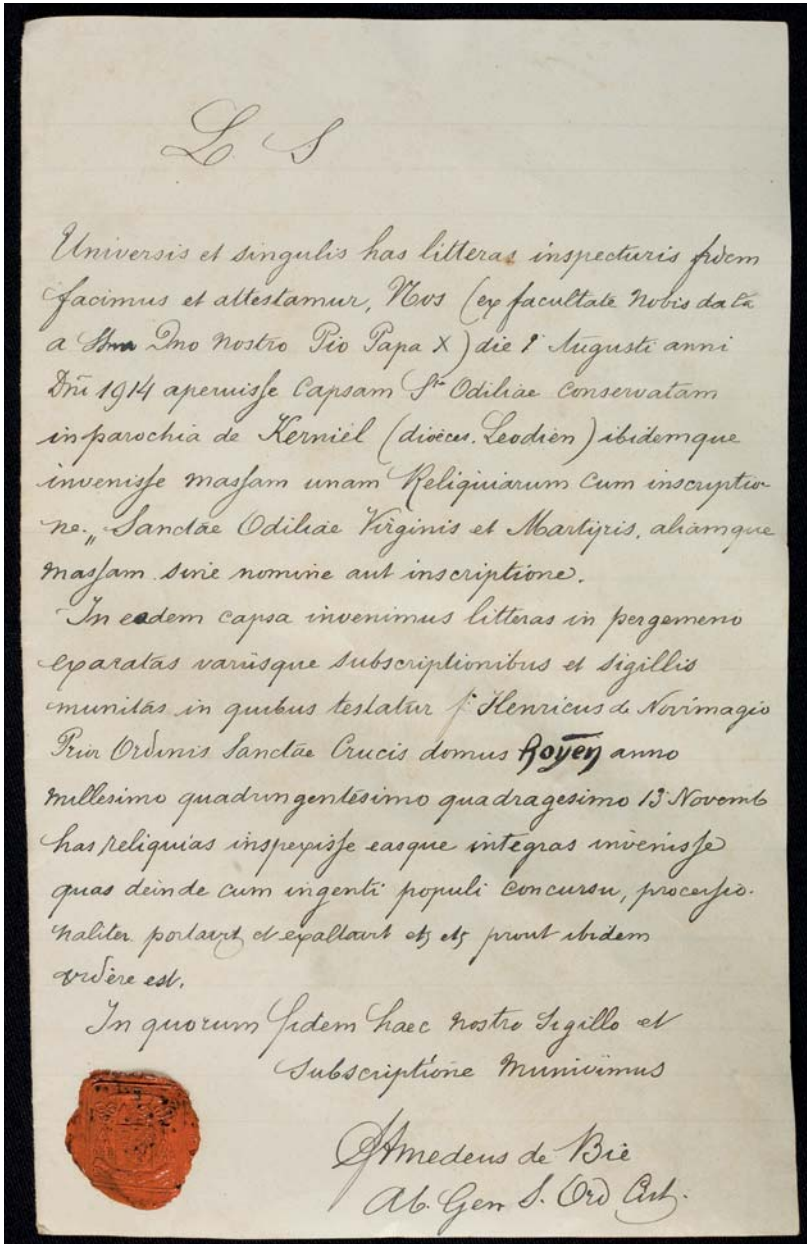


Fig. 8.8. Handwritten document on paper, composed by Amadeus De Bie  
(© KIK-IRPA, Brussels).



1. Handwritten document on paper, dating of 9 August 1914 and composed by abbot of the Cistercian Order Amadeus De Bie (13,5 × 21,5cm; Fig. 8.8).

Van Lieshout already mentioned this document in his study of the shrine.<sup>92</sup> This inventory is written in context of the First World War. The owner of the shrine is mentioned, at that moment the parish church of Kerniel. The handwritten text dates of August 9, two days before the Germans arrived in Belgium. Most likely De Bie wrote this inventory to protect the shrine from a new owner.

2. Red textile wrapped around a white cloth

This white textile was originally part of an alb. In this white cloth were found:

- a. Several small fragments of relics, 59 in total.
- b. A sealed envelope with the description: *Pulvis ex ossibus Martyrum* (11,9 × 9,3cm; Fig. 8.9).<sup>93</sup>
- c. White cloth that preserves two objects: a small handwritten *schedula* with the description *Reliqua Sta Odilia* and a small particle of wood (Fig. 8.10).<sup>94</sup>

3. Sixteen relics

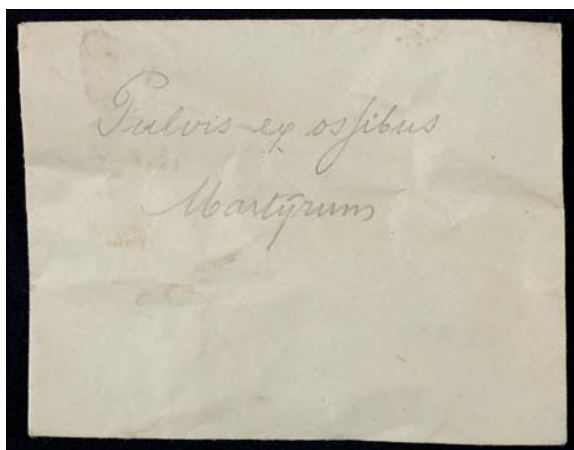


Fig. 8.9. A sealed envelope (© KIK-IRPA, Brussels).

<sup>92</sup> Van Lieshout 1935, 55 and 139-140 (attachment 4).

<sup>93</sup> It was also noticed by Van Lieshout in 1935, Van Lieshout 1935, 4.

<sup>94</sup> Van Lieshout wrongly identified this object as a bone. *Naast die twee bundels van grooteren omvang ligt in de kist nog 'n klein beentje, beschermd door witte zijde, waarbij 'n reeds ouder briefje met de woorden: Reliquia S. Odiliae.* Van Lieshout 1935, 4.

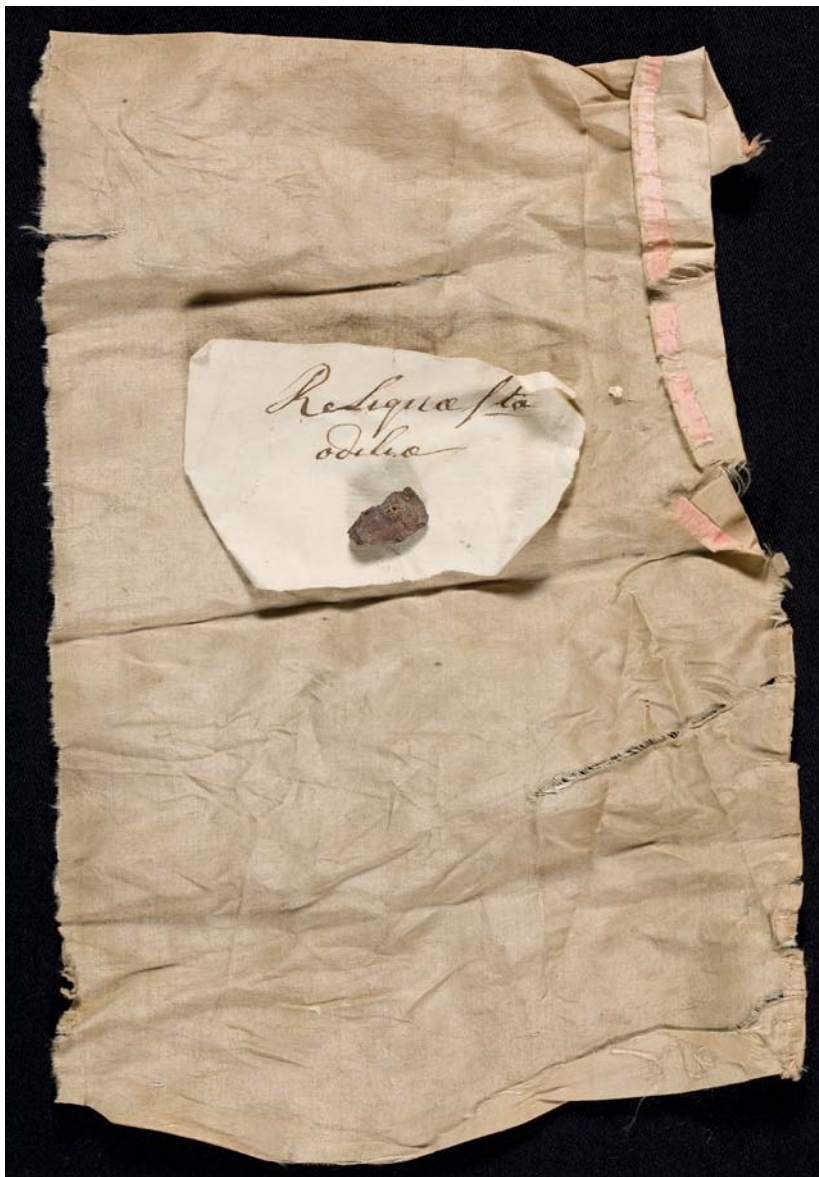


Fig. 8.10. White cloth with inside a small handwritten *schedula* and a small particle of wood (© KIK-IRPA, Brussels).

The earlier mentioned document of 1949 was not found inside the shrine. Its place of preservation is unknown.

At the end of the day all the relics and documents were placed back in the shrine. They were all wrapped in new linen textile bags. A new document to remember this opening was composed, signed by the people who were present and added to the shrine. The shrine was closed and sealed by Bishop Hoogmartens.

#### ANALYSIS OF THE HUMAN REMAINS

The shrine of Saint Odilia contains several bones and bone fragments (Fig. 8.11). The remains were macroscopically examined, measured and documented in the chapel. The osteological analysis aimed to determine the nature of the bones (human or animal) and to provide a description of the human bone present, to quantify the minimum number of individuals present, to assess the age-at-death, sex and presence of pathological changes.






In total, 83 bones and bone fragments were examined. All of them are human in origin and belonged to full-grown adults (older than twenty years of age).












Fig. 8.11. Content of the relic shrine, studied by Kim Quintelier (© KIK-IRPA, Brussels).






All bones show little to moderate *post mortem* weathering and flaking, characterised by the lighter discoloration on the bone surface. In many cases, the bone surface is eroded and the underlying trabecular, spongy structure is apparent. Most of the bones are preserved incompletely, e.g. the ends of the long bones (epiphyses) are mostly damaged and incomplete.

A number of, especially larger, bones were placed loosely in the shrine. The other, mostly smaller bones were put in a white textile bag. The results of the anthropological examination of the individual bones are summarized below.

Inv. no.	Name bone	Sex	<sup>14</sup> C lab code	Photo number KIK-IRPA	
<i>Separated bones</i>					
1	Proximal fragment left femur (head thigh bone)	Female	RICH-23334	X093073-X093074	
2	Left patella (kneecap)	-	-	X093075-X093076	
3	Right patella (kneecap)	-	RICH-23335	X093077-X093079	
4	Right talus (ankle bone)	-	-	X093080-X093082	
5	Left talus (ankle bone)	-	-	X093083-X093085	

Inv. no.	Name bone	Sex	<sup>14</sup> C lab code	Photo number KIK-IRPA	
6	Left talus (ankle bone)	-	-	X093086-X093089	
7	Right calcaneus (heel bone)	-	RICH-23336	X093090-X093092	
8	Left calcaneus (heel bone)	Female?	-	X093093-X093095	
9	Right calcaneus (heel bone)	Male?	-	X093096-X093099	
10	Sacrum	-	RICH-23338	X093100-X093102	

Inv. no.	Name bone	Sex	<sup>14</sup> C lab code	Photo number KIK-IRPA	
11	Sacrum	-	RICH-23316	X093103-X093105	
12	Distal fragment left tibia (shinbone)	Female?	RICH-23337	X093106-X093109	
13	Distal fragment left tibia (shinbone)	-	-	X093110-X093113	
14	Left femur (thigh bone)	Male	RICH-23317	X093114-X093115	
15	Right tibia (shinbone)	-	RICH-23319	X093116-X093117	
16	Right femur (thigh bone)	Male?	RICH-23318	X093118-X093119	
<i>Bone fragments in white textile bag</i>					
17	Proximal shaft fragment right femur (thigh bone)	Male?	RICH-23320	X093120-X093121	
18	Distal shaft fragment left femur (thigh bone)	Female?	RICH-23321	X093122-X093123	
19	Proximal shaft fragment right femur (thigh bone)	-	RICH-23314	X093124-X093125	

Inv. no.	Name bone	Sex	<sup>14</sup> C lab code	Photo number KIK-IRPA	
20	Fragment right acetabulum/ilium	-	RICH-23322	X093126-X093127	
21	Fragment right (?) talus (ankle bone)	Female?	-	X093128-X093129	
22	Fragment radial head	-	-	X093130-X093131	
23	Fragment first sacral vertebra (sacrum)	-	-	X093132-X093133	
24	Fragment sacrum	-	-	X093134-X093135	

25-83	Small fragments:			X093136-X093147	
	1 cranial vault fragment	-	-		
	2 rib fragments	-	-		
	8 vertebra fragments	-	-		
	5 fragments sacrum	-	-		
	6 fragments pelvis	-	-		
	1 fragment shoulder blade	-	-		
	1 proximal end radius	-	-		
	3 epiphyseal fragments (ends of long bones)	-	-		
	4 shaft fragments long bones	-	-		
	3 feet fragments	-	-		
	25 unidentified fragments	-	-		



Most of the bones or bone fragments are from the lower limb. Axial elements, such as the cranium, the mandible, the vertebral column and the ribs, are almost completely missing in the shrine. The pelvis is only represented by fragments from two or more sacra. Several calcanei and tali (heel and ankle bones) were present, but the small foot elements (tarsals, metatarsals and phalanges) are absent. Elements of the upper limb of the skeleton are scarcely present and hand elements are completely lacking in the shrine.

Estimation of sex and age-at-death is not straightforward. In general, the completer the skeleton is, the easier it is to estimate, but in case of the Saint Odilia shrine the most important bones to perform a sex and age-at-death estimation, namely as the pelvis and skull, are missing. Cautious sex determinations were made based on the morphology of the long bones.

One bone, a head of a femur (inv. no. 1), can be connected to a female individual based on its dimensions based on the standards published by Stewart.<sup>95</sup> The bone morphology of several other bones, such as the left calcaneus (inv. no. 8), the distal fragment of the left tibia (inv. no. 12), the distal shaft fragment of the left femur (inv. no. 18) and the fragment of the probably right talus bone (inv. no. 21), is more fragile what also could suggest the presence of one (or more) female individual(s) in the shrine.

As doctor Vroninckx already noticed during his investigation of 1949 (see above), he identified the present femurs as part of a male skeleton. During the recent examination, two femurs were encountered in the shrine. The head of the first studied femur (inv. no. 14) measures 50mm by 50mm. According to the standards of Stewart, this corresponds to a male skeleton. The maximal length of the femur is 453mm, which corresponds with a stature of 169cm ( $\pm$  3cm standard deviation) using Trotter's formula for white males.<sup>96</sup> The head of the second femur (inv. no. 16) is incompletely preserved. A sex estimation based on osteometry is therefore impossible, but its robust morphology suggests that the femur belonged to a male individual. The maximal bone length is 466 mm and this corresponds, according to Trotter's formula for white males, with a stature of 172cm ( $\pm$  3cm standard deviation). This bone is different than the first femur, what

<sup>95</sup> Stewart 1979. The femoral head measures 40 × 40mm.

