



Instituut Collectie Nederland  
Ministerie van Onderwijs, Cultuur en  
Wetenschap

THE INK CORROSION CHAPTER

# Back to the Future

Frank Ligterink  
Birgit Reissland  
Claire Phan Tan Luu  
Norbert Ligterink

March 2010



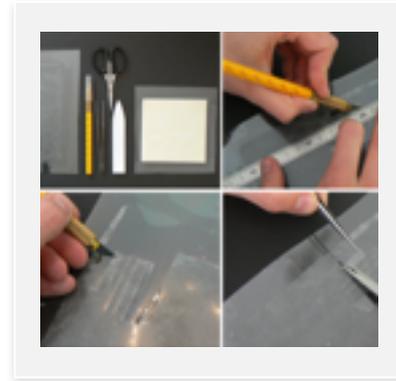
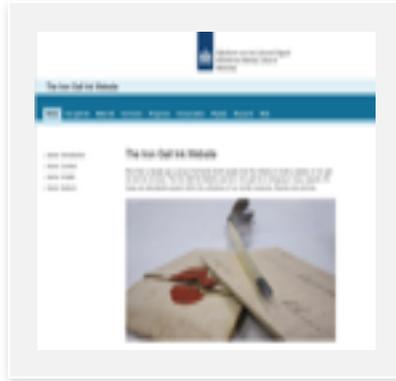
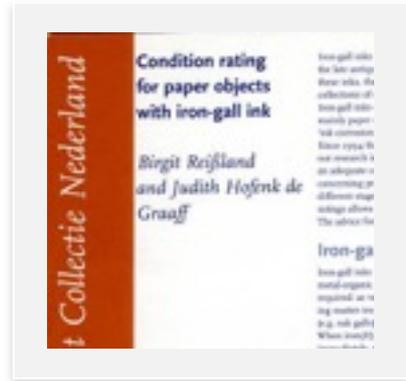
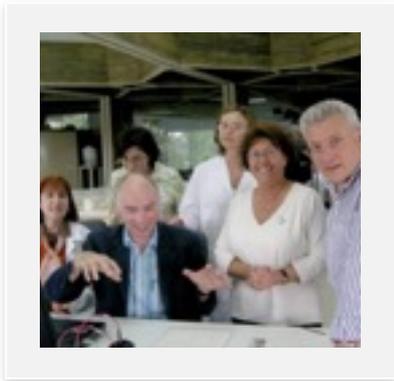


