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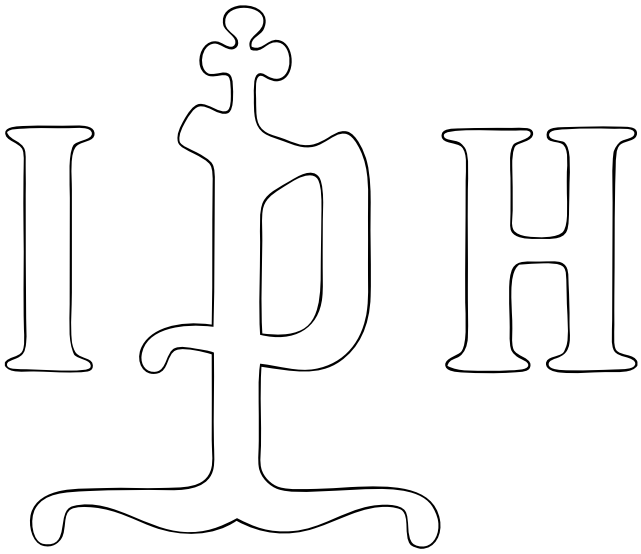

PAPER HISTORY

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Association Internationale des Historiens du Papier

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Letter of the President May 2016

Dear Members of IPH

This spring issue brings the sad news of "In memoriam Gerard van Thienen (1939-2015)". He was one of our most dedicated researchers of watermarks during his whole life and so closely connected to the research of watermarks in incunabula printed in Spain. We will commemorate him at the IPH Congress in Valencia.

The content of this spring issue illustrates the true nature of IPH - meeting each other at our international congresses, studying watermarks, visiting European paper museums and paper mills, presenting new publications within our fields of interest, studying the technological development of special paper qualities and keeping in touch through our web-site and periodical.

The XXXIII IPH Congress will be celebrated in Spain within a few months in Valencia, hosted by CULTURARTS GENERALITAT IVC + R, Valencian Institute of Conservation, Restauration and Research. With the main theme of the congress "The Paper Road from Xàtiva and Valencia to the Mediterranean countries and to the New World" and a rich programme you can look forward to numerous interesting presentations, take part in inspiring discussions and find many new and old friends of paper history.

In this issue information about registration, payment of congress fee, program and agenda of the IPH General Assembly is to be found, This information is also available online on www.paperhistory.org, and here further information about the IPH Congress will be available during the summer.
Welcome to Valencia!

Anna-Grethe Rischel

Brief der IPH-Präsidentin, Mai 2016

Liebe Mitglieder der IPH,

Diese Frühjahrs-Ausgabe bringt traurige Neuigkeiten „In Memoriam Gerald van Thienen (1939-2015)". Er war während seines ganzen Lebens einer unserer dediziertesten Wasserzeichen-Forscher und besonders verbunden mit der Erforschung von Wasserzeichen in Spanien gedruckter Inkunabeln. Wir werden seiner beim IPH-Kongress in Valencia gedenken.

Der Inhalt dieser Frühjahrs-Ausgabe verdeutlicht die wahre Natur von IPH – sich gemeinsam zu treffen bei unseren internationalen Kongressen, Studien zu Wasserzeichen, europäische Papier-Museen und Papiermühlen zu besichtigen, neue Publikationen aus unseren Interessengebieten vorzustellen, die technologischen Entwicklungen von speziellen Papierqualitäten zu studieren und unter einander in Verbindung zu bleiben durch unsere Webseite und unsere Zeitschrift.

Der XXXIII IPH Kongress wird in einigen Monaten in Valencia (Spanien) stattfinden, auf Einladung von CULTURARTS GENERALITAT IVC+R, das Institut für Konservierung, Restaurierung und Forschung. Mit dem Hauptkongress-Thema „Die Papier Straße von Xàtiva nach Valencia zu den mediterranen Ländern und in die neue Welt" und einem reichhaltigen Programm können Sie sich auf zahlreiche interessante Vorträge freuen, an inspirierenden Diskussionen teilnehmen und viele neue und alte Freunde der Papiergeschichte finden.

In dieser Ausgabe finden Sie Informationen über die Registrierung, die Zahlung der Kongress-Gebühr, das Programm sowie die Tagesordnung der IPH-Mitgliederversammlung. Diese Informationen sind auch online unter www.paperhistory.org abrufbar. Weitere Informationen über den IPH Kongress werden während der nächsten Sommermonate hier verfügbar sein.
Willkommen im Valencia!

Anna-Grethe Rischel

Lettre de la présidente de l'IPH – may 2016

Chers membres de l'IPH,

Ce numéro de printemps nous apporte de tristes nouvelles : « In memoriam Gerard van Thienen (1939-2015) ». Il a consacré sa vie à la recherche filigranologique avec un engagement rare, en particulier à l'égard des filigranes des incunables imprimés en Espagne. Nous lui rendrons hommage au Congrès de l'IPH à Valencia.

Le sommaire de ce numéro de printemps illustre la véritable nature de l'IPH : se réunir lors de nos congrès internationaux, étudier les filigranes, visiter les musées du papier et les moulins à papier d'Europe, présenter de nouvelles publications consacrées à nos centres d'intérêt, étudier les développements technologiques concernant certaines sortes de papier spécifiques, et garder le contact à travers notre site Web et notre périodique.

Le XXXIIIe Congrès de l'IPH se tiendra d'ici quelques mois à Valencia, sous l'égide du Culturarts Generalitat IVC+R, Institut de conservation, restauration et recherche de Valence. Autour des principaux thèmes du congrès, intitulé « La Route du Papier de Xàtiva et Valencia aux pays méditerranéens et vers le Nouveau Monde », un riche programme vous proposera de nombreuses contributions intéressantes, avec de stimulantes discussions en perspective, en compagnie d'amis de l'histoire du papier, anciens et nouveaux.

Vous trouverez dans le présent numéro des informations sur les inscriptions, les tarifs, le programme et l'ordre du jour de l'Assemblé générale de l'IPH. Ces informations sont également disponibles en ligne sur www.paperhistory.org, où vous aurez accès dans le courant de l'été à des précisions au sujet du Congrès de l'IPH.
Bienvenue à Valencia !

Anna-Grethe Rischel

IPH Publications available/ Lieferbare IPH-Publikationen/ Publications de l'IPH livrables

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IPH Information (1962 – 1990)	on request / auf Anfrage / sur demande
IPH Paper History (Periodical)	
Vol.13, 2009, 1-2	€ 20,70
Vol.14, 2010, 1-2	€ 20,70
Vol.15, 2011, 1-2	€ 20,70
Vol.16, 2012, 1-2	€ 20,70
Vol.17, 2013, 1-2	€ 20,70
Vol.18, 2014, 1-2	€ 20,70
Vol.19, 2015, 1-2	€ 20,70
Vol.20, 2016, 1	€ 10,35
IPH Yearbook (Congress Book)	
Vol.14 Addenda 5, 2002	€ 50,00
Vol.15, 2004	€ 60,00
Vol.16, 2006	€ 60,00
Vol.16, 2006 - supplementary	on request
Vol.17, 2008	€ 60,00
Vol.18, 2010	€ 60,00
Vol.19, 2012	€ 60,00

IPH Monographs/ Sonderbände/ Monographies

	Price / Preis / Prix
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Nils J. Lindberg: Paper comes to the North	
Paperback – broschiert – broché	€ 48,10
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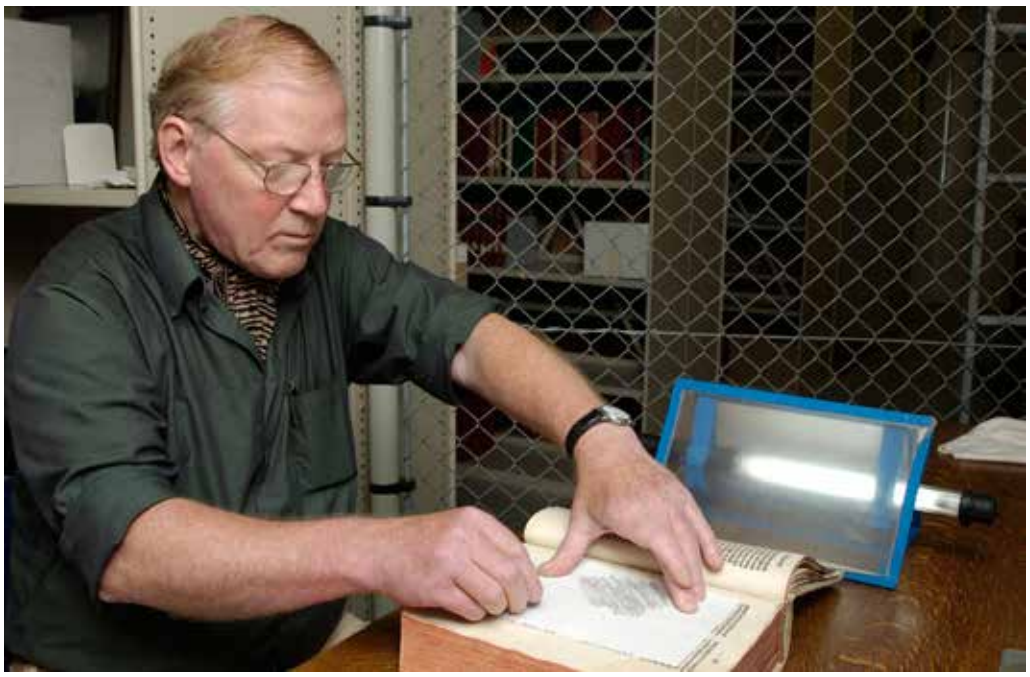


In memoriam Gerard van Thienen (1939-2015)

Mª Dolores Diaz de Miranda, O. S. B
mddiazmiranda@hotmail.com

The community of paper and watermarks' researchers has lost one of the most prominent researchers of the last decades: Gerard van Thienen.
This youthful, dynamic, sociable and generous man has passed away leaving us a feeling of orphan hood and sadness.