<sup>96</sup> Trotter 1970.



implicates the possibility of two different individuals. Further morphological observations suggest that the fragment of the right femur (inv. no. 9) and the proximal fragment shaft of the right femur (inv. no. 17) can be linked to a man.

Pathological observations were made for some of the bones. One kneecap (inv. no. 3) has osteophytic formation, i.e. new bone formation (bony spurs), on the anterior surface at the insertion of the patellar ligament. In this case, it is enthesopathy, an inflammation of the entheses (sites where ligaments or tendons insert into the bone) with a multifactorial origin (age, repetitive acts, acute trauma, illness, etc.). The same disorder is observed on the right heel bone (inv. no. 9), at the insertion of the Achilles tendon.

Further, on the sacrum (inv. no. 10), between the first (S1) and the second (S2) sacral vertebra, a syndesmofyte was discovered. This is a bony growth, originating from the inside of a ligament, specifically the ligaments in the intervertebral joints leading to fusion of the vertebrae.

The right talus bone (inv. no. 4) and the left heel bone (inv. no. 8) are light in weight and appears frail, which is most likely due by the visible decrease of the trabecular bone structure due to osteoporosis.

On the articulation surface with the navicular bone of the left talus bone (inv. no. 6) eburnation (or polish) was observed. This is a distinctive characteristic of osteoarthritis: a chronic, high age joint disease, caused by wear of the joints. But more factors could origin it such as age, sex, weight, practiced activities, illness/injury and genetic origin.<sup>97</sup>

During this study, two bones in the white linen bag could be connected to other separated bones inside the shrine. The fragment of the first sacral vertebrae (sacrum) (inv. no. 23) originally belonged to the sacrum (inv. no. 11). The same might be proposed to the fragment of the first sacral vertebrae (sacrum) (inv. no. 24) that also could have belonged to bone no. 11.

Concluding, the osteological study revealed that the shrine is filled with a mix of different bones deriving from several individuals based on the multiple presence of the same bone element. The proximal fragment of the shaft of the right femur is present three times (inv. no. 16, 17 and 19), what gives the minimum number of three individuals.

<sup>97</sup> Larsen 1997; Ortner 2003.

Since none of the right femur fragments morphologically correspond with the left femurs fragments, based on the macroscopically osteological examination, it can be concluded that at least five different individuals are represented in the shrine of Saint Odilia.

## RADIOCARBON DATING AND STABLE ISOTOPE MEASUREMENTS

### Materials and methods

#### *Sample treatment*

Samples were taken from the remains kept in Maaseik as well as of the remains kept in the shrine at Kerniel. After removal of the surface a bone sample is taken for analysis. Collagen is extracted from these samples using the Longin method adapted for small samples.<sup>98</sup> An extra NaOH step was introduced to remove humic acids. Part of the sample was used for radiocarbon dating, part for stable isotope analysis.

The wooden sample is treated by the ABA (acid-base-acid) method to remove humic acids and carbonates. The silk sample was treated successively with hexane, acetone and ethanol in an ultrasonic bath and then washed with water. The other textile was bleached.

The samples for radiocarbon dating were transformed into graphite. The samples of Saint Odilia from the Crosier monastery in Maaseik, sampled in 2014, were converted into graphite using a manual preparation line.<sup>99</sup> The samples from Kerniel were prepared later, using the automatic graphitisation devise AGE.<sup>100</sup>

#### *Measurements*

The <sup>14</sup>C-concentration of the prepared graphite was measured in a MICADAS AMS-machine.<sup>101</sup> The obtained results were calibrated using the calibration curve INTCAL 13<sup>102</sup> and the calibration program OxCal 3.<sup>103</sup>

<sup>98</sup> Longin 1971.

<sup>99</sup> Van Strydonck & van der Borg 1990-1991.

<sup>100</sup> Boudin et al. 2018 in prep.

<sup>101</sup> Boudin et al. 2015.

<sup>102</sup> Reimer et al. 2013.

<sup>103</sup> Bronk Ramsey 1995; Bronk Ramsey 2001.

Stable isotope ( $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ ) values and C:N ratio were determined on the collagen. Analyses were performed in duplicate on a Thermo Flash EA/HT elemental analyser coupled to a Thermo DeltaV Advantage isotope ratio mass spectrometer via a ConFloIV interface. Measurements were made relative to internationally defined standards for carbon (Vienna Pee Dee Belemnite; VPDB) and nitrogen (Ambient Inhalable Reservoir; AIR). The analytical precision was smaller than 0.25‰ for both  $\delta^{13}\text{C}$  and  $^{15}\text{N}$  values, based on multiple measurements.

## Results

### *Radiocarbon dating*

The results are depicted in table 1 and 2 and on figure 8.36.

TABLE 8.1: The radiocarbon results of the bone samples of Saint Odilia in Maaseik

Sample name	Laboratory code	Conventional $^{14}\text{C}$ date (BP)	Calibrated $^{14}\text{C}$ date (AD)
Rib	RICH-21315	1717±33	68.2% probability 250AD (22.9%) 300AD 320AD (45.3%) 390AD 95.4% probability 240AD (95.4%) 400AD
Femur	RICH-21311	1730±32	68.2% probability 250AD (64.5%) 350AD 370AD (3.7%) 380AD 95.4% probability 230AD (95.4%) 390AD
Tibia	RICH-21312	1798±33	68.2% probability 140AD (62.3%) 260AD 300AD (5.9%) 320AD 95.4% probability 120AD (95.4%) 330AD
Rib	RICH-21320	1776±36	68.2% probability 210AD (68.2%) 340AD 95.4% probability 130AD (95.4%) 350AD

Sample name	Laboratory code	Conventional $^{14}\text{C}$ date (BP)	Calibrated $^{14}\text{C}$ date (AD)
Patella	RICH-21313	1724±34	68.2% probability 250AD (31.7%) 300AD 310AD (36.5%) 380AD 95.4% probability 230AD (95.4%) 400AD
Cervical vertebra	RICH-21314	1811±33	68.2% probability 130AD (68.2%) 250AD 95.4% probability 120AD (84.6%) 260AD 270AD (10.8%) 330AD
Clavicule	RICH-21316	1946±33	68.2% probability 15AD (65.4%) 85AD 105AD (2.8%) 115AD 95.4% probability 40BC (95.4%) 130AD
Scapula	RICH-21317	1828±33	68.2% probability 135AD (68.2%) 225AD 95.4% probability 80AD (93.3%) 260AD 300AD (2.1%) 320AD
Fibula	RICH-21319	1785±33	68.2% probability 170AD (5.9%) 190AD 210AD (33.8%) 260AD 270AD (28.5%) 330AD 95.4% probability 130AD (95.4%) 340AD

TABLE 8.2: The radiocarbon results of the bone samples of Saint Odilia in Kerniel

Sample name	Inventory no. bone	Laboratory code	Conventional $^{14}\text{C}$ date (BP)	Calibrated $^{14}\text{C}$ date (AD)
Proximal femur left	1	RICH-23334	1662±30	68.2% probability 345AD (20.2%) 370AD 375AD (48.0%) 420AD 95.4% probability 250AD (3.5%) 280AD 320AD (89.8%) 430AD 490AD (2.1%) 530AD

Sample name	Inventory no. bone	Laboratory code	Conventional <sup>14</sup> C date (BP)	Calibrated <sup>14</sup> C date (AD)
Right patella	3	RICH-23335	1772±33	68.2% probability 220AD (68.2%) 330AD 95.4% probability 130AD (95.4%) 350AD
Right calcaneus	7	RICH-23336	1740±33	68.2% probability 245AD (68.2%) 340AD 95.4% probability 220AD (95.4%) 390AD
Sacrum	10	RICH-23338	1685±31	68.2% probability 330AD (68.2%) 400AD 95.4% probability 250AD (14.0%) 300AD 310AD (81.4%) 420AD
Sacrum (different individual than bone no. 10)	11	RICH-23316	1795±30	68.2% probability 140AD (57.9%) 260AD 290AD (10.3%) 320AD 95.4% probability 130AD (95.4%) 330AD
Distal fragment left tibia	12	RICH-23337	1710±31	68.2% probability 250AD (15.8%) 280AD 320AD (52.4%) 390AD 95.4% probability 250AD (95.4%) 400AD
Femur left (man)	14	RICH-23317	1824±30	68.2% probability 135AD (47.9%) 200AD 205AD (20.3%) 230AD 95.4% probability 80AD (1.6%) 110AD 120AD (91.4%) 260AD 290AD (2.4%) 320AD
Right tibia (man)	15	RICH-23319	1755±30	68.2% probability 240AD (18.2%) 265AD 270AD (50.0%) 335AD 95.4% probability 210AD (95.4%) 390AD
Femur left	16	RICH-23318	1748±30	68.2% probability 245AD (68.2%) 335AD 95.4% probability 220AD (95.4%) 390AD

Sample name	Inventory no. bone	Laboratory code	Conventional <sup>14</sup> C date (BP)	Calibrated <sup>14</sup> C date (AD)
Proximal diaphyseal right femur	17	RICH-23320	1765±32	68.2% probability 235AD (22.7%) 265AD 270AD (45.5%) 330AD 95.4% probability 140AD (95.4%) 380AD
Distal diaphyseal left femur	18	RICH-23321	1804±35	68.2% probability 130AD (68.2%) 250AD 95.4% probability 120AD (95.4%) 330AD
Proximal diaphyseal right femur	19	RICH-23314	1751±30	68.2% probability 240AD (16.6%) 265AD 270AD (51.6%) 335AD 95.4% probability 210AD (95.4%) 390AD
Pelvis right side	20	RICH-23322	1640±33	68.2% probability 350AD (61.3%) 430AD 490AD (5.4%) 510AD 520AD (1.5%) 530AD 95.4% probability 330AD (95.4%) 540AD

The results depicted in figure 8.36 represent a very coherent series that covers several centuries in the Roman period. Table 8.3 and figure 8.37 indicate the results of the sampled textile and wood that was discovered in the shrine.

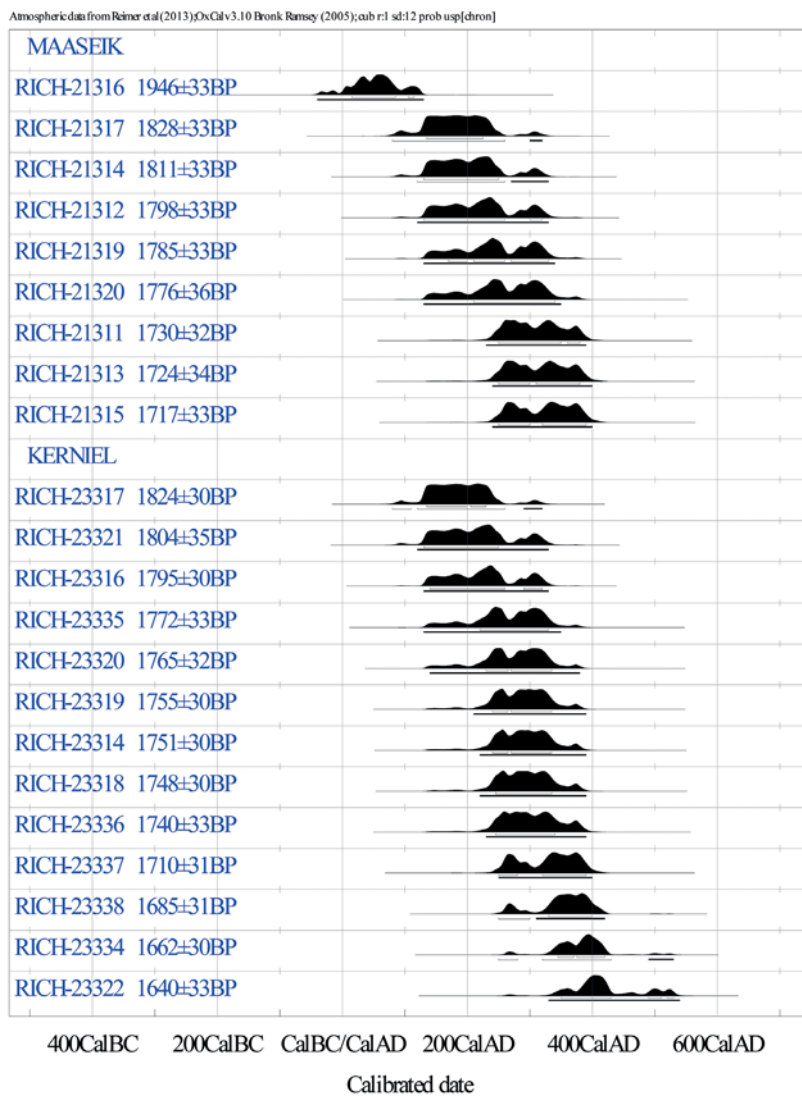


Fig. 8.36. The calibrated probability distributions sorted by origin and age.

TABLE 8.3: The radiocarbon results of the wood and textile samples in the shrine of Kerniel

Sample name	Inventory no. bone	Laboratory code	Conventional $^{14}\text{C}$ date (BP)	Calibrated $^{14}\text{C}$ date (AD)
Silk wrapped around a wood fragment	22	RICH-23315	154±30	68.2% probability 1660AD (13.3%) 1700AD 1720AD (32.1%) 1780AD 1790AD (8.2%) 1820AD 1910AD (14.6%) 1950AD 95.4% probability 1660AD (77.0%) 1890AD 1900AD (18.4%) ...
Wood wrapped in silk	23	RICH-23323	865±31	68.2% probability 1150AD (68.2%) 1220AD 95.4% probability 1040AD (14.1%) 1090AD 1120AD (81.3%) 1260AD
Red textile that wrapped the bones	21	RICH-23324	393±30	68.2% probability 1440AD (56.4%) 1510AD 1600AD (11.8%) 1620AD 95.4% probability 1430AD (71.4%) 1530AD 1570AD (24.0%) 1630AD

Atmospheric data from Reimer et al (2013); OxCal v3.10 Bronk Ramsey (2005); cub r:1 sd:12 prob usp[chron]

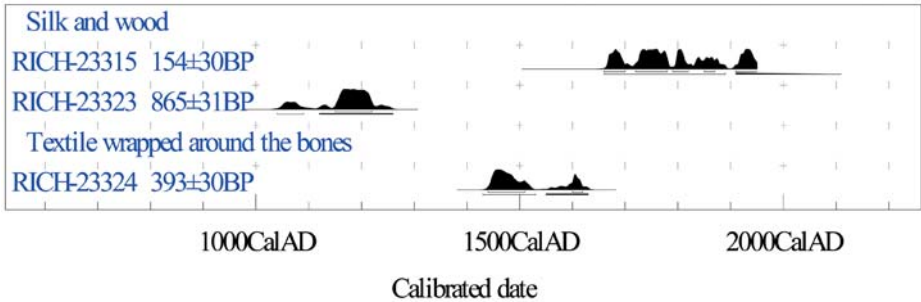


Fig. 8.37. The calibrated  $^{14}\text{C}$  ages of the wood and textile samples in Kerniel.



*Stable isotope results*

Table 8.4 and figure 8.38 depict the stable isotope results. Stable isotope measurements provide dietary information. C:N (carbon nitrogen ratio) gives information about the quality of the collagen.<sup>104</sup> Bone collagen disintegrates due to bad preservation. The C:N ratio of bone 18 (RICH-23321) and 20 (RICH-23322) from Kerniel indicate a bad preservation of the collagen and the data (radiocarbon as well as stable isotopes) must be treated with caution.