# Ink corrosion: an auto-catalytic 'success story'





# We have given the world ...





# To treat or not to treat...





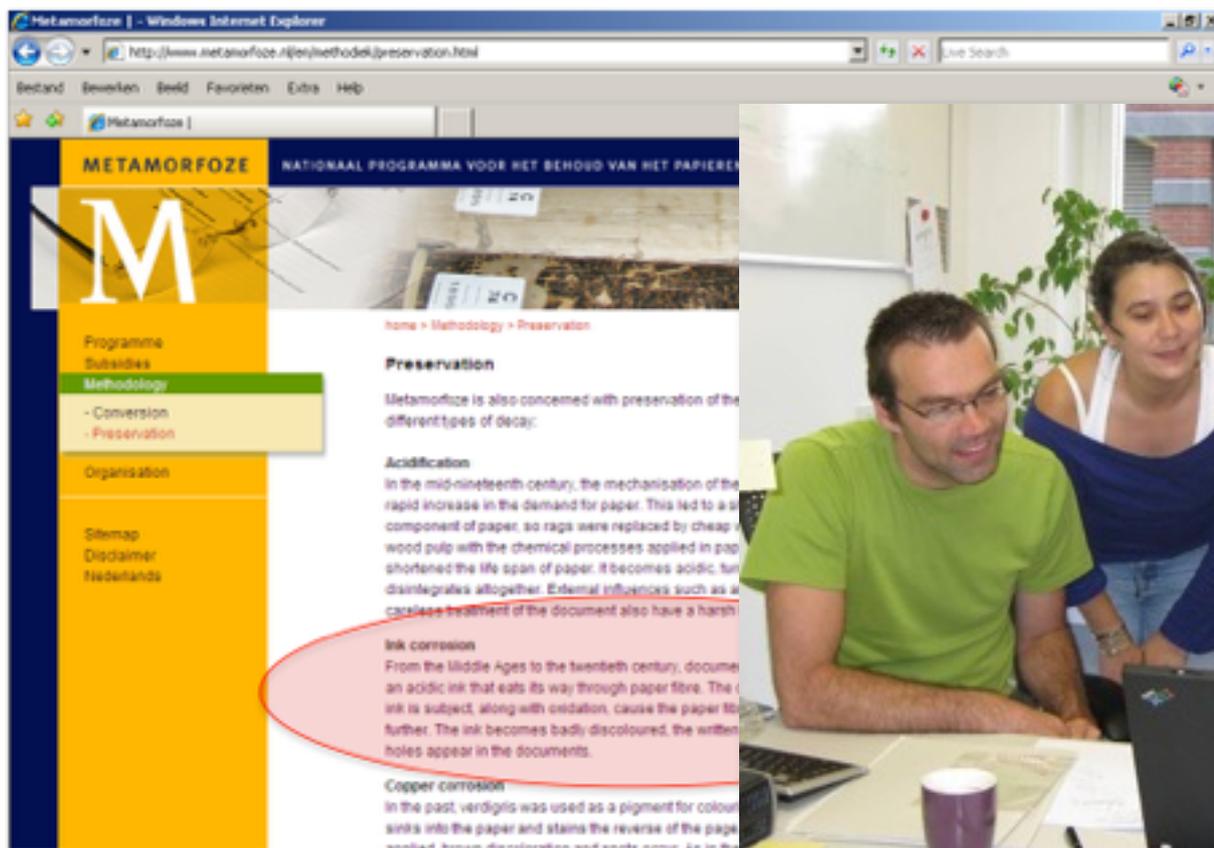
But: would you treat Goethe, Bach or Huygens ... ?!



University Library Leiden, Ca Phytate treatment of a letter by Christian Huygens (1653, Hug 45/169)