Born in 1939, he studied Dutch literature and Neophilology at the University of Amsterdam, where he graduated as a student of Wytzen Hellinga who was a great book historian. After finishing his studies, he started to work as a curator of the early printed collection of the Royal Library in The Hague (National Library of the Netherlands). The result of his work was the catalog of incunabula libraries (IDL) Netherlands; the catalog of printed incunabula in the Netherlands and Belgium, a catalog of all the libraries of the world (ILC); and a watermarks database of these incunabula, WILC, which includes 16.000 images of watermarks with their appropriate documentary evidence, characteristics of watermarks and other properties of the paper.

The database is of free access and is available on the website of the Koninklijke Bibliotheek and on the multilingual Bernstein portal. It aims to be a tool to help dating the incunabula that are undated. Its effectiveness has allowed to be able to specify the dates of 400 over the 12.000 editions of incunabula of the Netherlands.

Gerard's great contribution for researchers in Spanish watermarks is the creation of the database Watermarks in incunabula printed in Spain – (WIES), which is a provisional website that since November 2008 has 6.000 rubbed watermarks from incunabula printed in Spain of a total of approximately 9.000 that the author collected after visiting more than one hundred libraries from Spain, the United States, England, Munich, Paris, St. Petersburg, Vienna, Portugal, Belgium and Holland.

The purpose of the WIES is to provide with closer dates of the Spanish incunabula that are undated, an approximately 500 editions, by comparing similarities of their watermarks with the incunabula which are dated, which are also about 500 editions. It also allows to make comparative studies between the similarities of the dated papers of the Spanish incunabula with the undated incunabula printed in other countries, as it happens in some English incunabula that use the same type of Genoese's papers as Spanish incunabula.

In this brief obituary I cannot but express my affection and gratitude to this friend, colleague and teacher. My studies on watermarks were internationally opened thanks to his support and cooperation. I have told him many times in his long fight against cancer that I prayed for him; Today I toast for him in the same way as he wanted to say goodbye.

Un chercheur coréen spécialiste du Hanji visite moulins et musées du papier dans cinq pays d'Europe

Claude Laroque, maître de conférences,
Université Paris 1 Panthéon-Sorbonne
Claude.Laroque@univ-paris1.fr

Le Pr Choi Tae-Ho est directeur du laboratoire de Papier traditionnel coréen à l'université nationale de Chungbuk en Corée ; il est partenaire d'une recherche conduite en France sur l'identification des papiers asiatiques qui a débuté en 2009 et dont je suis le chef de projet. L'ambition de ce programme de recherche est de permettre grâce à une collaboration entre instituts de recherche, à la fois occidentaux et orientaux, la mise en commun de compétences complèmentaires pour identifier les papiers originaires d'Asie. Ainsi, se développe depuis 2010 un dispositif englobant une collecte documentaire sure les pratiques actuelles de fabrication du papier en Chine, Corée, Japon ; la réalisation d'une base de données multilingue sur les matériaux constitutifs des papiers, accessible en ligne (www.Khartasia-crcc.mnhn.fr); la mise au point d'une méthode descriptive des documents et œuvres sur papier qui débouchera sur la publication en ligne d'un guide ; le documents et œuvres sur papier qui débouchera sur la publication en ligne d'un guide ; le développement de protocoles d'analyses pour la caractérisation des élément de base des papiers.

Le Pr Choi m'ayant priée de lui organiser des visites de papeteries artisanales européennes nous avons effectué tout un périple entre le 4 et le 25 janvier 2016. Lui et son collègue le Pr Kim Hyoung-Jin de l'université Kookmin de Séoul, également partenaire de la recherche sur les papiers asiatiques, avaient organisé pour moi à la fin de l'année 2011 un voyage dans le sud de la Corée qui m'avait permis de visiter papeteries artisanales (Shinpong, Andong, Moonkyung, Chunyang, Wonju hanji), musées du papier et centres de recherche papetiers (Wonju, Jeonju). J'étais donc très heureuse de pouvoir à mon tour conduire le Pr Choi dans des moulins et musées du papier d'Europe. Mme Kim Mee Jung, restauratrice coréenne diplômée du Master de conservation de l'université Paris 1, qui travaille actuellement au British Museum, nous a accompagnés lors de notre périple car elle souhaitait elle aussi effectuer ces visites des moulins à papier ; elle a ainsi aimablement assuré la traduction durant tout notre séjour.

Angoulême : Puymoyen Paper Mill Angoulême : Puymoyen Paper Mill

Nous nous sommes tout d'abord rendus à Angoulême où nous avons visité le musée du papier guidés par l'actuel conservateur Florent Gaillard et l'ancien directeur du musée, Denis Peaucelle. Ce musée installé sur le site des anciennes papeteries « Bardoux Le Nil », sur les bords de la Charente, présente d'intéressants vestiges de la papeterie industrielle dans cette région charentaise qui fut l'un des centres majeurs de la production papetière en France. Le lendemain, Jacques Bréjoux nous a accueillis au moulin de Puymoyen, situé au sud d'Angoulême dans la vallée des eaux claires. La visite s'est déroulée sur la journée, permettant ainsi à Mr Choi d'examiner pour la première fois une papeterie artisanale européenne. Il a pu voir fonctionner les piles à maillets, la fabrication des feuilles et leur séchage dans les étendoirs.

Notre circuit s'est poursuivi vers Ambert et le moulin de Richard de Bas. Emmanuel Kerbouch, petit fils de Marius Péreaudeau, rénovateur du

Richard de bas Paper mill and Museum

moulin, a retracé pour nous l'histoire de la papeterie auvergnate dans cette région des « trois vallées ». Mr Choi a pu visiter les installations papetières et le musée avec l'habitation où vivait la famille du papetier jusqu'au début du 20e siècle. Il a pu dans l'atelier pédagogique fabriquer sa première feuille de papier occidental ! La journée froide et belle nous a permis d'apprécier les paysages de montagnes qui façonnent cette région.

Nous avons poursuivi notre périple jusqu'à Bâle où Pierre Tschudin nous a aimablement consacré son après midi pour nous guider dans le très beau musée du papier et de l'impression de cette ville. Situé dans le quartier St Alban sur le bras d'un canal qui permaittait de faire tourner les roues de nombreux moulins au 16e siècle, ce musée comprend dans sa partie basse une salle aménagée comme au 18e siècle. Un prototype de la machine de Louis Nicolas Robert y a été construit pour permettre des essais de reconstitution des débuts de la mécanisation. Mr Choi a été très impressionné par le fort potentiel pédagogique de cet établissement.

Basel : Paper and Printing Museum, Louis Nicolas Robert machine

En route pour la Belgique nous avons fait halte dans la ville de Pont à moussin (France) pour une visite du musée municipal. Ce petit musée abrite une très intéressante collection d'objets en papier mâché produits par l'ancienne manufacture des Frères Adt. Ces chinoiseries, très prisées à la fin du 19e siècle surprennent par leur qualité et leur diversité.

Notre premier arrêt en Belgique fut consacré à la visite du musée du papier d'Herisem installé dans l'ancienne cartonnerie Winderickx, au sud de Bruxelles. Jos de Gelas fut notre guide attentionné et passionné dans cette ancienne manufacture où ont été conservés divers éléments, outils, machines,

Pont à mousson Museum

Herisem : Winderickx paperboard manufacture

installations, offrant une image archéologique de la mutation de l'artisanat papetier vers l'industrialisation de la papeterie ; l'évolution de la fabrication du carton est particulièrement intéressante.

Malmedy fut notre seconde étape en Belgique. Bruno Kehl a pris soin de nous tout au long de cette journée ; il nous a tout d'abord guidés au sein du Malmundarium, ancien cloître du 18e siècle qui abrite un musée et un atelier du papier. Nous avons également pu admirer dans la Maison Villers, maison patricienne du 18e siècle, de très intéressantes peintures murales. Notre circuit s'est achevé sur le site de l'ancienne manufacture Steinbach dans la vallée de la Warche, transformée en business center. Un petit musée évoque la production du premier papier photographique fabriqué en Europe dans cette ancienne usine.

De retour à Paris, Mr Choi est parti pour Londres en compagnie de Kim Mee Jong, pour poursuivre sa tournée européenne. En effet, prise par mes obligations à l'université, je n'ai pu accompagner le Pr Choi pour la suite des ses visites prévues en

The paper trail, Frogmore Paper Mill

Malmedy : Steinbach Manufacture

Angleterre et an Italie.
Ils ont ainsi visité « The paper trail » au Frogmore Paper Mill, situé à Apsley au nord de Londres, aimablement accueillis par Peter Burford et Sue Woolnough, tous deux managers de la société gérant le site. A la fois papeterie et musée, c'est le site où a opéré la première machine à papier à forme ronde. L'usine possède d'anciennes machines Fourdrinier sur lesquelles ils produisent du papier.
Ils sont ensuite partis dans le Somerset pour visiter le « Two rivers paper company Pitt mill », guidés par Jim Patterson ancien ingénieur papetier, appartenant à la 4e génération de papetiers et rénovateur du moulin. Le moulin produit des papiers pour artistes, en particulier pour l'aquarelle.