**TABLE 8.4: Stable isotopes results of the Saint Odilia bones in Maaseik and Kerniel**

Sample name	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	C:N
<i>Maaseik</i>			
RICH-21315	-20.50	9.28	3.2
RICH-21311	-20.44	9.47	3.3
RICH-21312	-18.17	9.68	3.3
RICH-21320	-20.56	10.98	3.2
RICH-21313	-20.67	10.21	3.4
RICH-21314	/	/	/
RICH-21316	-19.4	8.4	3.2
RICH-21317	-21.1	9.03	3.2
RICH-21319	-20.0	10.68	3.3
<i>Kerniel</i>			
RICH-23334	-19.2	10.0	3.3
RICH-23335	-21.0	8.5	3.5
RICH-23336	-20.1	10.5	3.3
RICH-23338	-18.5	10.0	3.5
RICH-23316	-19.6	10.3	3.3
RICH-23337	-20.7	9.8	3.4
RICH-23317	-20.0	10.2	3.2
RICH-23319	-20.3	9.3	3.3
RICH-23318	-19.8	9.8	3.2

<sup>104</sup> Ervynck et al. 2014.

Sample name	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	C:N
RICH-23320	-20.3	9.0	3.4
RICH-23321	-20.7	11.6	3.7
RICH-23314	-19.8	9.6	3.2
RICH-23322	-20.6	10.1	3.7

The stable isotopes results are very dispersed ( $\delta^{13}\text{C}_{\text{max}} - \delta^{13}\text{C}_{\text{min}} = 3$ ;  $\delta^{15}\text{N}_{\text{max}} - \delta^{15}\text{N}_{\text{min}} = 2.6$ ). This is a strong indication of the fact that we are not dealing with a homogeneous group (like a family, people having the same social status or living in the same community). A comparative study with the relics of Saint Odilia in Maaseik and the physical anthropology reveals that at least thirteen individuals can be distinguished.

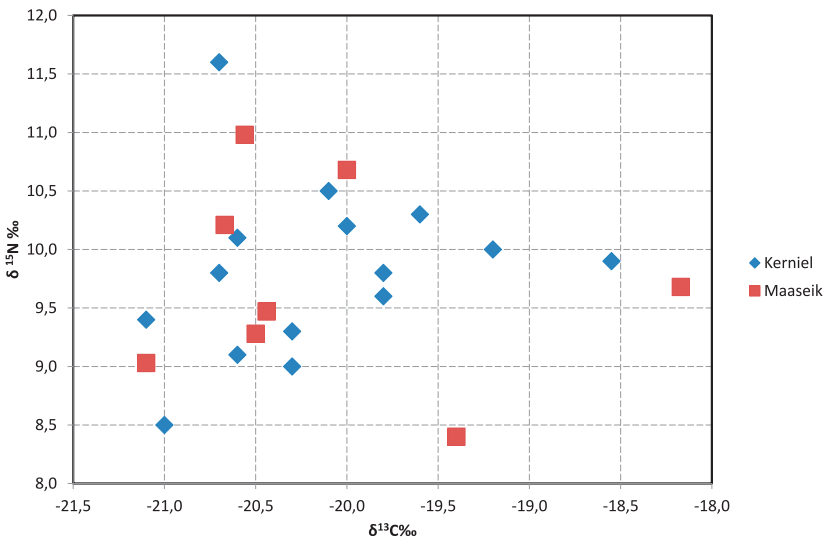


Fig. 8.38. Stable isotope measurements of the bone samples.

## CONTEXTUALISATION

## Studied objects

The objects that were found during the investigation, date from another period than when the shrine was made. It proves that the shrine was opened regularly in the past and new elements were added later to the shrine. The radiocarbon dating of the red textile, that wrapped a container with relics, indicates its origin between 1430 to 1630AD. The archival documents do not say much about the textiles inside the shrine. During latter period the shrine was opened three times: 1440/43, 1622 and 1630. During the opening of 1440/43 only the separation of the relics of Saint Odilia and her sisters in other relic bags is mentioned.<sup>105</sup> The red textile could be connected to the second opening, in 1622. The shrine was opened and the relics were placed in the sacristy until the next Sunday. That day the relics were wrapped in new textile, “although the earlier coverings were still intact and strong”.<sup>106</sup> Afterwards they were placed in the two niches of the high altar. In 1630 the relics were placed in a new shrine and nothing happened with the textile.

Another discovery during the opening of the shrine was the white textile in which a wood fragment and a *schedula* were found (Fig. 8.10). This textile is difficult to date, therefore it is impossible to link it to a historical context. On the other hand, the wood inside the textile, which its original position from the tree is not known, can be dated to the period 1040-1260AD. A packed-up piece of wood in a shrine is rare and the *schedula* mentioning its function as a relic moves forward that it might originally have belonged to the painted chest of 1292. Thanks to an earlier dendrochronological study of the Saint Odilia shrine by Pascale Fraiture (KIK-IRPA), this piece of wood could be connected to the shrine, where the present oak rings measured between 1121 and 1248AD.<sup>107</sup> The reason why a possible part of the chest lies inside the shrine must be understood in context of an earlier reduction of the shrine. Until recently the shrine was believed to be sawn smaller in the nineteenth century to place it in the Saint Odilia

<sup>105</sup> Van Lieshout 1935, 25.

<sup>106</sup> Van Lieshout 1935, 37-38.

<sup>107</sup> Fraiture 2015.

altar of the Church of Saint Pantaleon in Kerniel, but Jean-Albert Glatigny refutes this idea.<sup>108</sup> The dimensions of the shrine were already changed in the monastery of the Order of the Holy Cross in Huy, most likely in 1630 when the new, metal shrine of Saint Odilia arrived in the monastery.<sup>109</sup> The relics were then, in all likelihood, placed in the reduced shrine of 1292 and both were placed inside the new shrine of Saint Odilia. This might suggest why the wooden shrine only appears at the end of the eighteenth century, when the metal shrine of Saint Odilia was transported to Denmark and the wooden shrine was rediscovered when this shrine was opened.

It is not unthinkable that the sawn parts of the panels stayed in the monastery of Huy. According to the *schedula* which has a seventeenth century handwriting, this part of wood, a third-class relic, received a place inside the shrine possibly not much later after the sawing.

### Studied relics of Saint Odilia

The past decades many interdisciplinary studies of relics in Belgium were published, examined from a physical anthropological and radio-carbon dating point of view.<sup>110</sup> Several cases reveal that the shrines are not always filled with bones of one and the same person and/or from the same time. The local Saint Alena in Forest near Brussels for instance exists of male bones and a one of a newborn child, the shrine of Hilduardus and Christiana in Dendermonde is filled with bones of five different persons.<sup>111</sup> The bones of the Blessed Idesbald in Ter Dunen (Koksijde) are two centuries younger than expected.<sup>112</sup> That the relics of Saint Odilia, in Maaseik and Kerniel, do not belong to one and the same person as the legend mentions, is therefore not exceptional. Van Rooijen already concluded that the oldest legend of Saint Odilia in the university library in Liège might be a shortened

<sup>108</sup> A nineteenth century change of the dimensions was presented by Helbig (Helbig 1873, 41). Afterwards he mentioned that it took place in 1829 (Helbig 1903, 32). Glatigny does not follow this idea (Glatigny 2015).

<sup>109</sup> Glatigny 2015, 11.

<sup>110</sup> An important contribution was made by Van Strydonck and his colleagues: Van Strydonck et al. 2006.

<sup>111</sup> Franssen et al. 2006-2008, 106-107; Van Strydonck et al. 2006, 157-167; Van Strydonck et al. 2009, 575.

<sup>112</sup> Van Strydonck et al. 2016.

copy after a lost original of the thirteenth century.<sup>113</sup> That is the reason why nothing is mentioned about Archbishop Sigfridus in Cologne who has given relics of Ida and Imma, those of a Bishop and many skulls from the eleven thousand virgins group to Johannes which appears later in other documents.<sup>114</sup> Van Lieshout already pointed on the possible mistake that happened later, in 1440/43, when the shrine was opened and a wrapped bag with relics was believed to be those of Odilia's sisters Ida and Imma (*quas de iam dictae virginis Odiliae sororibus fuisse non dubitamus*). Van Lieshout rather understood it as relics of martyrs from the eleven thousand virgins group.<sup>115</sup> The existence of many virgins and a Bishop in this translation story could possibly suggest, from a historical perspective, why many different and male bones were found inside the shrine.

In the surviving legends of Saint Odilia no date of death is mentioned. She is described as the most important woman after Saint Ursula and the story of Saint Ursula and the eleven thousand virgins might be situated around 350 and 450AD. Though it is a legend, some of the studied relics can be situated around this period. Another part is much older, with the clear exception of the clavicle in Maaseik that was investigated with radiocarbon dating and revealed a date between 40BC and 130AD (95.4% probability range).

The radiocarbon dating laboratory of the KIK-IRPA studied many relics from the legendary story of the eleven thousand virgins in Belgium and the Netherlands (Table 8.5). This study revealed that these relics could be separated in two groups: a first group with bones from the Roman period and a second that date younger, namely from the thirteenth century. The reason why a group of thirteenth century bones are preserved suggests its trading of fake relics in Cologne of the eleven thousand virgins. The comparison between the examined bones of Saint Odilia and those of table 8.5 reveal that the bones in Maaseik and Kerniel belong to the first category and could derive from the cemetery where the bones were found in Cologne.

<sup>113</sup> Van Rooijen 1946, 124.

<sup>114</sup> Van Lieshout 1935, 28, 45 and 123-124.

<sup>115</sup> Van Lieshout 1935, 27 and 45.

**TABLE 8.5: Overview studied relics of the Eleven thousand virgins by the  $^{14}\text{C}$  laboratory of the KIK-IRPA. After Vandebrauene et al. 2018 in prep.**

Studied bones of the 11,000 virgins	Laboratory code	Conventional $^{14}\text{C}$ age (BP)	Calibrated $^{14}\text{C}$ date (AD)
Kuringen, Abbey of Herkenrode, skull 25	KIA-35775	1675±35	68.2% probability 330AD (68.2%) 420AD 95.4% probability 250AD (95.4%) 430AD
Kuringen, Abbey of Herkenrode, skull 30	KIA-36237	1985±30	68.2% probability 40BC (5.1%) 25BC 20BC (7.9%) 10BC 5BC (55.1%) 55AD 95.4% probability 50BC (95.4%) 80AD
Kuringen, Abbey of Herkenrode, skull 39	KIA-35776	1855±35	68.2% probability 90AD (2.7%) 100AD 120AD (65.5%) 220AD 95.4% probability 70AD (95.4%) 240AD
Kuringen, Abbey of Herkenrode, bone 89	KIA-36236	1815±25	68.2% probability 135AD (15.1%) 160AD 165AD (25.1%) 200AD 205AD (27.9%) 240AD 95.4% probability 120AD (93.1%) 260AD 300AD (2.3%) 320AD
Antwerp, Chapel of Saint Rochus	KIA-30354	670±25	68.2% probability 1280AD (39.9%) 1310AD 1360AD (28.3%) 1390AD 95.4% probability 1270AD (54.3%) 1320AD 1350AD (41.1%) 1390AD
Sint-Truiden, Benedictine abbey of Saint Trudo <sup>116</sup>	IRPA-1032	1490±35	68.2% probability 540AD (68.2%) 610AD 95.4% probability 440AD (6.1%) 490AD 530AD (89.3%) 650AD

<sup>116</sup> Van Strydonck 1991, 109; Van Strydonck et al. 2006, 77.

Studied bones of the 11,000 virgins	Laboratory code	Conventional <sup>14</sup> C age (BP)	Calibrated <sup>14</sup> C date (AD)
Utrecht, Church of Saint Gertrudis, skull 911	KIA-35545	825±25	68.2% probability 1190AD (1.8%) 1195AD 1205AD (66.4%) 1260AD 95.4% probability 1165AD (95.4%) 1260AD
Utrecht, Church of Saint Gertrudis, skull 914 <sup>117</sup>	KIA-35546	1790±30	68.2% probability 130AD (55.8%) 260AD 290AD (12.4%) 320AD 95.4% probability 130AD (95.4%) 330AD
Mechelen, Cathedral of Saint Rumoldus (uncertain), skull 18A	RICH-20571	834±31	68.2% probability 1165AD (3.4%) 1175AD 1180AD (64.8%) 1250AD 95.4% probability 1150AD (95.4%) 1270AD
Mechelen, Cathedral of Saint Rumoldus (uncertain), skull 18B	RICH-20569	1894±32	68.2% probability 65AD (68.2%) 135AD 95.4% probability 50AD (95.4%) 220AD
Mechelen, Cathedral of Saint Rumoldus (uncertain), skull 26	RICH-20568	1799±32	68.2% probability 140AD (64.2%) 260AD 300AD (4.0%) 320AD 95.4% probability 120AD (95.4%) 330AD
Mechelen, Cathedral of Saint Rumoldus (uncertain), thigh bone 1	RICH-20570	1024±31	68.2% probability 985AD (68.2%) 1025AD 95.4% probability 900AD (1.9%) 920AD 960AD (90.2%) 1050AD 1090AD (3,3%) 1120AD
Mechelen, Cathedral of Saint Rumoldus (uncertain), bone young individual	RICH-20572	1381±29	68.2% probability 635AD (68,2%) 670AD 95.4% probability 605 AD (95,4%) 680 AD

<sup>117</sup> de Kruijf 2011, 189.

### Order of the Holy Cross in Huy

The physical anthropological study, together with the <sup>14</sup>C study of the bones identified several individuals inside the shrine. That the bones were not from one and the same person and from exactly the same date, was in 1287 not an issue. Medical sciences and the knowledge of the human body were far from the same level as it is today.<sup>118</sup> The importance of saints, in the Low Countries mostly known as martyrs who died for God and/or dedicated their life to God, had an intervening place between God and the earthly people. The common people needed saints to ask for help, to occur for their diseases. The reason why there are relics and the reason why the relics arrived in that monastery must therefore be understood in a more theological and historical context.

In 1287, the recently founded Order of the Holy Cross was led by the important and passionate prior general Johannes Rijck van Cuijck. During his reign the cult of Saint Odilia started and the monastery in Huy became the most important of the order.<sup>119</sup> He also founded many new cloisters, such as in London, Tournai, Suxy, Caen and Beyenburg. Some more information on the status of the monastery in Huy is captured in the legend of Saint Odilia. In the vision to Johannes, Odilia asked him to bring her relics to the monastery of Huy, due to its poor and small status.<sup>120</sup> Odilia became popular outside the walls of the city through her healing power for better eyesight. According to the legend in Liège the church was filled with many sick people, also from far away, and many of them recovered.<sup>121</sup> The relics

<sup>118</sup> The same was proposed by Father A. Ramaekers after the discovery of male bones in the shrine of Saint Odilia in 1949: *We kunnen dus met de grootste waarschijnlijkheid zeggen, dat we te Colen de relieken haalden of liever 'n gedeelte ervan, die in 1287 door broeder J. v. Eppa en Lud. a Campis te Keulen werden opgegraven, die eeuwen lang in de orde werden vereerd en beschouwd als relieken van de H. Odilia. Dat de vrome middeleeuwen geen onderscheid maakten tussen mannelijke en vr. beenderen, dat ze de relieken van de meerdere martelaren die naar Hoi gebracht werden, niet juist onderscheidden, is bijzaak.*

<sup>119</sup> Janssen 2010, 41-45; Janssen & Winkelmolen volume 6 2002, 1357; van de Pasch 1959, 98-99.