Après une brève escale à Paris le Pr Choi s'est envolé pour Rome en compagnie de Silvia Brunetti, restauratrice d'œuvres graphiques, franco italienne, qui a aimablement assuré le contact avec les instances italiennes.

Ils ont ainsi visité à Rome la Calcografia, l'istituto nazionale della grafica, l'Accademia di San Luca et la bibliothèque de l'Iccrom en compagnie de Giovanna Pasquariello qui est biologiste, spécialiste des la bio détérioration des biens culturels.
Leur voyage s'est poursuivi vers Amalfi où ils furent reçus à la papeterie Amatruda par Lucio Amendola, époux de Mme Amatruda, héritière d'une longue lignée de papeteriers, qui leur a ainsi fait visiter l'un des plus anciens moulins italiens.

Ils se sont ensuite rendus à la Bibliothèque du Centre de culture et d'histoire amalfitaine où ils furent reçus par le directeur du centre, Giuseppe Cobalto qui leur a fait connaitre l'importance de la production amalfitaine dans l'histoire de la papeterie italienne.
Leur séjour s'acheva par la visite du musée du papier

Rome : Calcografia

de cette ville, qui avec la papeterie Amatruda sont les deux sites que nous avions pu visiter en 2014 lors du congrès de l'IPH.

Andrea D'Antuono, historien du papier, les guida dans une promenade historique de la ville. De retour à Rome, le Pr Choi s'est envolé, complètement fourbu vers Séoul pour un repos bien mérité mais chargé d'images, d'échantillons de papier et de livres...

Amalfi : Cartiera Amatruda

Cette initiative d'un collègue coréen doit être saluée car la papeterie européenne est très mal connue en Extrême orient et ne jouit que de peu de considération. L'attitude de nombreux papetiers en Corée comme au Japon se résume à une opinion très négative de notre papeterie. Ce jugement erroné est lié à leur seule connaissance du papier industriel auquel ils comparent les papiers de fibres de mûrier qu'ils fabriquent.

D'autres initiatives en France, comme l'association « Correspondance » créée en 2008 par Valentine Dubard, qui promeut les échanges entre papetiers japonais et français, permettront peut-être de rétablir un certain équilibre entre les savoir-faire des deux continents.

Saluons également la présence régulière aux congrès de l'IPH de notre collègue japonais, le Pr Enami Kazuyuki.

Toutes les personnes qui ont permis ce voyage nous ont accueillis très chaleureusement. Je souhaiterais ici les remercier vivement pour le temps qu'elles nous ont consacré et la générosité avec laquelle elles nous ont reçus. Je réserve un remerciement particulier à Kim Mee Jung et Silvia Brunetti pour leur aide dans l'organisation de ce périble.

Amalfi Paper Museum

The Llotja de la Seda "Silk Exchange", a late Valencian Gothic style civil building

"The Paper Road from Xàtiva and Valencia to the Mediterranean countries and to the New World"

The 33rd IPH Congress of International Paper Historians will take place 20 – 24/9 2016 in Valencia, Spain, hosted by the Valencian Institute of Conservation, Restoration and Research IVC+R of CulturArts Generalitat and the University of Valencia.

Valencia was founded as a Roman colony in 138 BC on the east coast of the Iberian Peninsula, fronting the Gulf of Valencia on the Mediterranean Sea. Its historic heritage centre of ancient monuments is one of the largest in Spain and makes Valencia one of the country's most popular destinations for travellers. Among the major monuments here are the Valencia Cathedral, the Torres de Serrans, the Torres de Quart the Llotja de la Seda (included in the Silk Road and declared as a UNESCO World Heritage in 1996), and the Ciutat de les Arts I les Ciències (City of Arts and Sciences), an entertainment-based cultural and architectural complex designed by Santiago Calatrava and Félix Candela.

The Museu de Belles Arts de València houses a large collection of paintings from the 14th to the 18th centuries, including works by Velázques, El Greco, and Goya, as well as an important series of engravings by Piranesi. On the third day of the IPH congress we will visit the city of Xàtiva (Saetabis in Latin) that in Roman times, mentioned by the poets Ovid and Catullus, was famous for its linen fabrics, and also known as an early European centre of paper manufacture. In the 12th century, Arabs brought the technology to manufacture paper to Xàtiva (Arabic text: Shāṭiba), and according to a quote from the cartographer and geographer Al-Idrisi "paper is made in it (Xàtiva), which is unique in the world and is known in the East and West"

Castle of Xàtiva.

Valencia City arms watermark. Year 1478

It is the birthplace of two Borgia's popes, Callixtus III and Alexander VI, and also the painter José Ribera (Lo Spagnoletto). The activity of patronage of the Borgia was very important and reached such famous artists as Michelangelo, Pinturicchio, Bartolommeo Veneto, Tiziano or the Bosco, who was protected at some point in his artistic life by the Borgia. To this protection we must connect some of his best known works. The most important Borgia patronage was the painter, inventor and scientist Leonardo da Vinci that designed many war machines for the army papal.

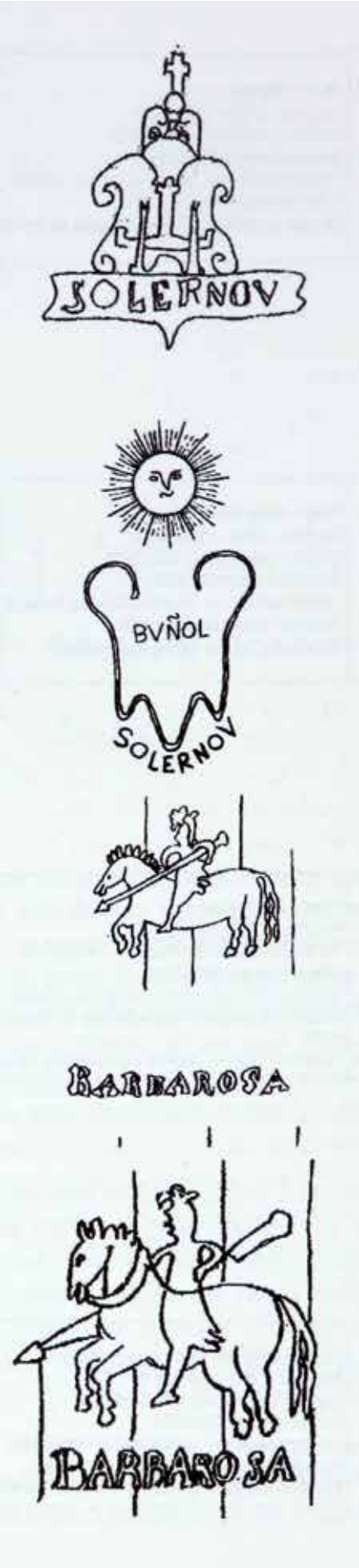
Xàtiva suffered a dark moment in its history at the hands of Philip V of Spain, when he, after his victory at the Battle of Almansa during the War of the Spanish Succession, ordered the city to be burned, and the name was changed to San Felipe. In memory of the insult, the portrait of the monarch hangs upside down in the local museum of l'Almodi. Xàtiva was a provincial capital under the short-lived 1822 territorial division of Spain, during the Trienio Liberal. The Province of Jàtiva was revoked with the return to absolutism in 1823. The same day as the visit to the castle of Xàtiva we will after lunch in Bocairent visit "Museu Valencià del paper" (Valencian Museum of Paper) in Banyeres de Mariola.

Buñol had an important paper industry during the XVIII century till the late XX century

Xàtiva, birthplace of Borgia's popes

The museum reflects the importance of the paper industry in this municipality and in other parts

Banyeres de Mariola



Watermarks of paper made in Buñol

of the Valencian Region, serving as a driving force of the economy and remaining unique to these lands from the second half of the eighteenth to the late twentieth century. In the museum we can just see how important this industry was, its evolution, history and production processes with the exhibition of the machines of the day, the articles, the models and even the recreation of a workshop, addressed especially to school children, where recycled paper is produced in the basement.

We'll finish the 33rd IPH congress in the city of Buñol, just 38 kilometres from Valencia in a mountainous area close to the coast, where you will have the chance to enjoy the beautiful nature areas in the surrounding region. Of interest are its 13th century castle in the old town and El Salvador Church, which also houses the town's Archaeological Museum.

Buñol is, nevertheless, distinguished by a great musical activity, derived from the ongoing work of the two musical societies and their educational work and training function of the Municipal Conservatory. Symphonic Band of the Musical Society Artistic and Symphonic Band "Armonica" of Buñol, both with a history over hundred years, are considered as two of the best music bands in the world.

But we can't forget that Buñol had an important paper industry, Galan paper mill is an example of pre-industrial heritage and symbol of the significance of the paper industry in Buñol with the first papermaking Picardo machine in Spain installed in the building.

Hotels in Valencia

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IPH CONGRESS 2016 / *CONGRÈS IPH 2016* / IPH-KONGRESS 2016

REGISTRATION / *INSCRIPTION* / ANMELDUNG/ INSCRIPCIÓN

I wish to register for the 33rd IPH Congress
Je désire m'inscrire au 33e Congrès IPH
Ich möchte mich für den 33. IPH Kongress anmelde
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Arrival date/ *Date d'arrivée*/ Ankunftstag/ Día de Llegada:	
Departure date/ *Date de départ*/ Abreisetag/ Día de salida :	
Special diet/ *régime alimentaire particulier*/ Specielle Diät/ Dieta especial:	yes/ *oui*/ Ja/ si ☐ No/ *non*/ Nein/ no ☐

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Please complete this registration form and send it as soon as possible and not later than July 31st 2016 by regular mail to **Bruno Kehl, Bellevaux-Impasse de l'Eglise, 2 à 4960 Malmedy, BELGIUM** or by e-mail to: kehlbruno@yahoo.fr.