<sup>120</sup> Van Rooijen also pointed on this problem in the monastery at the end of the thirteenth century. Van Rooijen 1946, 132.

<sup>121</sup> *Successu quoque temporis, dum ad sacrae virginis tumbam in Fratrum sanctae Crucis coenobio creberrime fierent miracula, fama magnalium excitati, de longinquis*



were important to bring people together and they might also be interesting for economical purposes, to get pilgrims to their convent and in a way to receive money. It must have been a success; the financial support for the veneration of Saint Odilia gave the occasion to build a new and larger place of worship. In 1292 a painted shrine was ready (Fig. 8.1) and in 1322 the new church was completed and dedicated on April 12 by Herman of Cologne (1315-†1332), Bishop of Henna.<sup>122</sup>

That the Crosiers had taken a virgin from the popular cult of Saint Ursula and the eleven thousand virgins was not surprising. Cologne is not that far from Huy and the cult of these virgins was very popular during this period. The collegial church of Our Lady in Huy for instance already owned a relic of these virgins in the thirteenth century.<sup>123</sup> In this context the cult of Saint Odilia must have arisen.

How the Crosiers came on the name of Saint Odilia, lies most likely in the revelations of 1183 and 1187 by the German mystic *B. Hermanni Josephi, canonici regularis Steinfeldensis*.<sup>124</sup> At the end of the twelfth century two new revelations were composed about Ursula and the 11000 virgins. Herman Joseph (°1150-†1241) was a Premonstrian German mystic, born in Cologne and entered the Norbertine abbey of Steinfield at a young age.<sup>125</sup> The cult of Saint Ursula was well thought-off and during Herman Joseph's scribe process, he based his work on the youngest edition of that time and added 769 names of virgins in his text, including some extra information and characteristics. In his two contributions Odilia is mentioned: *Octava sancta Odilia, cujusdam filia potentis, et ista duas sorores secum habebat, unam adultam et alteram lactentem, beatam Juliam et sanctam Urstitiam.*

*B. Odilia, virgo sapiens valde, omnique animi virtute conspicua et honesta: et haec mille praefuit virginibus, una de principalibus undecim existens. Filia siquidem sororis Magni fuit principis jam dicti, optimae*

*etiam regionibus advecti quamplurimi, qui, recepta confestim sospitate, gaudenter ad propria sunt reversi.* Liège, University Library, Ms. 135C: *Historia de translatione beatae virginis et martyris Odiliae* (1467), fol. 134r.

<sup>122</sup> Banelius 1621, 102; Hermans volume 2 1858, 203.

<sup>123</sup> Coens 1958, 322-325; George 1991, 217.

<sup>124</sup> *Acta Sanctorum. Octobris*, volume 9 1869, 173-201 (BHL 8433-8434); de Tervarent 1931, 29.

<sup>125</sup> Petit 2011, 121-122 and 145.

*matronae, filiaque comitis viri prudentis et strenui. Haec eadem virgo illustris duas secum duxit sorores virgines, S. Juliam et Ursicam.*<sup>126</sup>

Most likely the Crosiers in Huy had the revelations in their library, though no books of that time or an inventory are preserved.

The legend of Saint Odilia also talks about Johannes of Eppa from the Crosier monastery in Paris. He received the task in 1287 to search the bones of Saint Odilia in Cologne. In this part of the legend lies true history. This brother is mentioned in several archival documents, such as in a document of 1259 in Paris. Afterwards in 1286 he was for the first time in Cologne to receive the relics of Ida, Basilica and Christina. His third visit to latter city took place in 1294 to raise money for the construction of the cathedral.<sup>127</sup> Most likely in 1656 his burial tomb was found in front of the Saint Odilia altar in the church of the crosier monastery in Huy.<sup>128</sup>

The studies of the relics of the eleven thousand virgins bring forward that Johannes might have stand in front of the well where thousands of skeletons were found in Cologne and were believed to be those of the eleven thousand virgins. A document of the Cologne curia wrote that he already earlier exhumed bones of the eleven thousand virgins.<sup>129</sup> Although the legend in Liège mentions its burial place close to the church of Saint Gereon, it is rather an invention of the hagiographer who composed the legend of Saint Odilia. At that moment, Saint Helena was the patron saint of the order and the link with the Holy Cross is mentioned several times in the legend. Odilia mentions in the vision to Johannes that she was always thinking of the Holy Cross (*et quia sacrosanctae crucis amatrix semper fui in vita, ...*).<sup>130</sup> She told Johannes that he had to find her relics close to the church of Saint Gereon. This place was founded by Saint Helena.

<sup>126</sup> Saint Odilia acts for the number eight of most important virgins in the revelations. The Crosiers changed her to the most important figure of the group, after Saint Ursula. *Acta Sanctorum. Octobris* volume 9 1869, 176 and 188.

<sup>127</sup> Hermans volume I.1 1858, 55; Hermans volume 2 1858, 94; Janssen & Winkelmolten 2002, 1210.

<sup>128</sup> Hertzworms 1686, 91.

<sup>129</sup> Hermans volume 2 1858, 94; Van Lieshout 1935, 31-32; Van Rooijen 1946, 115.

<sup>130</sup> Liège, University Library, Ms. 135C: *Historia de translatione beatae virginis et martyris Odiliae* (1467), fol. 132v; *Analecta Bollandiana* 1884, 23.

The certificate of finding of 1287 mentions the exhumation on the relics by Johannes of Eppa on the cemetery where the other virgins were found in Cologne.<sup>131</sup> The exhumation on the same place can be suggested by the comparative study of <sup>14</sup>C bones of the eleven thousand virgins that were studied in Belgium (Table 8.5). They also date from the Roman period.

### CONCLUSION

In the past decades many relics of (local) saints were studied in Belgium. The results of these physical anthropological studies and the radiocarbon dating can categorize them in four groups: relics of historical saints<sup>132</sup>, those of “founding fathers”<sup>133</sup>, relics made for the trade<sup>134</sup> and the remains of ‘economical’ and ‘political saints’<sup>135</sup>. In case of Saint Odilia, the relics belong to the last two categories. The story of Saint Odilia is imbedded in the legend of Ursula and the eleven thousand virgins who were believed to be found in 1066 in Cologne. The veneration of these relics was immensely popular during the middle ages and were traded to many places in Europe. The Crosiers took one of these virgins and started their own cult. As Van Lieshout already pointed, the purpose to have relics and to start a cult

<sup>131</sup> Van Lieshout 1935, 31 and 126.

<sup>132</sup> These are relics from saints whose existence is testified by other sources than their vita. In most cases the radiocarbon date of these bones is in agreement with the historical age of that person. So, there is a real possibility that these skeleton remains belong to that historical person.

<sup>133</sup> In this case we are dealing with human remains from saints whose radiocarbon date is not in agreement with the supposed date written down in their vita. Also the authenticity of the vita is questionable. The dates are however very old. They go back to the Merovingian — Carolinian period. These relics are possibly the remains from important people of a local community who became mythicized much later.

<sup>134</sup> Radiocarbon has demonstrated that some relics are much younger than what they should be according to the vita of the saint. They are several centuries younger and date from the heydays of the relic trade. In other words, they were specially made for the trade in relics.

<sup>135</sup> The skeleton remains are old, but do not fit with what is written down in the vita of the saint. The vita contains a lot of doubtful elements, but it is obvious that the saint was ‘invented’ to serve a political or economic goal.

for Saint Odilia in the monastery of the Holy Cross Order in Huy was to make the cloister church better and to spread the order outside the city of Huy.<sup>136</sup> It took place at the end of the thirteenth century, in context of the important prior general Johannes Rijck van Cuijck who made the monastery in Huy more important and founded new monasteries of the order outside Huy.

Due to the poor status of the cloister church in Huy, the cult of Saint Odilia also makes part of the category about economical relics. It gave the Crosiers the possibility to bring people together in their monastery church and meanwhile to receive offerings.

Though at least thirteen different individuals were found in the shrines of Kerniel and Maaseik, the many legends of Saint Odilia, that were composed in the past centuries, also reveal historical facts. Johannes of Eppa went to Cologne to receive the relics.

The study of the vitae and the historical sources are also useful. First of all they prove the importance of this saint for the order. Furthermore they inform what happened with the relics in the past centuries and how the cult for this saint was started and evolved. Finally they bring forward the significance of the relics to the common people. There was, and still is, a need for faithful and peaceful gatherings and a trustful prayer to Saint Odilia against eye illness. Though it was not the focus of this article, a further study of this still existing cult could form an interesting addition to this research topic.

#### ACKNOWLEDGMENT

The authors warmly thank the sisters of Abbey Mariënlof and especially abbess Myriam for the support and trust in this interdisciplinary study. Without the help of Father Bert Graus, o.s.c. and Roger Jansen, o.s.c. this article could not have been presented correctly from a historical point of view. It is Jim Moeglein, o.s.c. in the monastery in Onamia, Minnesota that we owe for spending his free time to edit this text to a correct English contribution. The help of Marco Bonafini in sampling the relics is acknowledged. The support of Katrien Houbey brought this article to a good end. Finally, much appreciation goes to

<sup>136</sup> Van Lieshout 1935, 30.

Erfgoed Haspengouw. Thanks to them the study of the relics will not only be remembered on paper as a scientific study, they funded Haspengouw.TV to film the whole event, so that following generations could also remember and see the memorial opening of the fascinating shrine of Saint Odilia in Kerniel.

## BIBLIOGRAPHY

### 1. ARCHIVAL DOCUMENTS

- Maaseik, Church fabric committee: Letter, no. 920.
- Maaseik, Municipal Archives, "Inventaris Kerkbesturen" 171 — Documents related to the transfer of relics of Saint Relindis to the Bishop of Haarlem, the Bishop of Liège, 1 October 1930, and subsequent correspondence related to this (1 folder).
- Mechelen, Diocesaan archief (of Aartsbisschoppelijk Archief / AAM), Acta vicariatus III, 1, 1600-1844.
- Liège, Grand Séminaire, 6M7: Petrus of Amsterdam, *Sermo de translacione virginis Odilie* (1439), fol. 85r-98r.
- Liège, Grand Séminaire, 6N2: Petrus of Amsterdam, *Sermo de beata Odilia* (ca. 1450), fol. 293r-301v.
- Liège, University Library, Ms. 135C: *Historia de translatione beatae virginis et martyris Odiliae* (1467), fol. 131r-134r.
- Liège, University Library, Ms. 188: Vandenberch, *Monumenta Patriae Leodiensis* (17th century).
- Sint-Agatha, Het Erfgoedcentrum Kloosterleven, AR-Z122 — Archiefinventaris Vrouwen van Bethanië, no. 5058.

### 2. BOOKS AND ARTICLES

- 1000 jaar kerkelijke kunst in Limburg, Tentoonstelling uit het kunstpatrimonium van Belgisch en Nederlands Limburg* 1961. Exhib. cat., Hasselt, Provinciaal Begijnhof. Hasselt.
- Abascal S. 1987. *Tomás Garrido Canabal: sin Dios, sin curas, sin iglesias, 1919-1935*. Mexico: Editorial Tradición.
- Acta Sanctorum. Octobris* 1869, volume 9. Paris/Rome.
- Aitken Y., Cadel F., Voillot C. 1988. *Constituants fibreux des pâtes papiers et cartons. Pratique de l'analyse*. Grenoble: Centre Technique de l'Industrie des Papier Cartons et Celluloses & Ecole Française de Papèterie et des Industries Graphiques.
- Albert A. M. and Maples W. R. 1995. "Stages of epiphyseal union for thoracic and lumbar vertebral centra as a method of age determination for teenage and young adult skeletons." *Journal of Forensic Sciences* 40(4): 623-633.

- Alduc-Le-Bagousse A. 1988. "Estimation de l'âge des non adultes: maturation dentaire et croissance osseuse. Données comparatives pour deux nécropoles médiévales bas-normandes." in L. Buchet (ed.), *Anthropologie et histoire ou Anthropologie historique?*, Actes des 3èmes journées anthropologiques de Valbonne (28-30 mai 1986). Paris: Édition du CNRS: 81-103.
- Alfaro y Piña L. 1863. *Relación descriptiva de la fundación, dedicación etc., de las iglesias y conventos de México, con una reseña de la variación que han sufrido durante el gobierno de d. Benito Juárez*. Mexico: Tipografía de M. Villanueva.
- al-Shushtari A. H. 2009. *Songs of Love and Devotion*. Translated and Introduced by Lourdes María Alvarez. New York: Paulist Press.
- Amador Marrero P. F. 2002. *Traza española, ropaje indiano. El Cristo de Telde y la imaginería en caña de maíz*. Telde: Ayuntamiento de Telde.
- Analecta Bollandiana* 1884, volume 3. Brussels/Genève/Paris.
- Anonymous 1596. *Historie van het Leuen der heyliger maechden Harlindis ende Relindis, vvt de legende int cortste ende ghetrouwvelijckste ouergestelt*. Liège: Christiaen Ouvverx.
- Anonymous 1949. "De relieken van Sinte Odilia." *De Diestenaar. Katholiek Weekblad voor het Kanton Diest* 4, 29 (July 16): 1.
- Arponen A. 2011. "Cotton in Finland before the 1600s." in J. Harjula, M. Helamaa, J. Haarala (eds.), *Times, Things & Places, 36 Essays for Jussi-Pekka Taavitsainen. Jussi-Pekka Taavitsainen Festschrift Committee*. Turku: 236-245.
- Arponen A. 2015. "The Medieval Skull Relic of Turku Cathedral – Preliminary Results of Analyses." *Mirator* 16(1). Online: [http://www.glossa.fi/mirator/index\\_fi.html](http://www.glossa.fi/mirator/index_fi.html).
- Arteaga A., del Egido A., Culubret Worms B., Gayo García D., Borrego Díaz P. s.d. *Tejidos hispanomusulmanes. Estudio técnico y analítico*. Online: <http://ipce.mcu.es/pdfs/M0901-02-4-2-PDF3.pdf>.
- Baciorchi S. and Duhamelle C. (eds.) 2016. *Reliques romaines. Invention et circulation des corps saints des catacombes à l'époque moderne*. Collection de l'École française de Rome 519. Rome: École Française de Rome.
- Báez Hernández M. A. 2013. *Catálogo de cuerpos relicario de la ciudad de Puebla*. Dissertation, Benemérita Universidad Autónoma de Puebla.
- Báez Hernández M. A. 2015. "El cuerpo relicario: mártir, reliquia y simulacro como experiencia visual." in R. García Mahiques and S. Doménech García (eds.), *Valor discursivo del cuerpo en el barroco hispánico*. Valencia: Anejos de Imago: 323-333.
- Baillie M. G. L. and Pilcher J. R. 1973. "A simple crossdating program for tree-ring research." *Tree-Ring Bulletin* 33: 7-14.
- Ballestrero R. 2013. *Efigie, cadáver y cuerpo enfermo en la ceroplástica*. PhD dissertation, Universidad Complutense de Madrid.