Your registration will be effective only after reception of your payment of congress fee transferred to the IPH banking account. Please include your name, any accompanying person, and how many persons you are paying for with your bank transfer. No check please.

Merci de compléter ce bulletin d'inscription et de l'envoyer le plus rapidement possible, au plus tard le 31 juillet 2016 par courrier postal à: ***Bruno Kehl, Bellevaux-Impasse de l'Eglise, 2 à 4960 Malmedy, BELGIQUE*** *ou par e-mail : kehlbruno@yahoo.fr.*

Votre inscription ne prendra effet qu'à réception du paiement par virement bancaire sur le compte d'IPH. Lors du virement, merci de bien préciser votre nom et celui de la personne qui vous accompagne et pour combien de personnes vous payez.

Bitte füllen Sie dieses Anmeldungsformular aus und schicken es so schnell wie möglich, spätestens aber bis zum 31. Juli 2016 als Brief an: **Bruno Kehl, Bellevaux-Impasse de l'Eglise, 2 à 4960 Malmedy. BELGIEN** oder mittels E-Mail an: kehlbruno@yahoo.fr.

Ihre Anmeldung wird rechtsgültig mit der Zahlung der Kongressgebühr auf das unten angegebene Bankkonto. Geben Sie bitte bei Ihrer Überweisung Ihren Namen und etwaige Begleiter an und für wie viele Personen Sie bezahlen.

Por favor, complete este formulario de inscripción y envíelo lo antes posible no más tarde del 31 de julio de 2016 por correo ordinario a Bruno Kehl, Bellevaux-Impasse de l'Eglise, 2 à 4960 Malmedy, Bélgica o por e-mail a: kehlbruno@yahoo.fr

Su inscripción será efectiva sólo después de la recepción del ingreso de pago de la cuota del congreso transferida a la cuenta bancaria del IPH. Por favor incluya su nombre, sus acompañantes, y el número de personas que está pagando con su transferencia bancaria. No cheques, por favor.

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Congress fee 2016/
Frais d'inscription 2016/
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Cuota del Congreso 2016

IPH members, speakers/ *Membres IPH, conférenciers/* IPH-Mitglieder/ Vortragende/ *Miembros des IPH/ ponentes*	320 €
Members of other associations of paper historians/ *Membre d'une autre association d'historiens du papier/* Mitglieder einer anderen papierhistorischen Vereinigung/ *Miembros de otras Asociaciones de Historiadores del Papel*	330 €
Students/ *Étudiants/* Studierende/ *Estudiantes*	210 €
Accompanying persons/ *Personnes accompagnantes/* Begleitpersonen/ *Acompañtes*	220 €
Other participants/ *Autres participants/* Andere Teilnehmer/ *Otros participantes*	360 €

The Congress Fee includes bus, excursions, 4 lunches, 4 coffee breaks, one conference dinner and proceedings/

Frais d'inscription comprend les trajets en bus, excursions, 4 déjeuner, 4 pauses café, un dîner de gala, les actes du congrès/

Die Kongressgebühr umfasst Bus-transport, Exkursionen, 4 Mittagtische, 4 Kaffe-Pause. 1 Bankett, Kongressbuch/

Cuota del Congreso incluye autobuses, excursiones, receptión, desayunos, comidas, den a y comida de clausura del Congreso y actas

33rd IPH Congress, 2016: General Programme / 33e Congrès IPH, 2016: Programme général / 33. IPH Kongress, 2016: Programmübersicht/ 33.Congreso del IPH: Programa general

Universidad de Valencia. Aula Magna

20.09.2016 Tuesday/ *Mardi*/ Dienstag/ *Martes*

16:00	Arrivals & registration/ *Arrivées & inscriptions*/ Ankunft & Anmeldung/ *Llegadas & registro.*
17:00	Opening of the congress/ *Ouverture du Congrès*/ Eröffnung des Kongresses/ *Apertura del Congreso.*
18:00 – 19:00	Lectures/ *Conférences*/ Vorträge/ *Comunicaciones.*
19:00	Welcome drink/ *Verre de bienvenue*/ Begrüßungsdrink/ *Bebida de bienvenida.*
19:30 – 20:00	Concert, University chapel/ *Concert, Chapelle de l'Université*/ Konzert, Universitätskapelle/ *Concierto en la Capilla de la Universidad.*

21.09.2016 Wednesday/ *Mercredi*/ Mittwoch/ *Miércoles*

9:00 - 11:00	Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones (sesiones paralelas).*
10:30 – 11:00	Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones* (*sesiones paralelas).*
11:00 – 11:30	Coffee breaks/ *pause-café*/ Kaffeepause/ *Pausa-café.*
11:30 – 14:00	Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones* (*sesiones paralelas).*
14:00 – 15:30	Lunch/ *Déjeuner*/ Lunch/ *Comida.*
15:30 – 18:00	Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones* (*sesiones paralelas).*
18:00 – 20:00	Valencia circular bus tour/ *Valencia circuit en car*/ Valencia Touristenbus Rundfahrt/ *Bus Turístico por Valencia.*

22.09.2016 Thursday/ *Jeudi*/ Donnerstag/ *Jueves*

9:00	Visit in Xàtiva, Colegiata and Castle/ *Visite à Xàtiva, Colegiata et Château* / Besuch in Xàtiva, Colegiata und Burg/ *Visita a Xàtiva, Colegiata y Castillo.*
14:00	Lunch in Bocairent/ *Déjeuner à Bocairent*/ Mittagessen in Bocairent/ *Comida en Bocairent.*
17:00	Visit in an old paper mill and Paper Museum in Banyeres de Mariola/ *Visite d'ancien moulin à papier et du Musée du papier à Banyeres de Mariola* / Besuch in einer alten Papiermühle und Papiermuseum in Banyeres de Mariola/ *Visita al Museo del Papel y a un antiguo Molino papelero en Banyeres de Mariola.*
19:00	Departure to Valencia/ *Départ pour Valencia*/ Abfahrt nach Valencia/ *Regreso a Valencia.*

23.09.2016 Friday/ *Vendredi*/ Freitag/ *Viernes*

9:00 - 11:00 Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones* (*sesiones paralelas).*

11:00 – 11:30 Coffee breaks/ *pause-café*/ Kaffeepause/ *Pausa-café.*

11:30 – 14:00 Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones (sesiones paralelas*).

14:00 – 15:30 Lunch/ *Déjeuner* / Lunch/ *Comida.*

15:30 – 17:00 Lectures/ *Conférences* / Vorträge (double sessions/ *sessions parallèles*/ Doppelsektionen/ *Comunicaciones*(*sesiones paralelas.)*

17:00 Conclusions/ *Clôture*/ Abschluss/ *Conclusiones.*

17:00 IPH General Meeting/ *Assemblée générale IPH*/ IPH Generalversammlung/ *Asamblea General del IPH.*

17:30 Visit in Notarial Protocols archive in the Royal College Seminar Corpus Christi of Valencia/ *Visite aux Archives Notariales des Protocoles au Séminaire du Collège Royal Corpus Christi de Valencia/* Besuch in Notarial Protocols Archiv in Valencia Royal College Seminar Corpus Christi/ *Visita al Archivo de Protocolos del Real Colegio Seminario de Corpus Christi de Valencia.*

Visit of the Palacio del Marques de dos Aguas/ *Visite au Palais du Marquis de dos Aguas*/ Besuch des Palacio del Marques de dos Aguas/ *Visita al Palacio del Marques de dos Aguas.*

21:00 Dinner, Fine Arts Museum of Valencia/ *Diner, Musée des Beaux-Arts de Valencia*/ Bankett, Abendessen im Museum der schönen Künste von Valencia/ *Cena en el Museo de Bellas Artes de Valencia.*

24.09.2016 Saturday/ *Samedi*/ Samstag/ *Sábado*

9:00 Departure to Buñol/ *Départ pour Buñol*/ Abfahrt nach Buñol/ *Salida a Buñol.*

9:45 Castle – San Luis/ *Château – San Luis*/ Schloss – San Luis/ *Castillo - San Luis.*

11:30 Reception at the library (old paper mill "Galán/ *Réception à la bibliothèque (moulin à papier ancient « Galán »)/* Empfang in der Bibliothek (alte Papiermühle "Galán")/ *Recepción en la Biblioteca (antiguo Molino "Galán").*

12:00 Visit to paper mill industrial archaeology in Buñol and an old paper mill in activity / *Visite au moulin à papier de Buñol (archéologie industrielle) et dans un moulin ancien en activité/* Besuch einer Papiermühle (industrielle Archäologie) und einer alten noch arbeitenden Papiermühle/ *Visita molinos papeleros, arqueología industrial y a un Molino papelero en actividad.*

14:00 Lunch – Paella meal at "Meson Venta Pilar", where we can see how they do firewood paellas / *Déjeuner – Paella au feu de bois à la « Meson Venta Pilar /* Mittagessen – Holzoffenpaella in der "Meson Venta Pilar*"/ Comida-Paella realizada a leña en el Mesón Venta Pilar*.

Closure of Congress/ *Clôture du Congrès*/ Abschluss des Kongresses/ *Clausura del Congreso*

17:00 Departure to Valencia/ *Départ pour Valencia*/ Abreise nach Valencia/ *Regreso a Valencia.*

* The organizers reserve the right to changes of the programme in case of unexpected events /
Les organisateurs se réservent le droit de modifier le programme en cas d'événements imprévus /
Die Organisatoren behalten sich das Recht, bei unvorhersehbaren Ereignissen das Programm zu ändern. /
La organización se reserva el derecho a modificar el programa en caso de acontecimientos inesperados.