- Banelius J. 1616. *Petit discours de la translation du corps de madame S. Odile, vierge et martyre, & patronesse des frères croisiers*. Liège.
- Banelius J. 1621. *Gloriosi corporis S. Odiliae Virginis et Martyris... Translatio*. Cologne.
- Bang G. and Ramm E. 1970. "Determination of age in humans from root dentine transparency." *Acta Odontologica Scandinavica* 28(1): 3-35.
- Bass W. M. 2005. *Human osteology. A laboratory and field manual*. Columbia: Missouri Archaeological Society.
- Beauthier J. P. 2009. *Contribution à l'approche anthropologique et médico-légale des sutures viscérocrâniennes utiles dans l'estimation de l'âge au décès (sutures palatines, fronto-naso-maxillaires et zygomatiques)*. Online PhD dissertation, Faculty of Medicine, Université Libre de Bruxelles.
- Bello S., Thomann A., Rabino Massa E., Dutour O. 2003. "Quantification de l'état de conservation des collections ostéolithologiques et ses champs d'application en anthropologie." *Anthropo* 5: 21-37.
- Berlière U. 1928. *Monasticon belge. Province de Liège*. Liège.
- Black T. K. 1978. "A new method for assessing the sex of fragmentary skeletal remains: Femoral shaft circumference." *American Journal of Physical Anthropology* 48: 227-31. In Bass W. M. 1995. *Human osteology*.
- Bloem H. 1985. "Klein relikschrijn van groot allure op Hoeise tentoonstelling." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheren* 43: 31-36.
- Boldetti M. A. 1720. *Osservazioni sopra i cimiteri de'santi martiri ed antichi christiani di Roma. Aggiuntavi la serie di tutti quelli, che fino al presente si sono scoperti, e di altri simili, che in varie parti del mundo si trovano: con alcune riglessioni pratiche sopra il culto delle sagre reliquie. Libro primo. Alla santita di nostro signore Papa Clemente XI*. Rome: Maria Salvioni Stampatore Vaticano nell' Archiginnasio della Sapienza.
- Bolly J.-J. 1975. *Répertoire photographique du mobilier des sanctuaires de Belgique. Province de Liège, Canton de Huy I*. Brussels: Royal Institute for Cultural Heritage.
- Bomford D., Dunkerton J., Gordon D., Roy A. 1989. *Art the Making. Italian painting before 1400*. London: Esso.
- Bonilla y San Martín A. 1920. *El derecho aragonés en el siglo XII (Apuntes y documentos)*. Huesca: Talleres Tipográficos de Justo Martínez.
- Boonen M. 1997. *Van twee Heilige Jofferen – twee eeuwen Harlindis en Relindis viering*. Maaseik: Werkgroep Documentatie Maaseik.
- Borrego P. 2005. "Estudio técnico del ligamento de los tejidos hispanoárabes." *Bienes Culturales* 5: 75-121.
- Bosmans S. 2013. *État sanitaire et déséquilibres alimentaires dans une population médiévale monastique belge*. Thesis dissertation, Université Libre de Bruxelles — Biologie des organismes et Écologie.



- Boudin M., Boeckx P., Vandenabeele P., Van Strydonck M. 2013. "Improved radiocarbon dating for contaminated archaeological bone collagen, silk, wool and hair samples via cross-flow nanofiltrated amino acids." *Rapid Communications for Mass Spectrometry* 27(18): 2039-2050.
- Boudin M., Van Strydonck M., Van den Brande T., Synal H. A., Wacker L. 2015. "RICH – A new AMS facility at the Royal Institute for Cultural Heritage, Brussels, Belgium." *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms, Nuclear Instruments and Methods in Physics Research B* 361: 120-123.
- Boudin M., Bonafini M., Vanden Berghe I., Maquoi M.-C. 2016. "Naturally Dyed Wool and Silk and Their Atomic C:N Ratio for Quality Control of  $^{14}\text{C}$  Sample Treatment." *Radiocarbon* 58(1): 55-68.
- Boudin M., Bonafini M., Van den Brande T., Van Strydonck M. 2018 in preparation. "AGE: a new graphitisation apparatus for the  $^{14}\text{C}$ -dating laboratory." *Bulletin van het Koninklijk Instituut voor het Kunstpatrimonium* 35.
- Boussingault A. 1672. *La guide universelle de tous le Pays-Bas ou les dix-sept provinces*. Paris.
- Boutry P. 1979. "Les saints des Catacombes. Itinéraires français d'une piété Ultramontaine (1800-1881)." *Mélanges de l'Ecole française de Rome. Moyen-Age, Temps modernes* 91(2): 875-930.
- Boutry P., Julia D., Fabre P. A. 2009. *Reliques modernes: cultes et usages chrétiens des corps Saints des Réformes aux révolutions*, volume 1. Paris: Éditions de l'École des hautes études en sciences sociales.
- Bouza Álvarez J. L. 1990. *Religiosidad contrarreformista y cultura simbólica del barroco*. Madrid: Consejo Superior de Investigaciones Científicas.
- Brecko J., Mathys A., Dekoninck W., Leponce M., VandenSpiegel D., Semal P. 2014. "Focus stacking: Comparing commercial top-end set-ups with a semi-automatic low budget approach. A possible solution for mass digitization of type specimens." *ZooKeys* 464: 1-23.
- Breve apostólico de Pio VI y Estatutos Generales para la erección y gobierno de las custodias de misioneros franciscanos observantes de Propaganda Fide en las provincias internas de Nueva España* 1781. Madrid.
- Bronk Ramsey C. 1995. "Radiocarbon calibration and analysis of stratigraphy: the OxCal program." *Radiocarbon* 37(2): 425-430.
- Bronk Ramsey C. 2001 "Development of the radiocarbon calibration program." *Radiocarbon* 43(2A): 355-363.
- Bronk Ramsey C. 2009. "Bayesian analysis of radiocarbon dates." *Radiocarbon* 51(1): 337-360.
- Brooks S. and Suchey J. M. 1990. "Skeletal age determination based on the os pubis: A comparison of the Acsádi-Nemeskéri and Suchey-Brooks methods." *Human Evolution* 5: 227-238.

- Brothwell D. R. 1963. *Digging Up Bones. The excavation, treatment, and study of human skeletal remains*. London.
- Brouette E. and Grauwels J. 1976. *Monasticon belge 6: Province de Limbourg*. Liège.
- Budny M. 1984. "The Anglo-Saxon Embroideries at Maaseik: their historical and art-historical context." *Mededelingen van de Koninklijke Academie voor Wetenschappen, Letteren en Schone Kunsten van België. Klasse der Schone Kunsten* 45, 2: 57-133.
- Budny M. and Tweddle D. 1984. "The Anglo-Saxon embroideries at Maaseik: their historical and art-historical context." *Anglo-Saxon England* 13: 65-96.
- Burkardt A. 2009. "Les fêtes de translation des Saints des catacombs en Bavière (XVII<sup>e</sup>-XVIII<sup>e</sup> siècles)." in B. Dompier (ed.), *Les cérémonies extraordinaires du catholicisme baroque*. Clermont: Presses universitaires Blaise-Pascal: 79-98.
- Buyle M. and Haneca K. 2011. "De reliekkast van Sint-Dimpna in Geel: balanceren tussen legende en wetenschap." *M&L. Tijdschrift voor Monumenten, Landschappen & Archeologie* 30: 48-61.
- Cabrera Lafuente A. 2005. "Los tejidos como Patrimonio: investigación y exposición." *Bienes Culturales* 5: 5-19.
- Cabrera A. 2014. "Materias preciosas textiles: el caso del bordado con posible escena de Pentecostés del Museo Nacional de Artes Decorativas." *Anales de Historia del Arte* 24: 27-37. Online: <http://revistas.ucm.es/index.php/ANHA/article/view/48267>.
- Calderón de la Barca M. 1843. *Life in Mexico during a residence of two years in that country. With a preface by W. H. Prescott, author of "The History of Ferdinand and Isabella of Spain"*. London: Chapman and Hall.
- Caputo G. and Gentili G. 2013. *Torcello alle origini di Venezia tra occidente e oriente*. Venice: Grafiche Antiga.
- Cardon D. 1993. *Fils renoués. Trésors textiles du Moyen Âge en Languedoc-Rousillon*. Carcassonne: Musée des Beaux-Arts.
- Cardon D. 2003. *Le monde des teintures naturelles*. Paris: Editions Belin.
- Cardon D. 2007. *Natural Dyes. Sources, Tradition, Technology and Science*. London: Archetype Publications.
- Catlos B. A. 2004. *The Victors and the Vanquished: Christians and Muslims of Catalonia and Aragon, 1050-1300*. Cambridge: Cambridge University Press.
- Chen W. 1992. *History of Textile Technology of Ancient China*. New York: Science Press.
- Chenciner R. 2000. *Madder Red. A History of Luxury and Trade. Plant Dyes and Pigments in World Commerce and Art*. Richmond: Curzon Press.
- Coatsworth E. 2007. "Text and textile." in A. Minnis and J. Roberts (eds.), *Text, image, interpretation: studies in Anglo-Saxon literature and its*

- Insular context in honour of Éamonn Ó Carragáin*, Studies in the Early Middle Ages 18. Turnhout: Brepols Publishers: 187-207.
- Coens M. 1958. "Les saints vénérés à Huy d'après un psautier récemment rapatrié et le martyrologe de la collégiale." *Annalecta Bollandiana* 75: 316-335.
- Colard T., Bertrand B., Naji S., Delannoy Y., Bécart A. 2015. "Toward the adoption of cementochronology in forensic context." *International Journal of Legal Medicine*: 1-8.
- Collins J. 2004. *Papacy and politics in eighteenth century Rome. Pius VI and the arts*. Cambridge: University Press.
- Colman P. 1966. *L'orfèvrerie religieuse Liégeoise. Du XV<sup>e</sup> siècle à la Révolution*, volume 1. Liège.
- Colson M. 1951a. "Sinte Odilia-Herinneringen te Kerniel." *De Tijdspiegel* 6: 33-38.
- Colson M. 1951b. "Het Sinte Odilia-schrijn van Diest. Een reproductie van het oude schrijn van Kerniel." *De Tijdspiegel* 6, 10: 236-239.
- Concilio de Trento 1787. El Sacrosanto y Ecuménico Concilio de Trento, traducido al idioma castellano por Don Ignacio López de Ayala, Agregase el texto latino corregido según la edición autentica de Roma, publicada en 1564, Tercera Edición con Privilegio*. Madrid: Imprenta Real.
- Cruz Lira L. M. 2015. "Familia y eclesiásticos. Los Gómez Portugal de Santa María de los Lagos, siglo XVIII." *Temas Americanistas* 36: 41-60.
- Daniëls M. 1910. "Province de Limbourg." *Bulletin des Commissions royales d'Art et d'Archéologie* 49: 282-289.
- Daris J. 1867. *Notices sur les églises du diocèse de Liège*, volume 1. Liège.
- Daris J. 1892. *Le diocèse de Liège sous l'épiscopat de Mgr. Théodore de Montpellier 1852 à 1879*. Liège: Demarteau.
- Darrah J. 1989. "The microscopical and analytical examination of three types of metal thread." *International Restorer Seminar*. Veszprém: 53-63.
- De Borman C. 1880. "Genealogie van de Maeseycker familie Puytlinck." *Annuaire de la Noblesse de Belgique* 34: 279-283.
- De Groot K. 2008. *Middeleeuws aardewerk in Vlaanderen. Techniek, typologie, chronologie en evolutie van het gebruiksgoed in de regio Oudenaarde in de volle en late middeleeuwen (10<sup>de</sup>-16<sup>de</sup> eeuw)*, Relicta Monografieën 1. Brussels: Agentschap Onroerend Erfgoed.
- de Kruijf A. 2011. *Miraculeus bewaard. Middeleeuwse Utrechtse relieken op reis: de schat van de oud-katholieke Sint-Gertrudiskathedraal*. Zutphen.
- del Arco y Garay R. 1942. *Catálogo monumental y artístico de la provincia de Huesca*. Madrid: Instituto Diego Velázquez (CSIC).
- Demaret H. 1924. *La collégiale Notre-Dame à Huy. Notes et Documents*. Huy.
- DeNiro M. J. 1985. "Postmortem preservation and alteration of in vivo bone collagen isotope ratios in relation to palaeodietary reconstruction." *Nature* 317: 806-809.

- Depaire J.-P. 1969-1970. *La bibliothèque des Croisiers de Huy, de Liège et de Namur*, 2 volumes. Unpublished licentiate's thesis, Université de Liège.
- de Saumery P.-L. 1740. *Les delices du país de Liège, ou description historique, géographique, topographique et chorographique des monumens sacrés et profanes de cet évêché-principauté et de la comte de Namur*, volume 2. Liège.
- de Tervarent G. 1931. *La légende de Sainte Ursule dans la littérature et l'art du Moyen Age*, volume 1. Paris.
- de Warem A. 1659. *Eburonum Huensium sacrarium, eorumque diva sartensis*. Huy.
- Día Primero de cada mes dedicado a santa Teodora, cuyo sagrado cuerpo se venera en la parroquia de Xalapa a devoción del difunto Don Pedro Josef Hernández, y su esposa doña Bárbara Ortiz de Zárate y Ponce de León, quien saca éste a la luz, y lo da a la imprenta* 1809. Mexico: Casa de Arizpe.
- Dierkens A. 1974-1975. *L'Abbaye d'Aldeneik pendant le Haut Moyen Age*. Unpublished thesis, Université libre de Bruxelles.
- Dierkens A. 1979. "Les origines de l'abbaye d'Aldeneik (Première moitié du VIIIe siècle)." *Le Moyen Age* 85: 389-432.
- Dierkens A. 1999. "Du bon (et du mauvais) usage des reliquaires au Moyen Âge." in E. Bozóky and A.-M. Helvétius (eds.), *Les reliques. Objets, cultes, symbols. Actes du colloque international de l'Université du Littoral-Côte d'Opale (Boulogne-sur-Mer) 4-6 septembre 1997*, Hagiologia. Études sur la Sainteté en Occident, 1. Turnhout: Brepols Publishers: 239-252.
- Donnadieu J. 2014. *Jacques de Vitry (1175/1180-1240). Entre l'Orient et l'Occident: l'évêque aux trois visages*. Turnhout: Brepols Publishers.
- Duday H., Courtaud P., Crubézy E., Sellier P., Tillier A.-M. 1990. "L'anthropologie de "terrain": reconnaissance et interprétation des gestes funéraires." *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 2 (3-4): 26-49.
- Durán Gudiol A. 1993. "Aragón: de Condados a Reino." in M. C. Lacarra Ducay and C. Morte García (eds.), *Signos, arte y cultura en el Aragón medieval*. Zaragoza: 70-75.
- Durian-Ress S. 1986. *Meisterwerke mittelalterlicher Textilkunst aus dem Bayerischen Nationalmuseum*. Munich/Zurich.
- Dutour O. 1989. *Hommes fossiles du Sahara: peuplements holocènes du Mali septentrional*. Paris: Editions du Centre national de la recherche scientifique.
- Eckstein D. and Bauch J. 1969. "Beitrag zur Rationalisierung eines dendrochronologischen Verfahrens und zur Analyse seiner Aussagesicherheit." *Forstwissenschaftliches Centralblatt* 88: 230-250.
- Edgren T. 2000. "The Eastern Route. Finland in the Viking Age." in W. W. Fitzhugh and E. I. Ward (eds.), *Vikings. The North Atlantic*