IPH General Meeting in Valencia (Spain)
IPH Assemblée générale à Valencia (Espaigne)
IPH Generalversammlung in Valencia (Spanien)

23.9.2016, 17:00

Information about time and place of the Ordinary General Meeting of IPH is published in the periodical « IPH Paper History »,Volume 20, Year 2016, Issue 1/
Les informations concernant l'heure et le lieu de l'Assemblée Générale ordinaire de l'IPH sont publiées dans la revue « IPH Paper History », vol. 20, année 20164, Numéro 1/
Die Information über Ort und Zeit der ordentlichen Generalversammlung ist in der Zeitschrift „IPH Paper History", Band 20, 2016, Nummer 1, veröffentlicht worden/

Agenda/ *agenda*/Tagesordnung

(1) Welcome, communications by the President, ascertain of quorum, designation of tellers and chairperson of the meeting/
Mot de bienvenue, communication de la Présidente, vérification du quorum, désignation des scrutateurs et du/de la « président-e de séance »/
Begrüßung, Mitteilungen der Präsidentin, Feststellung der Beschlussfähigkeit, Bestimmung der Stimmenzähler und Sitzungsleiter/

(2) Report of the General Meeting 2014, Fabriano/
Rapport de l'Assemblée générale 2014, Fabriano/
Protokoll der Generalversammlung 2014, Fabriano/
(cf. IPH Congress Book 20/2014, pp.xxx-xxx)

(3) Evolution of membership; approval of new members/
Évolution du nombre des membres; approbation des nouveaux membres/
Entwicklung der Mitgliederzahl; Gutheißung von neuen Mitgliedern/

(4) President's biennial report: Activities since GM 2014/
Rapport bis-annuel de la Présidente: activités depuis l'AG 2014/
Zweijahres Bericht der Präsidentin : Aktivitäten seit der GV 2014/

(5) Accounts for 2014 and 2015/
Comptes de 2014 et 2015/
Jahresrechnungen 2014 und 2015/

(6) Auditors' report on the accounts 2014 and 2015/
Rapport des auditeurs concernant les comptes de 2014 et 2015/
Bericht der Kassenprüfer für 2014 und 2015/

(7) Voting on points 3 to 6 (approval/discharge of the Council)/
Vote des points 3 à 6 (approbation/ décharge du Conseil)
Abstimmung über die Punkte 3 bis 6 (Genehmigung/Entlastung des Vorstands)/

(8) Elections/
Élections/
Wahlen/

(8.1) President & Vice-President/
la Présidente & Vice-président/
Präsidentin & Vize-Präsident/
Treasurer/
Trésorier/
Schatzmeister/

(8.2) Secretary/
Secrétaire/
Sekretärin/

(8.3) Auditors/
Auditeurs/
Kassenprüfer/

(8.4) Council (assessors)/
Conseil (assesseurs)/
Vorstands (Beisitzer)/

(8.5) Editor
Éditeur
Redaktor

(9) Budgets 2016 & 2017, membership fee/
Budgets 2016 & 2017, cotisations/
Finanzpläne für 2016 & 2017, Mitgliedsbeitrag/

(10) Future activities, (Congresses; other items)/
Activités futures, (congrès et autres)/
Zukünftige Aktivitäten, (Kongress; andere Themen)/

(11) Miscellaneous, including questions, ideas and comments from members/
Divers, y compris les questions, les idées et les commentaires des Membres/
Varia, einschließlich Fragen, Ideen und Kommentare der Mitglieder/

(12) Closing of the ordinary General meeting by the President/
Clôture de la séance par la Présidente/
Schluss der Generalversammlung durch die Präsidentin/

President's report, the accounts for 2014/2015 and the budget proposals for 2016/2017 will be published in Vol. 20, Year 2016, Issue 2 of the periodical "IPH Paper History".

Any other proposals, also for candidates, have to be addressed by mail to the President by August 15th, 2016.

Le compte rendu de la Présidente et les comptes des années 2014/2015 ainsi que les chiffres des budgets 2016/2017 seront publiés dans le numéro 2, vol. 20, de l'année 2016 du périodique « IPH Paper History ».

D'autres propositions et les nominations de candidats émanant des membres d'IPH sont à adresser à la Présidente par voie postale de correspondance avant le 15 août 2016.

Der Bericht der Präsidentin, die Jahresrechnungen 2014/2015 und die Budgetpläne 2016/2017 werden in Nr. 2, Vol. 20, 2016 der Zeitschrift „IPH Paper History" veröffentlicht.

Weitere Anträge zur Tagesordnung sowie Wahlvorschläge sind der Präsidentin bis zum 15. August 2016 schriftlich mitzuteilen.

Transparent papers: A review of the history and manufacturing processes

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Department of Preservation
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Introduction

The use of transparent papers throughout history has been diverse with applications ranging from tracing art, creating technical drawings to wrapping items. The term transparent paper refers to the function and physical characteristic of the paper rather than to a specific manufacturing process or a certain cellulose type. In order to preserve these objects found in archives and museum collections worldwide, an understanding of their individual inherent degradation processes is necessary. Considering that the transparency has been created by different methods throughout history, knowledge of the papers different composition and manufacturing processes is essential. In this paper, a review of the most used terms and usages together with a presentation of the different manufacturing methods is presented.

Refraction index

Refraction index of a material specifies the resistance under which light passes through a material. The greater the resistance, the higher the refraction index [1]. When light falls on a material with a refraction index different than the refraction index of the surrounding air, refraction is created. If the incident light travels into a denser medium, i.e. from air to water, the light will pass through the denser media with a smaller angle. The index of refraction, *n*, gives information about the materials ability to refract incoming light and may be determined with Snell´s law: $n_2/n_1 = \sin \theta_1/\sin \theta_2$, with n_1 and n_2 being the refraction index for the different substances and θ_1 and θ_2 the light angles in the different substances, respectively. (Figure 1).

Normally, paper is perceived as opaque because the air between the transparent cellulose fibers reflects the incident light. However, by replacing the air between the fibers with different substances the refraction index of the paper can be altered. Refraction index furthermore depends on the surrounding temperature and wavelength of light.

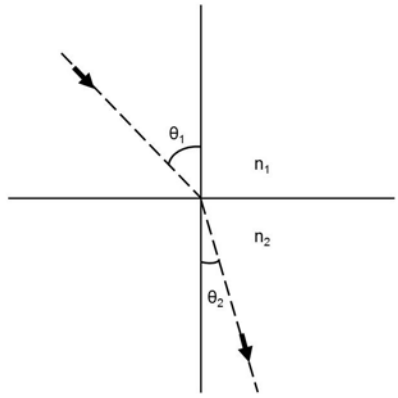

Fig. 1. Snell´s law: $n_2/n_1 = \sin \theta_1/\sin \theta_2$

The higher the wavelength, the lower the refraction index and vice versa [2]. Normally, reflection index is measured in sodium light with a wavelength of 589.3 nm [1] and in room temperature. Refraction index for air is 1.00 and for water 1.33 [2]. Cellulose fibers show a double reflection depending on whether it is measured in axial or transverse direction [3] and is also somewhat dependent on fiber type. In transverse direction the refraction index for cellulose is 1.54 and in axial direction it is 1.62 (fiber type not specified) [4].

Additionally, ageing may have an influence on the refraction index. For example, the refraction index of linseed oil increases from 1.48 to 1.57 during polymerization [5] [6]. Oils, like olive oil, poppy seed oil, rapeseed oil, and sesame oil have reflective indices between 1.46 and 1.47 [5] and resins such as Canada balsam, colophony, copal, dammar, mastic, sandarac, and shellac have refraction indices between 1.52 and 1.55 [6] [7]. Waxes such as beeswax, candelilla wax, and carnauba wax have refraction indices between 1.44 and 1.46 [7] and turpentine oil has a refraction index between 1.47 and 1.48 [8] and starch a value of 1.53 [6].

Transparent papers

By substituting the air with substances having the same or nearly the same reflection index as the cellulose, the light will be transmitted through the material instead of reflected and hence the paper is perceived as transparent. Another way of reducing the air is to compress the fiber network and thereby creating a homogenous mass that enables the light to travel through the material without reflection. To increase the transmission for a paper the light reflection can be reduced using three methods:

1. Impregnating the paper with a substance that has

the same or nearly the same reflection index as cellulose.

2. Immersing the paper in acid which causes the fibers to swell and reduce the air pockets.
3. By mechanically overbeating the pulp, sometimes in combination with a finishing calendering.

The two first methods are performed on paper sheets, whereas the last method is a pulp process. Another differentiation can be made in that impregnation methods usually were created by the artists themselves prior to drawing, whereas the two later methods are industrially made.

Uses and tools for tracing

Transparent sheets have been used to transfer artistic motifs and decorative patterns to other materials for centuries and tracing was used for sketches, paintings and engravings, maps, technical drawings, textile patterns, architectural drawings, etc. Up to the end of the 1970´s all architectural drawings were made by hand on transparent papers [9]. Furthermore, transparent papers have been used for reproduction on light sensitive materials. Prior to paper the transparency was made on parchment which acted as substitutes for glass windows, as magnifying glasses and as light screens [10].

The possibility to copy motifs to other substrates with the aid of a transparent paper or parchment involved a much less destructive method for the original art piece than before. Previously, the copying process had been made by pricking the contours of an original drawing or painting with a stylus to a new underlying support and the tiny dots were then connected to create outlines for a copy of the original drawing. Another way of reproducing was to place the motif behind a frame equipped with a grid and sketch this motif onto a paper with a similar network. This method was used both for direct imaging of live models and to enlarge or reduce an original painting [11].