- Saga*. Washington/London: Smithsonian Institution Press & National Museum of Natural History.
- Ellingham S. T., Thompson T. J., Islam M., Taylor G. 2015. "Estimating temperature exposure of burned bone – A methodological review." *Science and Justice* 55(3): 181-188.
- Emsee 1949. "Uit het leven van de orde der Kruisheren." *Kruis en Wereld. Maandblad der Kruisheren* 28, 9 (August): 260-264.
- Epstein S. A. 2009. *An Economic and Social History of Later Medieval Europe, 1000-1500*. New York: Cambridge University Press.
- Ervynck A., Boudin M., Van den Brande T., Van Strydonck M. 2014. "Dating human remains from the historical period in Belgium: diet changes and the impact of marine and freshwater reservoir effects." *Radiocarbon* 56(2): 779-788.
- Esco V. 1993. "Huesca en la Marca Superior de al-Andalus." in M. C. Lacarra Ducay and C. Morte García (eds.), *Signos, arte y cultura en el Aragón medieval*. Zaragoza: 59-70.
- Orfebrería y Ropas de Culto: Arte Español de los siglos XV al XIX* 1941. Madrid: Comisaría General del Servicio de Defensa del Patrimonio Artístico Nacional.
- Feliciano M. J. 2005. "Muslim Shrouds for Christian Kings: A Reassessment of Andalusí Textiles in Thirteenth-Century Castilian Life and Ritual." in C. Robinson and L. Rouhi (eds.), *Under the Influence: Rethinking the Comparative in Medieval Iberia*. Leyden: Brill Academic Publisher: 101-131.
- Feliciano M. J. 2014. "Medieval Textiles in Iberia: Studies for a New Approach." in D. Roxburgh (ed.), *Envisioning Islamic Art and Architecture: Essays in Honor of Renata Holod*. Leyden: Brill Academic Publishers: 46-65.
- Feng Z. 2012. "Silk Artistry of the Yuan Dynasty." in D. Kuhn (ed.), *Chinese Silks*. New Haven/London: Yale University Press.
- Ferembach D., Schwidetzky I., Stloukal M. 1979. "Recommandations pour déterminer l'âge et le sexe sur le squelette." *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 6(1): 7-45.
- Ferembach D., Schwidetzky I., Stoukal M. 1980. "Recommendation for age and sex diagnoses of skeletons." *Journal of Human Evolution* 9: 517-549.
- Ferrara D. 2002. *Il Trecento adriatico. Paolo Veneziano e la pittura tra Oriente e Occidente, catalogo della mostra*. Milan: Altomani & Sons.
- Ferrara D. 2008. *Giovanni Baronzino e la pittura a Rimini nel Trecento*. Milan: Silvana Editoriale.
- Feuillat F., Dupouey J. L., Sciam D., Keller R. 1997. "A new attempt at discrimination between *Quercus petraea* and *Quercus robur* based on wood anatomy." *Canadian Journal of Forest Research* 27: 343-351.

- Fisen B. 1747. *Flores ecclesiae Leodiensis sive Vitae vel elogium sanctorum & aliorum qui illustriori virtute hanc dioecesim exornarunt*. Insulis.
- Fletcher J. M. 1977. "Tree-ring chronologies for the 6th to 16th centuries for oaks of southern and eastern England." *Journal of Archaeological Science* 4: 335-352.
- Floriano Cumbreño A. 1942. *El Bordado*. Barcelona.
- Fontaine E. 1951. "La fin de Clairlieu." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheren* 9, 1: 6-42.
- Fontaine E. 2010. *Jacques Dubois. Crosier Prior General at Clairlieu 1778-1796*, translated from French by Michael Cotone. Phoenix/Rome.
- Fraiture P. 2015. *Report of dendrochronological analysis. Shrine of St. Odilia*. Unpublished report Brussels, Royal Institute for Cultural Heritage (no. 2014.12403), 49p.
- Fraiture, P. and Haneca K., 2017. "Dendrochronological Analysis of the Panel Paintings," in M. Maillard-Luypaert (ed.), *Frans Pourbus l'Ancien à Tournai. Les panneaux peints pour l'abbatiale Saint-Martin. Histoire, iconographie, style, technique, restauration*, Scientia Artis, 14. Brussels: Royal Institute for Cultural Heritage: 123-139.
- Ferreira Caldas J. 1996. "Igreja da Nossa Senhora da Consolacao e Santos Passos." in *Guimarães. Apontamentos para a sua História. Parte II*. Guimarães: CMG/SMS: 350-352.
- Fransen B., Vandenbruaene M., Van Strydonck M., Boudin B. 2006-2008. "De vermeende reliëken van de Heilige Alena te Vorst: Geschiedenis, botonderzoek en <sup>14</sup>C dateringen." *Bulletin van het Koninklijk Instituut voor het Kunstpatrimonium* 32: 95-112.
- Fréron J. 1906. "Le trésor, les vêtements sacerdotaux & le mobilier de l'église collégiale de Huy lors la Révolution française." *Cercle hutois des Sciences & Beaux-Arts* 15: 163-172.
- Gage J. 1999. *Colour and Culture. Practice and Meaning from Antiquity to Abstraction*. Berkeley/Los Angeles: University of California Press.
- García García F. 2016. "Mover al Santo: Traslado de reliquias y renovación de escenarios de culto en monasterios hispanos (s. XI y XII)." in J. A. Garcia de Cortázar y Ruiz de Aguirre and T. Ramón (eds.), *Los monasterios medievales en sus emplazamientos: lugares de memoria de lo sagrado*. Aguilar de Campo: Fundación Santa María La Real y Centro de Estudios del Románico: 143-174.
- Gayo M. D. and Arteaga A. 2005. "Análisis de colorantes de un grupo de tejidos hispanomusulmanes." *Bienes Culturales* 5: 123-147. Online: <http://es.calameo.com/read/000075335d30d779d0ea7>
- Gazeta de México del martes 12 de septiembre de 1786, Tomo II, Núm. 17.*
- Gazeta de México del martes 26 de agosto de 1788, Tomo III, Núm. 15.*



- Geijer A. 1954. "Textilierna i sankt Eriks skrin." in B. Thordeman (ed.), *Erik den Helige. Historia, kult, reliker*. Stockholm: Nordisk rotogravtry: 289-302.
- Geijer A. 1994. *Ur textilkonstens historia*. Stockholm: Tidens förlag.
- George P. 1984. "De l'intérêt de la conservation et de l'étude des reliques des saints dans le diocèse de Liège." *Bulletin de la Société Royale Le Vieux-Liège* 10, 226 (July-September): 509-530.
- George P. 1991. "A Saint-Trond un import-export de reliques des onze mille vierges au XIII<sup>e</sup> siècle." *Bulletin de la Société Royale Le Vieux-Liège* 12, 253: 209-228.
- George P. 2013a. "Sources écrites permettant l'identification des reliques." in *Châsses du Moyen âge à nos jours*. Exhib. cat., Liège, Archeoforum. Liège: 84-85 (inv. no. 17).
- George P. 2013b. *Reliques. Le Quatrième Pouvoir*. Nice: Les Edition Romaines.
- Geukens B. 1977. *Fotorepertorium van het meubilair van de Belgische bedehuizen. Provincie Limburg. Kanton Borgloon*. Brussels: Royal Institute for Cultural Heritage.
- Ghilardi M. 2010. "Quae signa erant illa, quibus putabant esse significativa Martyrii?, Note sul riconoscimento ed autenticazione delle reliquie delle catacombe romane nella prima età moderna." *Mélanges de l'école française de Rome. Italie et Méditerranée* 122(1): 81-106.
- Ghilardi M. 2013. "Paolino e gli altri martiri. Il culto dei "corpi santi" nella prima età moderna." *Il cardinal Montelpare, Atti del Convegno, Montelparo 17 giugno 2012*, Quaderno per la Ricerca 17. Teramo: Archivio Diocesano San Benedetto del Tronto: 101-125.
- Ghilardi M. 2015. "Le commerce des objets de dévotion chrétiens: approches croisées (XVI<sup>e</sup>-XIX<sup>e</sup> siècle)." Unpublished paper.
- Gill G. W. 1984. "A forensic test case for a new method of geographical race determination." in T. A. Rathbun and J. E. Buiskstra (eds.), *Human identification: Case studies in forensic anthropology*. Springfield, Illinois: Thomas: 329-39. In Bass W. M. 1995. *Human osteology*.
- Glatigny J.-A. 2015. *Rapport d'observations du support: châsse de St Odile*. Unpublished report, 11p.
- Gleba M., Vanden Berghe I., Aldenderfer M. 2016. "Textile technology in Nepal in the 5th–7th centuries CE: the case of Samdzong." *STAR: Science & Technology of Archaeological Research*: 1-11.
- Gómez M. L. 2000. "Los rayos X." in *La Restauración. Examen científico aplicado a la conservación de obras de arte*. España: Ediciones: Cátedra: 170-179.
- Gómez Mata M. 2012. *Efemérides de Lagos de Moreno*. Mexico: Propaganda y Diseño.
- González de Matos H. 2015. *El jardín de la Borda, una historia con herencia novohispana*. Mexico: CONACULTA, Secretaría de Desarrollo Social e Instituto de Cultura de Cuernavaca.

- Gramtorp D., Botfeldt K., Glastrup J., Pikkjær Simonsen K. 2015. "Investigation and conservation of Anne Marie Carl-Nielsen's wax models." *Studies in Conservation* 60-2: 97-106.
- Grau Quiroga N. 2010. *Roda de Isábena en los siglos X-XIII. La documentación episcopal y del cabildo catedralicio*. Zaragoza: Institución Fernando el Católico.
- Guardia Pons M. 2011. *San Baudelio de Berlanga, una encrucijada*. Barcelona: University of Barcelona.
- Guy J. and Thakar K. 2015. *Indian Cotton Textiles. Seven Centuries of Chintz from the Karum Thakar Collection*. Woodbridge: ACC Art Books.
- Hacke M. 2006. *Investigation into the Nature and Ageing of Tapestry Materials*. Unpublished PhD dissertation, University of Manchester.
- Haneca K., De Boodt R., Herremans V., De Pauw H., Van Acker J., Van de Velde C., Beeckman H. 2005a. "Late Gothic altarpieces as sources of information on medieval wood use: a dendrochronological and art historical survey." *IAWA Journal* 26: 273-298.
- Haneca K., Wazny T., Van Acker J., Beeckman H. 2005b. "Provenancing Baltic timber from art historical objects: success and limitations." *Journal of Archaeological Science* 32: 261-271.
- Haneca K., Cufar K., Beeckman H. 2009. "Oaks, tree-rings and wooden cultural heritage: a review of the main characteristics and applications of oak dendrochronology in Europe." *Journal of Archaeological Science* 36: 1-11.
- Haneca K. and De Ridder M. 2010. "Verslag dendrochronologisch onderzoek: het reliëfschrijn van Sint-Dimpna, te Geel." *Rapporten Natuurwetenschappelijk Onderzoek VIOE* 2010-23. Brussels.
- Heere L. 1953. "Relieken van Sint Odilia te Deventer." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheren* 11: 36-39.
- Helbig J. 1873. *Histoire de la peinture au Pays de Liège*. Liège.
- Helbig J. 1903. *La peinture au Pays de Liège et sur les bords de la Meuse*. Liège.
- Hendrickx, M. and Sangers W. 1963. *De kerkschat van de Sint-Catharinakerk te Maaseik*, Limburgs Kunstpatrimonium 1. Averbode.
- Hendriks V. 2014a. *Archeologische opgraving Mechelen Sint-Romboutskathedraal (prov. Antwerpen). Basisrapport*. Ingelmunster: Monument Vandekerckhove nv: 81 p.
- Hendriks V. 2014b. "Opgravingen in de Sint-Romboutskathedraal te Mechelen." *Opgetekend Verleden* 6: 64-69.
- Henschenius G. (ed.) 1668. "De sancti virginibus Herlinde et Reinula sev Renilde, abbatissis Masaci in Belgio." *Acta Sanctorum*, March, volume 3. Antwerp: 385-392.
- Hermans C. R. 1858. *Annales canonicorum regularium S. Augustini, ordinis S. Crucis*, 3 volumes. Silvaeducis.
- Hertzworms A. 1686. *Religio sanctissimae crucis, seu brevis ac solida informatio de ortu, progressu, ac statu in praesens; necnon de sanctis, ac quibusdam*



- memorabilibus viris, gestisque ejusdem religionis, sub lege D. Aurelii Augustini merentis. Editio altera. Annis XXV posterius ab eodem auctore novata, et additionibus aucta.* Roermond.
- Het Algemeen Belang der Provincie Limburg*, Wednesday 25th of August 1897: 2.
- Hillson S. 1996. *Dental anthropology*. Cambridge: Cambridge University Press.
- Hofenk de Graaff J. H. 2004. *The Colourful Past. Origins, Chemistry and Identification of Natural Dyestuffs*. Riggisberg: Abegg-Stiftung/ London: Archetype Publications Ltd.
- Hollstein E. 1980. *Mitteleuropäische Eichenchronologie: Trierer dendrochronologische Forschungen zur Archäologie und Kunstgeschichte*. Trierer Grabungen und Forschungen 11. Mainz am Rhein: Verlag Phillip von Zabern.
- Honhon L. 1887. *De Heilige Odilia, maagd en martelares, patrones van de orde der Kruisbeeren*. Roermond.
- Huchet J.-B., Deverly D., Gutierrez B., Chauchat C. 2011. "Taphonomic evidence of a human skeleton gnawed by termites in a Moche-Civilisation grave at Huaca De La Luna, Peru." *International Journal of Osteoarchaeology* 21: 92-102.
- Huchet J.-B. 2014. "Approche ichnologique et taphonomique des altérations ostéolytiques dues aux insectes en contexte archéologique." in C. Denys and M. Patou-Mathis (eds.), *Manuel de Taphonomie*. Paris: Actes Sud — Errance, collection «Archéologiques», Muséum National d'Histoire naturelle & CNRS: 185-207.
- Huesca R. 1807. *Teatro histórico de las iglesias del Reyno de Aragón*, volume 9. Madrid.
- Janssens B. 1940. "Bij de herstelling van het ciborium in de kerk van de H. Dimpna te Geel." *Tijdschrift voor Geschiedenis en Folklore* 3(2): 88-91.
- Janssen R. and Winkelmolen P. 1999. *Repertorium Canoniorum Regularium Ordinis Sanctae Crucis 1840-1996*, volume 1. Maaseik.
- Janssen R. and Winkelmolen P. 2002. *Repertorium Canoniorum Regularium Ordinis Sanctae Crucis 1248-1840*, volume 5 and 6. Maaseik.
- Janssen R. 2010. *Oord van helder licht. 800 jaar Orde van het Heilig Kruis 1210-2010*. St.-Agatha.
- Knüsel C. J. and Robb J. 2016. "Funerary taphonomy: An overview of goals and methods." *Journal of Archaeological Science: Reports* 10: 655-673.
- Kondakov N. 2015. *Icons*. New York: Parkstone International Press.
- Koudounaris P. 2013. *Heavenly bodies, cult treasures & spectacular Saints from the catacombs*. USA: Thames and Hudson.
- Krogman W. M. and Işcan M. Y. 1986. *The Human Skeleton in forensic medicine*. Springfield: C. C. Thomas.

- Kublo E. K. 2012. "The production of textiles in Novgorod from the 10<sup>th</sup> to the 14<sup>th</sup> centuries." in M. A. Brisbane, N. A. Makarov and E. N. Nosov (eds.), *The archaeology of medieval Novgorod in context. Studies in centre/periphery relations*. Oxford: Oxbow Books: 224-258.
- Labarre E. J. 1969. *Dictionary and encyclopaedia of paper and papermaking*. Amsterdam: Swets & Zeitlinger.
- Larrosa Consuelo V., Gómez González C., Martín García J. C., Vidal Meler P., Burón Álvarez M. 2012. "Estudios radiográficos determinantes para el conocimiento constructivo de tres esculturas policromadas realizados por el CCRBC de Castilla y León." *Ge-conservación / conservação* 3: 152-168.
- Larsen C. S. 1997. *Bioarchaeology: interpreting behavior from the human skeleton*. Cambridge.
- Legner A. 2003. *Kölner Heilige und Heiligtümer. Ein Jahrtausend europäischer Reliquienkultur*. Cologne: Greven-Verlag.
- Lemeunier A. 2012. *Trésor de la collégiale Notre-Dame Huy*. Huy.
- León N. 1906. *Bibliografía mexicana del siglo XVIII por el Dr. Nicolás León profesor de etnología en el Museo Nacional, Sección Primera, Tercera Parte A-Z*. Mexico: Imprenta de la viuda de Francisco Díaz de León.
- Liénardy A. and Van Damme P. 1989. *Inter Folia, Handboek voor de conservatie en restauratie van papier*. Brussels: Koninklijk Instituut voor het Kunstpatrimonium.
- Longin R. 1971. "New Method of Collagen Extraction for Radiocarbon Dating." *Nature* 230: 241-242.
- Lopez R. S. and Raymond I. W. 2001. *Medieval Trade in the Mediterranean World. Illustrative Documents*. New York: Columbia University Press.
- López González V. 1999. *Cuernavaca. Visión retrospectiva de una ciudad*. Morelos: Instituto Estatal de Documentación.
- Lorés i Otzet I. 2014. "From Roda de Ribagorça to Lleida (XII<sup>th</sup>-XIII<sup>th</sup> Centuries: Artistic and Liturgical Transfers between Displaced Episcopal." *Hortus Artium Medievalium* 20(2): 632-641.
- Lorés i Otzet I. 2015. "Hagiography and Memory: The Use of Bishop Saint Ramon of Roda in the Thirteenth Century." *Hortus Artium Medievalium* 21: 136-51.
- Lovejoy C. O. 1985. "Dental wear in the Libben population: its functional pattern and role in the determination of adult skeletal age at death." *American Journal of Physical Anthropology* 68(1): 47-56.
- Lovell N. C. 1997. "Trauma Analysis in Paleopathology." *Yearbook of Physical Anthropology* 40: 139-170.
- Maat G. J. R. and Van Der Velde E. A. 1987. "The caries attrition competition." *International Journal of Anthropology* 2: 281-292.
- Macías C. 1987. "El retorno a la Valenciana. Las familias Pérez Gálvez y Rul." *Historia Mexicana, El Colegio de México* 66(3): 643-659.

- Magnien A. et al. 2001. *Thesaurus des Objets Mobiliers*, Documents & méthodes 8. Paris: Ministère de la Culture et de la Communication, Sous-direction des études, de la Documentation et de l'Inventaire, Direction de l'Architecture et du Patrimoine, France.
- Mann R. W. and Murphy S. P. 1990. *Regional Atlas of Bone Disease: A Guide to Pathologic and Normal Variation in the Human Skeleton*. Springfield: Charles C Thomas publisher.
- Manso Porto C. 2008. "La colección Cartográfica de América de Alexander Von Humboldt conservada en la Real Academia de la Historia." *Boletín de la Real Academia de la Historia* 205(3) (September-December): 537-590.
- Mantilla de los Ríos Rojas M. S. (ed.) 1995. *Vestiduras pontificales del Arzobispo Rodrigo Ximenez de Rada. S.XIII*. Madrid: Ministerio de Educación, Cultura y Deporte.
- Marcus A. F. 1972. "Klooster Mariënlof Kolen-Kernel." *De Tijdspiegel* 27: 1-35.
- Mardaga P. 1990. *Le patrimoine monumental de la Belgique. Wallonie. Province de Liège. Arrondissement de Huy*, 15. Liège.
- Maresh M. M. 1970. "Measurements from roentgenograms." in R. W. McCammon (ed.), *Human Growth and Development*. Springfield, Illinois: Charles C Thomas Publisher: 157-200.
- Marmolejo L. 1884. *Efemérides guanajuatenses o datos para formar La Historia de la Ciudad de Guanajuato, obra escrita con presencia de los más auténticos e interesantes documentos por el Presbítero Lucio Marmolejo Socio Corresponsal de la Sociedad Mexicana de Geografía y Estadística y miembro de algunas otras Corporaciones Literarias. Tomo III. Comprende los acontecimientos verificados en la primera mitad del Siglo XIX*. Guanajuato: Imprenta del Colegio de Artes y Oficios a cargo de Francisco Rodríguez.
- Martin J. 1986. *Treasure of the land of darkness. The fur trade and its significance for medieval Russia*. Cambridge: Cambridge University Press.
- Martin R. 1928. *Lehrbuch der Anthropologie in Systematischer Darstellung mit Besonderer Berücksichtigung der Anthropologischen Methoden für Studierende, Ärzte und Forschungsreisende. Zweiter Band: Kraniologie, Osteologie*. Jena: Gustav Fischer.
- Martín i Ros R. 1995-1996. "Les vêtements liturgiques de Saint-Valère: étude historique." *Bulletin du CIETA* 73: 63-78.
- Martínez Assad C. R. 2004. *El laboratorio de la Revolución. El Tabasco garridista*. Mexico: Siglo XXI.
- Matteini, M. Y. A. M. 2001. "Técnicas radiográficas." in *Ciencia y Restauración*. Sevilla: Nerea: 189-202.
- May F. 1957. *Silk textiles of Spain. Eighth to Fifteenth century*. New York.
- Mazzaoui M. F. 2008. *The Italian Cotton Industry in the Later Middle Ages 1100-1600*. Cambridge: Cambridge University Press.

- Miller M. C. 2014a. *Clothing the Clergy. Virtue and Power in medieval Europe, c. 800-1200*. Ithaca: Cornell University.
- Miller M. C. 2014b. "Reform, Clerical Culture and Politics." in *Oxford Book of Medieval Christianity*. Oxford: 305-322.
- Mohanty B. C., Chandramouli K. V., Naik H. D. 1987. *Natural dyeing processes of India*. Ahmedabad: H. N. Patel on behalf of Calico Museum of Textiles.
- Montes Marrero A. L. *Radiología aplicada en relicarios de ceroplástica. Estudio de la técnica de factura de Santa Faustina y San Plácido mártires, en la Catedral de Durango, México*. Unpublished thesis dissertation, Escuela de Conservación y Restauración de Occidente.
- Montgomery S. B. 2010. *St. Ursula and the Eleven Thousand Virgins of Cologne: relics, reliquaries and the visual culture of group sanctity in late medieval Europe*. Oxford.
- Murail P., Brůžek J., Houet F., Cunha E. 2005. "DSP: a tool for probabilistic sex diagnosis using worldwide variability in hip-bone measurements." *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 17(3-4): 167-176.
- Niño F. 1941. "Las mitras de Roda." *Archivo Español de Arte* 14: 138-147.
- Njus J. 2008. "The Politics of Mysticism: Elisabeth of Spalbeek in Context." *Church History* 77(2): 285-317.
- Nordman C. A. 1954. "En relik av Erik den helige i Åbo domkyrka." in B. Thordeman (ed.), *Erik den Helige. Historia, kult, relikier*. Stockholm: Nordisk rotogravyr: 303-320.
- Olaerts P. 1987-1992. *Documentatiemap: Maaseik, relieken en kerkschatten, uit Archief Kerkfabriek van Sint-Catharina nr. 154*.
- Olivier G. 1960. *Pratique anthropologique*. Paris: Vigot Frères, Editeurs.
- Olivier G., Aaron C., Fully G., Tissier G. 1978. "New estimations of stature and cranial capacity in modern man." *Journal of Human Evolution* 7(6): 513-518.
- Onkelinx Y. 1981. "Het leven van de H. Dimpna." *Jaarboek van de Vrijheid en het Land van Geel* 18: 74-76.
- Orazione in memoria della solenne traslazione della Martire Santa Agape detta nella Chiesa propisturale già insigne colleciata di Chiari, dell'Ilmo. e Rev. mo Monsignore Geremia Dottor Bonomelli ora vescovo di cremona il XVI Agosto MDCCCLXXI dedicata al merito di S. E. Ill. e Rev. Monsig. Girolamo Nobil Verzeri, vescovo di Brescia, prelado domestico di sua Santità. Asistente al Solio Pontificio* 1872. Modena: Tip. Dell'Imm. Concezione.
- Orban R. and Polet C. 2003. "Diagnostic de l'âge au décès et détermination du sexe." in C. Susanne, B. Chiarelli, E. Rebato (eds.), *Anthropologie biologique. Evolution et biologie humaine*. Louvain-la-Neuve: 127-131.

- Orban R., Eldridge J., Polet C. 2011. "Potentialités et historique de la collection de squelettes identifiés de Schoten (Belgique, 1837-1931)." *Anthropologica et Præhistorica* 122: 147-190.
- Ortner D. J. 2003. *Identification of pathological conditions in human skeletal remains*. San Diego.
- Otavsky K. and Abbas Muhammad M. 1995. *Mittelalterliche Textilien, I. Ägypten, Persien und Mesopotamien. Spanien und Nordafrika*. Bern: Abegg-Stiftung.
- Otavsky K. 2011. "Introduction to part 1." in K. Otavsky and A. E. Wardwell (eds.), *Mittelalterliche Textilien. II. Zwischen Europa und China*. Riggisberg: Abegg-Stiftung: 328-330.
- Otavsky K. and Wardwell A. E. 2011. *Mittelalterliche Textilien. II. Zwischen Europa und China*. Bern: Abegg-Stiftung.
- Panhuysen R. 2016. "Deconstructing the story of the miraculous recovered skeleton of Ailbertus of Antioing". Paper presented at "Relics @ the Lab", Royal Institute for Cultural Heritage, Brussels, Belgium, 27 October 2016.
- Paquay J. 1932. "A propos de la chässe de Sainte Odile à Kerniel." *Leodium* 25: 62-68.
- Partearroyo Lacaba C. 1993. "Los tejidos medievales en el Alto Aragón." in M. C. Lacarra Ducay and C. Morte García (eds.), *Signos, arte y cultura en el Aragón medieval*. Zaragoza: 137-143 and 220, 226, 228, 313 and 316.
- Parthasarathi P. 2009. "Cotton Textiles in the Indian Subcontinent, 1200-1800." in G. Riello and P. Parthasarathi (eds.), *The Spinning World. A Global History of Cotton Textiles, 1200-1850*, Pasold Studies in Textile History 16. Oxford: Oxford University Press.
- Pasquel L. 1949. *Perfiles de Xalapa: mosaico histórico*. Mexico: Ediciones Logos.
- Pastor J. F., Gutiérrez B., Montes J. M., Ballestriero R. 2016. "Uncovered secret of a Vasseur-Tramond wax model." *Journal of Anatomy* 228: 184-189.
- Pearson K. 1917-1919. *A study of the long bones of the English skeleton I: The femur*. University of London, University College, Department of Applied Statistics, Company Research, Memoirs, Biometric Series X, chapters 1-4. In Bass W. M. 1995. *Human osteology*.
- Perpetua Restauración 2012. *Informe de restauración*. Unpublished paper.
- Petit F. 2011. *Spirituality of the Premonstratensians. The Twelfth and Thirteenth Centuries*, Premonstratensian Texts and Studies 2. Minesota.
- Petit-de Rosen J. 1852. "Analectes limbourgeois." *Bulletin de la Société Scientifique et Littéraire du Limbourg* 1: 49-63.
- Pierce J. M. 2006. "Vestments and Objects" in G. Wainwright and K. B. Westerfield Tucker (eds.), *Oxford History of Christian Worship*. Oxford: 851-857.

- Pöder K. 2010. "Credible commitment and cartel: the case of the Hansa merchant in the guild of late medieval Tallinn." *Baltic Journal of Economics* 10(1): 43-60.
- Poskin G. and Stokart P. 1982. *Orfèvres Namurois*. Namur.
- Pratissoli V. 2007. *Santa Clementina vergine e martire, la storia e il culto*. Corregio: Parrocchia dei S. S. Quirino e Michele Arcangelo Corregio.
- Puchalsky S. M. 2008. "Principles of digital X-ray imaging: computed tomography and digital radiography." *Equine veterinary education* 20(2): 99-102.
- Quatrehomme G. 2015. *Traité d'anthropologie médico-légale*. Louvain-la-Neuve: Editions De Boeck Université.
- Quintelier K. and Vandenbruaene M. 2009. "Fysisch-antropologisch onderzoek van de opgegraven skeletten." *Onder het Sint-Pietersplein Gent. Van hoogadelijke begraafplaats tot parking*. Ghent: 89-101.
- Ramaekers A. 1949. "[Translation of the relics to Diest]." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruissheren* 7, 2: 110.
- Ramaekers A. 1984. "Renerus Augustinus Neerius Magister Generaal van de kruissheren 1619-1648." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruissheren* 42: 3-118.
- Ramaswamy V. 2006. *Textiles and Weavers in South India*. Second edition. Oxford: Oxford University Press.
- Ray P. C. 1902. *A History of Hindu Chemistry from the Earliest Times to the Middle of the Sixteenth Century A. D.*, volume 1. Calcutta: Chuckervertty, Chatterjee & Co., Ltd.
- Rayssius A. 1628. *Hierogazophylacium Belgicum sive Thesaurus sacrarum reliquiarum Belgii*. Douai.
- Rebora G. 1970. *Un manuale di tintoria del quattrocento*. Università degli Studi di Genova, Istituto de Storia Economica 3. Milan: Dott. A. Giuffrè Editore.
- Reijners G. Q. 1998. "Enige opmerkingen over de liturgie bij de Kruisbroeders." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruissheren* 56: 99-113.
- Reimer P. J., Bard E., Bayliss A., Beck J. W., Blackwell P. G., Ramsey C. B., Buck C. E., Cheng H., Edwards R. L., Friedrich M., Grootes P. M., Guilderson T. P., Haflidason H., Hajdas I., Hatté C., Heaton T. J., Hoffmann D. L., Hogg A. G., Hughen K. A., Kaiser K. F., Kromer B., Manning S. W., Niu M., Reimer R. W., Richards D. A., Scott E. M., Southon J. R., Staff R. A., Turney C. S. M., van der Plicht J. 2013. "IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0-50,000 Years cal BP." *Radiocarbon* 55: 1869-1887.
- Rey L. 1999. "L'invention d'une vierge martyr. les reliquaires de sainte Philomene au XIXe siècle", in *La mont n'en saura rien, reliques d'Europe et d'Océanie*. Paris: 103-110.