To multiply specific motifs popular among customers, e.g. saints or Madonna motifs, the use of transparent papers were of great help. With this option art collectors could expand their collections for reasonable prices. Most commonly young apprentices were those who performed the copying; Rembrandt was an artist often copied in this way and Dürer was known to copy the style of his contemporary Mantegna in an attempt to learn his specific antique manner [11].

da Vinci is said to have described an apparatus used for producing lifelike portraits and landscapes which consisted of a glass plate upon which the artist drew the outlines of the motif and subsequently transferred this to a transparent paper. A similar apparatus has been illustrated by Dürer and was frequently used in various academies. This apparatus, however, had one distinct disadvantage as the artist had to have a fixed position when observing the motif through a hole in a stationary holder, this could give the finished drawing a somewhat flat appearance compared to a drawing made with stereoscopic vision. With the aid of the apparatus more than one motif could easily be gathered. A person who was to be pictured with a specific background was first portrayed on the glass and once the glass was cleaned, the landscape could be drawn and later the two motifs could be gathered together on a transparent paper. For silhouette drawings, a technique popular during the 18th century in France and England, a similar apparatus was used. The person to be depicted had a light source behind them, sometimes enhanced by placing a mirror behind the light. Meder also reports that transparent papers were used for miniature paintings where the artist had access to different contours, i.e. “face templates”, with appropriate shapes for noses, eyes, etc. A combination of suitable templates was selected for the customer and placed under a transparent paper onto which the contours were drawn [11].

During the 18th and 19th centuries, the use of transparent papers increased as they became a useful tool in textile and porcelain production where craftsmen in workshops could copy designs, patterns and ornaments with great accuracy [12]. Pattern books for textiles dating as far back as to the middle of the 16th century have been found and they have probably been used both to show design examples for customers and as an aid for the craftsmen weaving the textiles [13]. Tracing was obviously normally performed by a light source or next to a window. Bachmann mentions a table with light underneath and such an equipment is depicted by Meder, where day light is reflected by a mirror placed underneath a glass table [11] [13].

Transparent papers were especially useful for architectural drawings. As many different workforces were involved in the constructions, duplicates of the drawings were necessary. During the 18th century Paris was famous for its architecture and buildings and many foreign customers and architects showed an interest for French constructions. For example, the famous Swedish architects Hårleman and Tessin

ordered architectural drawings from France and since the French were reluctant to send original drawings, copies on impregnated papers were made [14].

During the late 19th century photographic techniques using transparent paper were developed using light sensitive materials such as cyanotypes, diazotypes and silver-gelatin emulsions. The so called blueprinting process was mainly used for technical plans, constructions and architectural drawings. A transparent paper or transparent fabric were placed in contact with the sensitized cyanotype in a glass frame and exposed in day light. As the sun light was blocked by the pencil marks the final motif became reversed. During the 19th century the technique was improved with the development of the cyanotype machines which allowed for larger paper formats on rolls and the duplication of very sizeable drawings. By the beginning of the 20th century, the ammonia diazotype technique was developed and instead of the earlier ferric salts used for cyanotypes, this method used light sensitive organic dyes [15] [16] [17].

Impregnating methods

Unfortunately, it is rare to find very early examples of transparent papers and parchment. As their main purpose was to serve as an intermediate step during the copying process, they were most often discarded after use. Furthermore, the creating of the transparency with different types of substances were often performed without any thought of sustainability and hence, when it comes to the earliest uses we have to rely on written sources. Written testimonies regarding early artistic techniques can, among others, be found in Theophilus´ *De diversis artibus* from the 12th century [18], Cennini´s treaty *Il libro dell'arte* from the late 14th century [19] and de Mayerne´s manuscript from the 17th century [20].

In *Il libro dell'arte*, Cennini describes late Medieval and early Renaissance art techniques and materials in detail. There are several passages describing how to prepare and use transparent supports, made from parchment as well as from cellulose, and how to use them for copying artworks. For an example, Cennini mentions the use of linseed oil to make parchment transparent. Before Cennini mentions paper, he talks about the preparation of another type of transparent material which is made by applying animal glue to a polished marble plate. The transparency for this sheet could furthermore be enhanced by impregnating it with linseed oil [19]. In the Mayerne manuscript, gum arabic, honey and egg white are described for the preparation of transparent parchment [20].

Not surprisingly, the development of impregnating parchment and papers follows the development for oil painting. Solely using oils saves one from the heating procedure needed for varnishes (here the term varnish means a mixture of resins and oils or other solvents, and not oils alone). According to the sources there is a period of 200 years until the use of oil based varnishes is substituted or interchanged by alcohol and solvent based varnishes [13]. During the 14th and 15th centuries, oils were commonly used, and mainly linseed oil. By the beginning of the 15th century, mixes of resins and oils occur. However, when a resin is used for varnishes it is not always specified which resin it is. It was more common to distinguish between the resins by colour instead of which tree or bush they originated from. For example, the terms mastic and sandarac seem to have been used rather broadly although they stem from different plants. Even African copals were available in Europe from the 16th century and onwards [7]. The majority of recipes from the 18th and 19th centuries describes using varnishes for paper that are solvent based and the varnish was applied in several applications [13].

The medieval manuscript by Theophilus is interesting in this context as a passage in his text mentions paper for the first time in Europe. Although paper was already introduced by the Arabs in Spain during the 11th century, no domestic paper was produced during this period. It is assumed that Arabic and Syrian paper was imported to the Latin parts of Western Europe before the 12th century. These papers were made of hemp and flax, which is thought to be the material described by Theophilus (translated by Dodwell): "Take some Greek parchment, which is made from linen rags…" [18]. This shows that Theophilus also had an awareness of the components of the material. Although we cannot find any descriptions on how to make parchment or paper transparent, Theophilus´ manuscript contains recipes on how to prepare linseed oil and varnishes.

From the 14th century and onwards paper became more accessible and Cennini mentions how to make

paper transparent with linseed oil. He states that it is desired that the paper is white, thin and has an even structure. Furthermore, in Cennini´s manuscript examples on how to improve the artistic skills by tracing are exemplified. Using other artists´ drawings by following the contours was considered a teaching process and when practicing this method the apprentices improved their drawing skills and could obtain the style and manners from great artists [19]. In de Mayerne´s manuscript we find descriptions on how to trace paintings with paper made transparent with either linseed oil mixed with turpentine, or pork fat [20].

Another transferring method was to trace the motif onto a transparent paper which afterwards was prepared at the back with a substance that easily could be rubbed off, e.g. charcoal or chalk. Traces of the charcoal was then transferred to the new support by pricking the contours of the motif and after marking this with a pencil on the new support the charcoal could be brushed off [13] [20].

Impregnated papers could evidently also be regarded as having an inherent aesthetic value without the purpose of using them for tracing. Nationalmuseum in Stockholm has a written verification from an artist sending an impregnated drawing to a customer, where the impregnation was made only with the intention of making it beautiful. Today this drawing presents a totally reddish hue due to the polymerization and ageing of the varnish used [14].

Substances

To summarize, some specific substances for impregnating have been more frequently used within the different groups:

Besides linseed oil other oils have been used, e.g. walnut oil, hazelnut oil, poppy seed oil, sesame oil castor oil, coconut oil, and rapeseed oil [21] [22] [23] [24]. In the group of natural resins colophony, sandarac, dammar, and mastic have been used [21] [25]. In order to use resins, a solvent must be added and examples are turpentine, petroleum spirit, naphtha, and toluene [23]. Waxes were not so common, mainly because it is hard to transfer ink to a waxed surface [15] [26], but when wax have

English	**German**	**French**	**Method**
Coated paper	Gestrichene Papiere	Papiers couchés	Impregnation and/or coating
(Genuine) vegetable parchment paper	Echtpergament-Papiere Vegetabilisches Pergament	Papier parchemin vegetal Papyrine Papier sulfurisé (veritable)	Acid immersion
Glassine	Glassin Pergamin	(Papier) cristal	Highly beaten pulp followed by an extreme calendering of the sheet
Greaseproof paper	Butterverpackpapier Fettdichtes Papier	Papier ingraissable Papier simi-sulfurisé	Beating
Imitation parchment paper	Imitiertes Pergamentpapier (Imitiert) Pergamyn Pergamentersatz	Imitation de parchemin Papier simili sulfurisé	Mechanically overbeaten pulp, followed by a high calendering
Impregnated paper	Getränktes Papier Imprägniertes Papier	Papiers imprégnés	Impregnation
Tracing paper	Detailzeichenpapier Pauspapier Transparentzeichenpapier	Papier calque	Overbeating of the pulp
Vellum paper	Velinpapier	Papier vélin	A combination of mechanical treatment and impregnation with synthetic resins

Table 1. The most common terms for transparent papers and their manufacturing process [12] [26] [29] [35] [41].

been used it was mainly bees wax [25]. However, in 1841 Talbot used warm wax to the back of calotype negatives and when transparent they were placed in contact with salt printed positives and exposed to light. But the so called waxed-paper process is mainly attributed to Le Grey who in 1851 waxed his papers before sensitizing. With his method the papers could be exposed several weeks after preparation, in comparison to Talbot's calotypes which had to be exposed within a couple of hours after the sensitizing [27]. It is possible that the wax thereby had a preservative effect and functioned as a form of emulsion and protected the light sensitive particles compared to particles lying on top of the paper surface [28]. As Le Gray's method proved to produce sharper images most photographers applied his method [27]. Waxed papers can also be used for other purposes. Yates reports about paper made from sulphite pulp treated in a bath of melted paraffin and used for wrapping groceries [28].

It may be assumed that handmade rag papers before the industrial era were impregnated when needed. However, handmade rag paper was not really suitable for drawing because of the patterns from the laid mould. But with the introduction of machine made papers it became easier to produce thinner papers with a smoother surface [28]. In the Danish reference book *Vareleksikon for papirhandel og papirindustri*, information about papers used for drawings includes that they can be impregnated with linseed oil, poppy seed oil, varnish or wax. As for the quality, the paper must be thoroughly produced and clean, it may not yellow, it must have a smooth structure and may not contain iron [29]. Along with the industrialization, other cellulose sources than rag material were introduced and even though chemical and mechanical wood pulps became more common for transparent papers, impregnation techniques could also be implemented in the industrial process [24] [26] [28]. After 1950 synthetic resins were replacing the natural oils and resins [26] with the advantage that synthetic resins do not yellow much during ageing [15]. In addition, starch and mineral oils have also been used to impregnate modern papers [24] applied either to the surface or in the vat [26].

Degradation aspects of impregnated papers

During ageing, cross linking in the structure causes the oils and resins to become brittle and yellow. This may also cause degradation of the paper and ink and impregnated papers often have a very low pH [13]. Not surprisingly, paper made of cotton pulp seems to withstand the degradation better than paper made of wood pulp. But the drawback is that rag papers cannot be made as transparent as paper made of wood pulp [15].

Fig. 2. Example of loss of transparency in areas where the paper has been folded. Detail of a drawing made by the Swedish artist Augustin Ehrensvärd in the 1720´s on impregnated paper. Owner: Kulturen in Lund, Sweden.

A characteristic damage phenomenon for impregnated papers is the loss of transparency occurring when the paper is folded or creased. As the light transmission through the sheet is hindered, a white opaque area is created [15]. A typical example of this is shown in figure 2.

Chemical treatment (vegetable parchment paper)

The term *parchment paper* is often used in relation to transparent papers. This can either allude to *vegetable parchment* or *imitation parchment*. It is important though, to know that there is a difference in the production of these two paper

types. Furthermore, *vellum* and *parchment* mostly describes the same thing. To some extent this may be true for the animal material, but not so for paper. According to Jenkins *vegetable parchment* should be the same as *parchment paper*, whereas *imitation parchment* is synonymous with *tracing paper*, *glassine*, *pergamun*, and *parchmoid* [30]. The most common terms for transparent papers are listed in table 1.

As for the production of transparent papers from the period of industrialization, two main methods have dominated: a chemical and a mechanical. The earlier of the two were the chemical, resulting in the production of vegetable parchment. In this process a strong acid solution is added to make the paper transparent and the most common acid for this purpose has been sulphuric acid. The process of using sulphuric acid was first discovered by the two French chemists Figuier and Poumarèze when they found that the acid chemically modified wood and resulted in a skin like material. In 1846 they presented their discovery named *papyrine* to The French Academy of Sciences [10]. It was the English chemist Gaine, however, who took credit for the newly discovered material when he patented *parchmentizing paper* in 1853. In this method unsized paper sheets of linen were immersed in sulphuric acid. Later, this method was passed on from Gaine to the English paper company de la Rue. The first mechanized production of vegetable parchment paper began around 1860 [10] and as the patent expired by 1870, more paper makers took on the production and parallel with a decrease in the price level, there was a large growth in the market [26]. By the late 19th century a larger scale production also began in Germany along with the use of larger paper rolls [30]. Up to the 19th century the pulp consisted of traditional cotton or linen fibers and the method was used parallel with the impregnation methods. Along with the introduction of the sulphate and bisulphite treatments in the 1870´s, an identical result could be reached with pure bleached wood pulp [22] [26].

The largest producers of vegetable parchment in Europe were paper makers in Germany and Austria [26]. Homburger and Korbel states that the production continued into the century but due to the pollution connected with the method only few manufactures produce vegetable parchment today [31].

Production

As with impregnated papers, the chemical method is normally performed on sheets and the pulp is nearly never beaten. The use of acid resembles what is occurring during the beating process as the acid hydrates the cellulose. Along with a decomposition of the outer fiber membrane, the strong acid makes the cellulose fibers swell into an amyloid gel [32] resulting in a dissolving and spreading of the fiber mass. As the reaction is terminated in the following water bath, the dispersed and dissolved fiber membranes are precipitated onto the remaining fiber structure thereby filling out the air pockets. The next step is an alkaline bath with ammonia or sodium carbonate. Sometimes the paper was impregnated with alum to provide more flexibility [33] and most sheets are treated with softening agents such as glycerin or glucose after drying [30], which is why vegetable parchment papers often have a distinct sweet taste [33]. By finishing off with calendering, remaining air pockets in the paper are even more diminished.

The strong swelling agent sulphuric acid was sometimes used in combination with nitric acid [10]. The rather expensive method of using zinc chloride had the same effect on the fibres and that product was called *vulcanized fiber* or *vulcanized paper* [12] [30] [33] [34]. Acid concentration and the time of bathing are two main factors. Meyer states that the acid bath was around 5 to 20 seconds and performed by evenly moistening the sheet on both sides [33]. The French papyrine was immersed in 66°C sulphuric acid for half a minute or more, whereas Gaines patent consisted in bathing the paper in 2/3 sulphuric acid and 1/3 of water for a very short time [10]. The solution may also be as strong as 2 parts of acid to 1/4 of water [33] and may last up to 3 minutes [23]. Due to the acid, the amounts of water needed, and the fact that the manufacture was performed on singular sheets, this was a quite costly method [26].

Characteristics

A vegetable parchment shrinks a lot during drying but gives a finished product that is thick and very strong. Two modifications of the methods were present: on the one hand, a full parchmentization of the sheet resulting in a transparent paper very much resembling an animal hide having the attribute of being soft as animal skin when wetted but firm as parchment in a dry state. On the other hand, there was

the method of surface-parchmentization resulting in a paper that looked like leather, also known as *carton cuir,* which could be used for imitating embossed leather for wall papers [26].

The characteristics sometimes wished for in vegetable parchment papers, especially for artistic uses, are softness and occasionally an ivory hue. Colouring cannot be executed in the pulp but must be performed on the finished surface. The final product has a medium transparency sometimes with an uneven and blotchy appearance and a low surface gloss. Vegetable parchment papers are resistant to water and oils and are stronger in wet than in dry state [23] [28] [30] [34] [35].

Uses

In the beginning vegetable parchment papers were used mainly for writing and printing important documents such as diplomas, maps and bank notes as well as for envelopes [10] [26] [30]. Since the paper is resistant to water and grease, it has also been used for food packaging, such as for tea, jam, butter, meat etc. [26] [30]. With its resistance towards solvents and its high wet strength, it is also recommended for offset lithographs and silkscreen prints [32] and today the paper is sometimes used as a barrier sheet for glue when making wood laminates [26].

Mechanical treatment (imitation parchment, tracing paper)

By the end of the 19th century cheaper alternatives for the vegetable paper production was sought for. However, the method that was to replace the acid treatment came about by chance. When a pulp accidently got stuck too long in the hollander, the prolonged beating resulted in a transparent paper named pergamyn [31]. Today such papers are also called natural tracing paper, imitation parchment or glassin. The development of these papers increased heavily during the start of the 20th century and the Scandinavian countries were large producers of imitation parchment made of bisulphite pulp from the mid 20th century onwards [26]. The physical appearance and quality of the paper depends on pulp type, fiber length and beating time as well as any post treatments.

Production

The distinctiveness of cellulose fibers to be able to physically bind to one another and form a coherent bulk upon drying is unique. Even without adding sizing agents the bonds between the fibrils in the fibers are strong enough to create a paper sheet. However, if an unsized sheet is re-exposed to water the bonds are broken and the sheet will fall apart. A beating of the pulp enhances this cohesive strength. In the beating the fibers become hydrated when absorbing water and the process induces fibrillation and increases the bonding sites [31] [36]. When the fibers are fibrillated they are torn and ragged and this results in many split ends. The contact between the fibres is increased when the ends are physically connected forming a densely packed web and as the paper sheet thereby is free from light scattering air pockets it is perceived transparent.

During beating the fibers can either be cut and shortened (called free or quickly beaten pulp) or the fibers can be crushed which leads the fiber ends to split and the fibers to become fibrillated and hydrated (called greasy pulp). Whereas a free pulp easily can drain off the water on the wire cloth, a greasy pulp retains water. If the consistency is thin and a heavy pressure between the roll and the knife of the bedplate is applied, the result is mainly a free pulp. Oppositely, if the consistency is thick and the pressure less, there is less physical stress on the fibers and they are only slightly shortened and crushed, and a greasy pulp is the end result. If the pulp is subjected to a degrading chemical degradation before the beating, e.g. with chlorine or alkaline substances, the lengthwise splitting ability and the prospects of receiving a greasy pulp is reduced [36].

The chemical and physical differences between textile and wood fibers also play a role for the paper strength. Textile fibers are considered to result in a more durable paper as it contains around 96 – 98% alpha cellulose [37]. On the other hand, a hydration of the fibers in the beating process leads to a higher strength in the final product and the higher the amount of hemicellulose and saccharides, the higher the maceration. Different fibers have different tendencies for lengthwise fragmentation: hemp and flax are rather easy to fibrillate, whereas jute, manila, cotton and wood pulp are somewhat more difficult, and straw cellulose almost impossible [36]. Therefore, pulp that easily absorbs water, e.g. pulp with a high content of hemicellulose, is especially suitable for this method, such as extremely soft wood pulps [30]. In addition, whereas textile fibers can be up to 25 – 30 mm in length, wood fibers are much

shorter, around 1 – 3 mm [36]. Cotton fibres are not as easy to fibrillate during beating and the twisted structure of cotton fibres also interlocks air in the structure, leading to a reflection of incoming light which hinders the transparency. If using pulp made of cotton, it is a requirement to also impregnate with starch, oils or varnishes. A chemical wood pulp on the other hand consists mainly of flat fibres easy to split which reduces the light reflection [23].