- Reyniers J. 2012-2013. *The Relic Shrine of Saint Odilia (1292) in Kerniel. Contribution to the art historical study of the oldest dated panel paintings in the Netherlands*. Unpublished Master's thesis, KU Leuven- Faculty of Arts.
- Reyniers J. 2013. "Een verborgen parel in Haspengouw. Het dertiende-eeuwse reliekschrijn van Sint-Odilia." *Limburg- Het Oude Land van Loon* 92: 157-191.
- Reyniers J. 2014. "Het reliekschrijn van Sint-Odilia (1292) onder de loep. Een nieuwe bijdrage aan de studie van het oudst gedateerde kunstwerk op hout uit de Lage Landen." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der Kruisheren* 72: 131-161.
- Reyniers J. 2015. *Het reliekschrijn van Sint-Odilia. Archeometrische studie*. Unpublished report Illuminare-Centre for the Study of Medieval Art KU Leuven, 506p.
- Reyniers J. 2016. "Het reliekschrijn van Sint-Odilia geeft zijn geheimen prijs." *Kruis & Wereld. Driemaandelijks Tijdschrift Kruisheren* 95, 3: 25-27.
- Rinne J. 1932. "Pyhä Henrik: Piispa ja marttyyri." *Suomen kirkkohistoriallisen seuran toimituksia* 33. Helsinki: Otava.
- Rivera A. 1875. *Viaje a las ruinas del Fuerte del Sombrero, hecho en mayo de 1875 por Agustín Rivera, Individuo de la Sociedad Mexicana de Geografía y Estadística, del Liceo Hidalgo y de la Sociedad Médica de Guadalajara. Recuerdos de Moreno*. San Juan de los Lagos: Tipografía de José Martín.
- Rodríguez L. and Cabrera A. (eds.) 2014. *La investigación textil y nuevos métodos de estudio*. Madrid. Online: <http://www.flg.es/images/publicaciones/investigacion-textil-nuevos-metodos.pdf>.
- Romero de Terreros M. 1944. "Los hijos de los primeros Condes de Regla." in *Memorias de la Academia Mexicana de la Historia correspondiente a la Real de Madrid*. Mexico: Imprenta Aldina, Robrero y Rosell: 189-192.
- Ruiz Souza J. C. 2001. "Botín de guerra y tesoro sagrado." in I. Bango Torviso (ed.), *Maravillas de la España Medieval. Tesoro Sagrado y Monarquía*. Madrid: Junta de Castilla y León and Caja España: 31-39.
- Russelius H. 1635. *Chronicon Cruciferorum, Siue Synopsis Memorabilium Sacri Et Canonici Ordinis Sanctæ Crucis*. Cologne.
- Saladrigas S. 2013. "De capa a casulla: el teixit de sant Ermengol." *Data textil* 28: 1-7.
- Salman 1989. "Gelovig onderweg. Gesprek met de oud-provinciaal Dré Ramaekers." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheren* 47: 11-26.
- Sánchez Reyes G. 2004. *Relicarios novohispanos a través de una muestra de los siglos XVI al XVIII*. Master's Degree dissertation, Universidad Nacional Autónoma de México-Facultad de Filosofía y Letras, División de Estudios de Posgrado.

- Sánchez Reyes G. 2016. *Los relicarios de mártires romanos en Orizaba*. Paper presented at the Museo Religioso de San Antonio, Orizaba, Veracruz, 29 September 2016.
- Sánchez Reyes G., Velázquez Ramírez J. L., Montes Marrero A. L. 2016. "La radiología digital para relicarios de ceroplástica: estudio interdisciplinar para identificar el sistema constructivo y la ubicación de los restos óseos." *Ge-conservación Grupo Español del IIC (International Institute for Conservation of Historic and Artistic Works)* 10: 55-65. Online: <http://ge-iic.com/ojs/index.php/revista/article/view/370>.
- Sánchez Reyes G. *Reliquias y relicarios en México*. Unpublished paper.
- Sandberg G. 1997. *The Red Dyes Cochineal, Madder and Murex Purple. A World Tour of Textile Techniques*. Asheville, North Carolina: Larks Books.
- Santiago un caballero con alma de maíz*. 2016. Mexico: Instituto Nacional de Antropología e Historia-Coordinación Nacional de Difusión.
- Sanyova J. 2008. "Mild Extraction of Dyes by Hydrofluoric acid in Routine Analysis of Hystorical Paint Microsamples." *Microchim Acta* 162(3): 361-370.
- Schäfke W. 1984. *St. Gereon in Köln*, Rheinische Kunststätten 300. Cologne.
- Schmedding B. 1978. *Mittelalterliche textilien in Kirchen und Klöstern des Schweiz*. Bern: Abegg-Stiftung.
- Schmidt Arcangeli C. 2002. *Il Trecento adriatico. Paolo Veneziano e la pittura tra Oriente e Occidente, catalogo della mostra*. Milan: Altomani & Sons.
- Schmitt A. 2005. "Une nouvelle méthode pour estimer l'âge au décès des adultes à partir de la surface sacro-pelviennne iliaque." *Bulletins et Mémoires de la Société d'Anthropologie de Paris* 17 (1-2): 89-101.
- Schmitt J. C. 2002. *Le corps des images. Essais sur la culture visuelle au moyen age*. Paris: Gallimard.
- Schoolmeesters E. H. 1871. *Levenschets der h. h. Maagden en Abdissen: Harlindis en Renildis*. Liège.
- Schoolmeesters E. 1883. "Quelques notes et documents concernant le monastère d'Aldeneyck." *Analectes pour servir à l'histoire ecclésiastique de la Belgique* 19: 164-176.
- Schoolmeesters E. H. 1890. "Les origines de la ville de Maeseyck." *Analectes pour servir à l'histoire ecclésiastique de la Belgique, Deuxième série — tome sixième* (XXIIe de toute la collection). Louvain: Ch. Peeters: 369-384.
- Serrano Ruano D. 2000. "El ámbito social de la oración islámica: el *Kitab al-salat* de una obra de casos judiciales." *Qurtuba, Estudios Islámicos* 5: 255-262.
- Sickel T. 1879-1884. "Conradi I, Henrici I et Ottonis I Diplomata." *Monumenta Germaniae Historica Diplomata*, volume 1. Hanover.



- Sigaut N. 1991. *La catedral de Morelia*. Michoacán: El Colegio de Michoacán, Gobierno del Estado de Michoacán.
- Smirnova E. S. 1976. *Живопись Великого Новгорода. Середина 13-начало 15 века*. Moscow: Наука.
- Steinmetz J. 1982. "Odilia. Een schrijn uit 1292." *Maaslandse Sprokkelingen. Nova Series* 5, 10 (October).
- Steinmetz J. 1983. "The Veneration of Odilia in the Course of Centuries." *Crosier Heritage* (July): 4-28.
- Stewart T. D. 1979. *Essentials of forensic anthropology*. Springfield.
- Stiennon J. 1951. "Introduction à l'étude des scriptoria des Croisiers de Liège et de Huy au XVe siècle." in *Les manuscrits des Croisiers de Huy, Liège et Cuyk au XVe siècle*, Bibliotheca Universitatis Leodiensis 5. Liège: 25-53.
- Stoner J. H. 2015. "Vignettes of interdisciplinary technical art history investigation." *CeROArt*. [Cited 8 January 2017]. Online: <http://ceroart.revues.org/4508>.
- Strait P. 1974. *Cologne in the Twelfth Century*. Gainesville.
- Swanson Hernández R. 2016. *Tradicions i transmissions iconogràfiques dels manuscrits de la Ribagorça entre els segles X-XII, Vols I-II*. History of Art Dissertation, University of Barcelona. Online: <http://hdl.handle.net/10803/401465>.
- Thiers L. 2009. *Sint-Rombouts kathedraal Mechelen: Bouwhistorische studie van interieurelementen. Rapport 1*. Unpublished report, 50 p.
- Thomsen V. 2007. "Basic Fundamental Parameters in X-Ray Fluorescence." *Spectroscopy* 22(5): 46-50.
- Tossavainen J. 1994. *Dutch forest products' trade in the Baltic from the Late Middle Ages to the peace of Munster in 1648*. Jyväskylä: University of Jyväskylä.
- Treasures of Heaven saints, relics and devotion in medieval Europe*, 23 June - 9 October 2011. Exhibition, 2001. Online: <http://www.learn.columbia.edu/treasuresofheaven/relics/Arm-Reliquary-of-the-Apostles.php>.
- Trotter M. and Gleser G. C. 1952. "Estimation of stature from long bones of American whites and Negroes." *American Journal of Physical Anthropology* 10: 213-27. In Bass M. W. 1995. *Human osteology*.
- Trotter M. and Gleser G. C. 1958. "A re-evaluation of estimation based on measurements of stature taken during life and of long bones after death." *American Journal of Physical Anthropology* 16: 79-123. In Bass M. W. 1995. *Human osteology*.
- Trotter M. 1970. "Estimation of stature from intact long limb bones." in T. D. Stewart (ed.), *Personal identification in mass disasters*. Washington: 71-83.
- Van Asseldonk A. 1944. "Het brevier der Kruisheeren." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheeren* 2, 1-2: 8-144.

- Van Asseldonk A. 1945. *Het brevier van de Kruisheeren*. Diest.
- Van Asseldonk A. 1959. "De Odilia-preek van 1439 te Hoei." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheeren* 17: 26-52.
- Van Cleven F. and De Boeck J. 2010. *Rapport Conservatie Textielreliëken Sint-Catharinakerk Maaseik 1984-2010*. Unpublished report Brussels, Royal Institute for Cultural Heritage.
- van de Pasch A. 1959. "Het klooster Clairlieu te Hoei en zijn prioren-generaal 1210-1796." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheeren* 17: 65-112.
- van de Pasch A. 1960. "Het klooster Clairlieu te Hoei en zijn prioren-generaal 1210-1796." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheeren* 18: 13-70.
- van den Bosch P. 1968. *Studiën over de observatie der kruisbroeders in de vijftiende eeuw*. Diest.
- Vanden Berghe I. and Wouters J. 2000. *Etude de fragments de textiles chinois (provenant de Noin-Oula et Lou-lan) de la période Han*. Unpublished report Brussels, Royal Institute for Cultural Heritage, Project Krishna Riboud (no. 1999.06665).
- Vanden Berghe I., Gleba M., Mannering U. 2009. "Towards the identification of dyestuffs in Early Iron Age Scandinavian peat bog textiles." *Journal of Archaeological Science* 36, 9: 1910-1921.
- Vanden Berghe I. 2016a. Analysis report: *Relics from Turku cathedral*. Unpublished report Brussels, Royal Institute for Cultural Heritage (no. 2016.13023).
- Vanden Berghe I. 2016b. "The Identification of Cochineal Species in Turkmen Weavings; A Special Challenge in the Field of Dye Analysis." in J. Rageth (ed.), *Turkmen Carpets. A New Perspective*, volume I. Sarnen: 303-310.
- Van den Bosch P. 1970. "De orde van de Kruisheeren in het verleden een hospitaalorde?" *Handelingen van het XLI kongres van de Federatie van de Kringen voor Oudheidkunde en Geschiedenis van België*. Mechelen: 173-180.
- Vandenbrouaene M., Van Strydonck M., Boudin M., Eryvynck A. 2018. "De menselijke resten en hun datering." in F. Van Cleven, J. Reyniers, A. Eryvynck (eds.), *Met maagdelijke blik. De reliëkschat van Herkenrode doorgelicht*, Scientia Artis, 15. Brussels: Royal Institute for Cultural Heritage (in preparation).
- Van Lieshout H. 1935. "Rond het reliëkschrijn van Sint Odilia." *Verzamelde Opstellen. Geschied- en Oudheidkundige Kring van Hasselt* 11, 1: 1-159.
- Van Rooijen H. 1936. *Theodorus van Celles: een tijd- en levensbeeld*. Cuyck.
- Van Rooijen H. 1946. *Sinte Odilia. Legende of historie?*. Diest.

- Van Rooijen H. 1961. "De oorsprong van de orde der Kruisbroeders of Kruisheren. De geschiedbronnen." *Clairlieu. Tijdschrift gewijd aan de geschiedenis der kruisheren* 19: 1-240.
- Van Strydonck M. and van der Borg K. 1990-1991. "The construction of a preparation line for AMS-targets at the Royal Institute for Cultural Heritage Brussels." *Bulletin van het Koninklijk Instituut voor het Kunstpatrimonium* 23: 228-234.
- Van Strydonck M. 1991. "Radiokoolstof dateringen van materialen afkomstig uit de reliekschat van Sint-Truiden." *Stof uit de kist. De middeleeuwse textielschat uit de abdij van St.-Truiden*. Leuven: Peeters: 106-110.
- Van Strydonck M., Boudin M., Ervynck A. 2002. "Isotopisch onderzoek van de beenderen toegeschreven aan de Heilige Dimpna en de Heilige Gerebernus." *Jaarboek van de Vrijheid en het Land van Geel* 37: 175-190.
- Van Strydonck M., Ervynck A., Vandenbruaene M., Boudin M. 2006. *Relieken. Echt of vals?*. Leuven: Davidsfonds.
- Van Strydonck M., Ervynck A., Vandenbruaene M., Boudin M. 2009. "Anthropology and <sup>14</sup>C analysis of skeletal remains from relic shrines: an unexpected source of information for Medieval archaeology." *Radio-carbon* 51: 569-577.
- Van Strydonck M. 2014, "Allemaal botjes. Over echte en valse relieken." *Madoc. Tijdschrift over de Middeleeuwen* 28(4): 212-221.
- Van Strydonck M., Boudin M., Van den Brande T., Saverwyns S., Van Acker J., Lehouck A., Vanclooster D. 2016. "<sup>14</sup>C-dating of the skeleton remains and the content of the lead coffin attributed to the Blessed Idesbald (Abbey of the Dunes, Koksijde, Belgium)." *Journal of Archaeological Science: Reports* 5: 276-284.
- Velázquez J. L. 2012. "Radiología digital como herramienta complementaria en el dictamen de bienes muebles." *Memoria 5º Foro Académico*. Mexico: Instituto Nacional de Antropología e Historia, CONACULTA, Escuela de Conservación, Restauración y Museografía, 5. Online since April: <https://www.revistas.inah.gob.mx/index.php/foro/article/view/246>.
- Verelst K. and Van Laere R. 1997. *De Eerste Wereldoorlog in Limburg. Verslagen*, volume 1, Limburgse Documenten 1.8. Hasselt.
- Voronin K. V., Dolgikh A. V., Matskovsky V. V., Cherkinsky A., Skripkin V., Alexandrovskiy A. 2015. "Comparative dendrochronological and <sup>14</sup>C dating of 15th century Russian icon." *Radiocarbon* 57(1): 173-182.
- Von Sonnenburg H. 1996. *Rembrandt/Not Rembrandt in The Metropolitan Museum of Art: Aspects of Connoisseurship*, volume I. Paintings: Problems and Issues. New York: Metropolitan Museum of Art.
- Waldron T. 2009. *Paleopathology*. Cambridge: University of Cambridge.
- Wazny T. 1990. *Aufbau und Anwendung der Dendrochronologie für Eichenholz in Polen*. Hamburg: Hamburg University.

- Wazny T. 2005. "The origin, assortments and transport of Baltic timber: historic-dendrochronological evidence." in C. Van de Velde, H. Beeckan, J. Van Acker, F. Verhaeghe (eds.), *Constructing Wooden Images: Proceedings of the Symposium on the Organization of Labour and Working Practices of Late Gothic Carved Altarpieces in the Low Countries. Brussels: 25-26 October 2002*. Brussels: VUB Press: 115-126.
- Wilckens L. V. 1992. "Some remarks on Spanish samites from the 12th and 13th centuries." *Bulletin du CIETA* 70: 87-90.
- Wilmotte L. s. d. *Notice historique sur le Couvent des Croisiers de Huy*. Huy.
- Wolters M. J. 1855. *Notice historique sur la ville de Maeseyck*. Ghent.
- Yochum T. R. and Rowe L. J. 2005. *Essentials of skeletal radiology*, volume 1, 3<sup>rd</sup> edition. Hagerstown: Lippincott Williams & Wilkins.
- Zunde M. 1999. "Timber export from medieval Riga and its impact on dendrochronological dating in Europe." *Dendrochronologia* 16-17: 119-130.