When producing tracing paper, the beater roll in the hollander is not made of steel as this would shorten and cut the fibres too much. Instead the roll is a basalt lava stone with no bars. This way the fibres are not cut, but instead they are crushed with shearing and tearing movements. This high fibrillation results in a wet pulp [38] with nearly no fiber structure in the cross-section [32]. The water drainage as well as the speed of the machine are important factors in the process [30] and due to the large amount of water needed, this methods requires a large drying capacity [28]. The fiber concentration may be as low as around 6% and to soften the fibres and increase fibrillation the temperature is high, around 80°C [32].

The process is nearly always finished with a calendering. This process, also called glazing, is a mechanical treatment where the paper is heavily pressed between steel rolls and the remaining air pockets in the paper are compressed, resulting in a final product with a high glaze. If the paper is pressed in wet condition between warm steel rolls, the air pockets are reduced even more and the final product is a very transparent paper. Hence, depending on degree of calendering, the paper may either get a matte surface good for graphite drawing, or a more shiny surface for ink, or a combination of the two [39].

Characteristics

Generally, it can be said that the transparency of tracing papers depends on the beating - the higher the beating, the more transparent paper [31] [36]. Even though the beating leads to increased hydrogen bond sites for the individual fiber fragments, the process also leads to a decrease of the papers stability since the overbeating shortens the fibers which lead to a low tear strength [23]. The transformation of the fibers has the effect that tracing papers are very hygroscopic and dimensionally unstable. As the movement possibilities for the individual fibers are diminished, expansion and contraction of the fibers along with changes in relative humidity is reduced. And in combination with a reduce in air pockets this is compensated by the whole paper sheet expanding or contracting along with changes in the surrounding humidity [40].

Imitated parchment paper is a thin transparent paper and because of the wood pulp it has a tendency to yellow during degradation. Compared to vegetable parchment it has much less resistance towards water. Imitation parchment has a translucency of medium character and a high surface gloss [35].

Uses

High quality imitated parchment paper made of rags is used for certificates and other important documents. But usually this greaseproof material is used for grocery wrapping, such as tea and bisquits, meet, butter, etc. However, the paper type is mainly used for tracing [26] [30].

Summary

Numerous combinations of different methods for the production of transparent papers have been applied throughout history, something that has also contributed to the many different terms found in the literature. In table 1 the most common terms for transparent papers are gathered. (Table 1)

With respect to each individual object, the different manufacturing methods may pose challenges on how to best preserve transparent papers in collections. Most often drawings on transparent papers are in large formats and in combination with a frequent brittleness of the paper, the handling of these fragile objects may create physical stress with tears and creases as a result. Restoration methods may include the use of solvents, humidification methods and flattening. In any case, the transparency and the gloss of the paper are important features of the objects that should be retained. In addition, many transparent papers are by nature very hygroscopic and to avoid physical distortions an understanding of their different manufacturing processes is important. This paper has presented the three major manufacturing processes of transparent paper throughout history together with the most common terms attributed.

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Rezension: Die kunsterfahrenen Papiermacher Schaffhirt

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Die Stadt Bautzen, obersorbisch Budyšin genannt, gehörte zum Königreich Böhmen, als dort im Jahr 1511 der Papiermacher Valten Ochsel seine kurz zuvor entstandene Papiermühle an Michael Schaffhirt (1485-1556) verkaufte. Als sich jenes Ereignis 2011 zum 500. Mal jährte, war dies für Harald Schaffhirt und Thomas Schaffhirt Anlass, alle Materialien zu sichten, die in früheren Generationen von genealogisch interessierten Familienangehörigen zusammengetragen und in den letzten Jahrzehnten auch von Alfred Kraus durch Nachforschungen zur Geschichte der einzelnen Papiermühlen ergänzt worden waren.

Nun haben sie ihre Forschungen in einem Buch vorgelegt, das nicht nur für deutsche Papierhistoriker von Interesse ist, sondern auch in weiteren Ländern Beachtung verdient. Papiermacher aus der Familie Schaffhirt waren als Eigentümer oder Pächter die Betreiber von Papiermühlen an knapp zwei Dutzend Orten, die heute in den deutschen Bundesländern Sachsen, Sachsen-Anhalt, Thüringen und Brandenburg, ebenso in der Tschechischen Republik, in Polen und in Russland liegen. Bei ihren Nachforschungen machten sie die Erfahrung, „dass die Familie Schaffhirt mit der Häufung solcher Vornamen wie ALEXANDER, MICHAEL, SAMUEL und MARTIN durch die Jahrhunderte ohne Absicht für Verwirrung unter

Papierhistorikern gesorgt haben.“ (S. 3) Zudem ergaben die Forschungen, dass früher den Schaffhirts zugerechnete Papiermühlen in Hermsdorf (heute Ortsteil der Gemeinde Ottendorf-Okrilla, vgl. S. 215—219) und in Wilthen (vgl. S. 224—227) nicht in diesen Kontext gehören.

An den Anfang des Buchs ist eine reich illustrierte Geschichte der Papiermacherei gestellt (S. 5—21). Dem schließt sich in alphabetischer Folge der Ortsnamen, die von Arnstadt bis Zittau reicht, in einzelnen Kapiteln die Geschichte der jeweiligen Papiermühlen an. Neben Jahreszahlen von Ereignissen und Lebensdaten sind hier vor allem die geografischen Koordinaten der Papiermühlenstandorte hervorzuheben. Dabei ist den Autoren eine außerordentlich lebendige Darstellung gelungen, weil sie keine Mühe gescheut haben, den in Worten und Zahlen vorgetragenen Ergebnissen ihrer historischen Recherchen jederzeit die Anschaulichkeit bildlicher Quellen an die Seite zu stellen. Hier ist vor allem die ausführliche Wiedergabe von Wasserzeichen zu nennen, die beigefügten Ortswappen verhelfen zu manch überraschender Einsicht in einige dem Unkundigen nicht selbstverständliche Zusammenhänge. Ortsansichten und Herrscherporträts verdeutlichen territorialgeschichtliche Zusammenhänge.

Aus der Fülle des gebotenen Materials sei auf einige besondere Objekte verwiesen. Ein Riesumschlag zeigt ein sehr anschauliches Bild der Papiermühle Arnstadt um 1610 (S. 22), Willkommen-Pokale aus Bautzen (S. 43), Carben (S. 61—63) und Dresden (S. 211) sowie ein Papiermacherglas aus Zittau (S. 213) bringen alte Handwerksbräuche in Erinnerung (vgl. S. 209—215: Sonderkapitel B – Der Willkommen und das ehrliche Geschenk). Friedhofsbesuche führen zu interessanten Grabmälern (S. 45 Familiengrab Fischer in Bautzen, S. 48 Grabmal Friedrich Gottlob Keller in Krippen, S. 73 Grabmäler Schaffhirt in Zittau). Begehungen an den alten Papiermühlenstandorten führen in einigen Fällen zu den alten Gebäuden mit vor Ort befindlichen Kartuschen mit Monogrammen (Bautzen S. 40), die zum Teil nun ihren Platz in Museen gefunden haben (S. 43). An anderer Stelle – in Schirgiswalde – ist aus dem ehemaligen Verwaltungsgebäude einer Papiermühle das heutige Heimatmuseum entstanden (S. 175).

Bei diesen Forschungen gibt es eine industriearchäologische Bestandsübersicht entstanden, die sich auch das Aufspüren alter Mühlkanäle und Gewässer zur Aufgabe macht (vgl. S. 132 Mühlbach und Rasnitz in Friedland/Böhmen, S. 157 die Salza bei Mühlhausen, S. 163 die Zorge bei Nordhausen). An einigen Stellen sind noch Straßennamen zu entdecken, die auf die alten Gewerbebetriebe verweisen.

Die Autoren haben keine Mühen gescheut, sich nach alten Lageplänen, Postkarten und Gebäudefotografien umzusehen. Bei der Ermittlung der örtlichen Situation wurde von modernen elektronischen Satellitenbildnachweisen (Microsoft Bing) Gebrauch gemacht (S. 28 Arnstadt, S. 37 Aussig/Ústí nad Labem, S. 53 Bautzen, S. 60 Carben, S. 107 Dresden, S. 139 Görlitz-Moys/Zgorzelec-Ujazd, S. 145 Leipzig-Lindenau, S. 149 Lohmen, S. 155 Niedereinsiedel, S. 179 Schirgiswalde, S. 186 Steinpleis, S. 191 Teschenwalde, S. 195 Wittenberg, S. 218 Hermsdorf, S. 234 Domkau).

Ein ausführliches Literatur- und Quellenverzeichnis (S. 240—252) belegt kapitelweise alle verwendeten Text- und Bildquellen. Ein Namensregister mag man in dem gedruckten Buch vermissen, da sei der Interessierte auf die Durchsuchbarkeit der digitalen Ausgabe verwiesen. Den beiden Verfassern ist es in eindrücklicher Weise gelungen, vorhandenes Quellenmaterial und vorliegende Untersuchungen kritisch zu überprüfen, daraus einen eigenen Forschungsstand abzuleiten und zusätzlich mit neuen Methoden – man denke an die Luftbildrecherchen zur Rekonstruktion auch abgelegener Mühlenstandorte (Carben im ehemaligen Ostpreußen) – anzureichern.

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