# Project: Ink Corrosion Prognosis 2007-2010





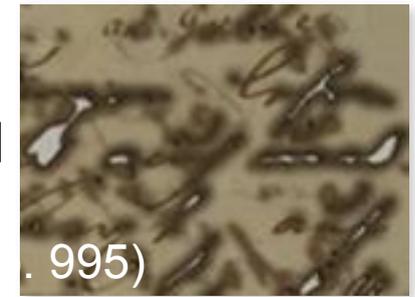
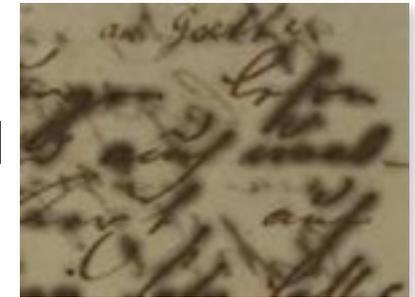
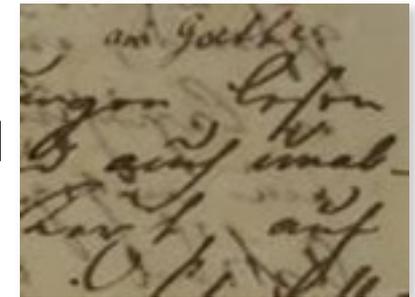
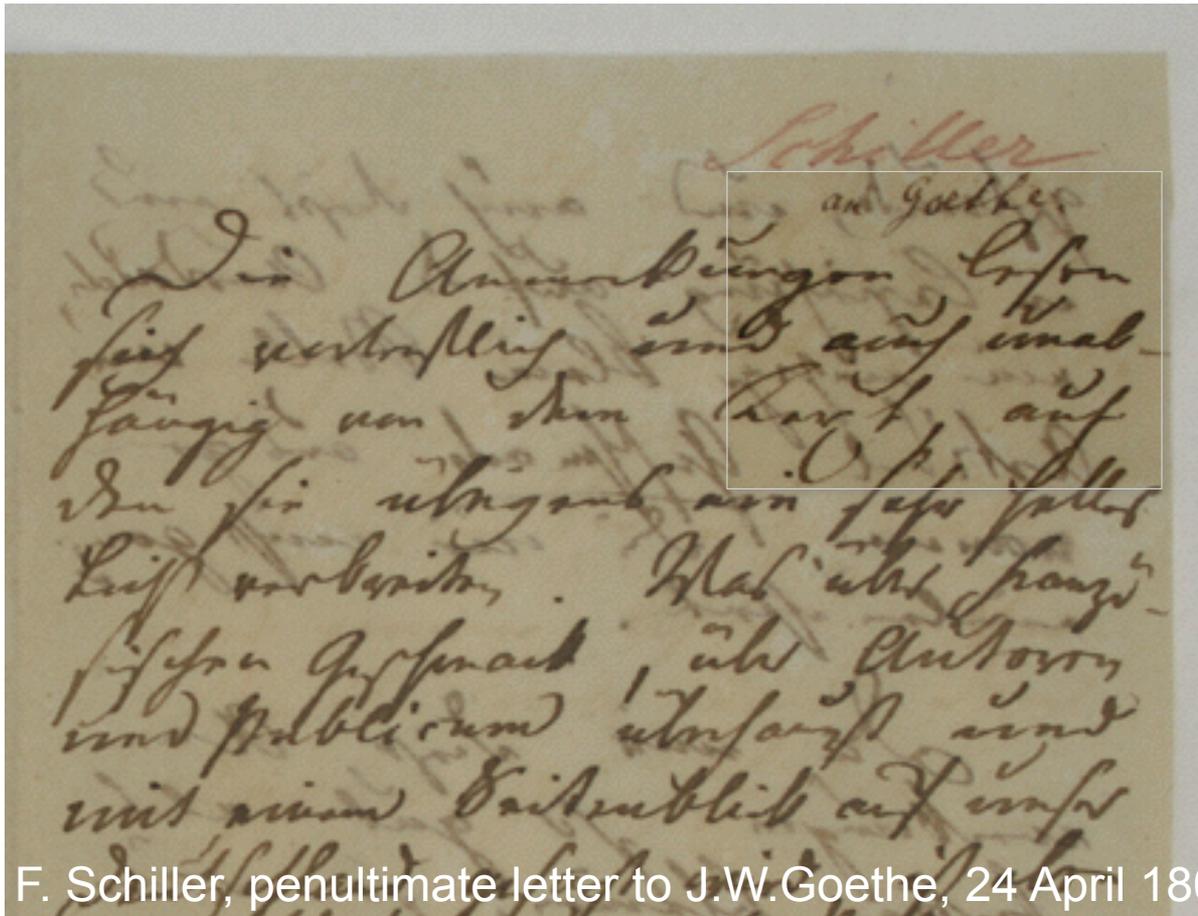
# NEW: Multiple Risk Perspective



Hercules slaying the Hydra, Beham, (Hans) Sebald (1500-1550): 1545 (B.102, P.100 iv/iv)



# We need a prognosis !



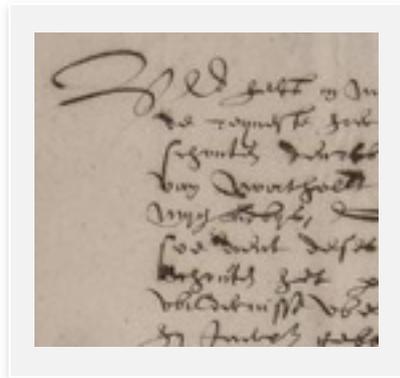
F. Schiller, penultimate letter to J.W.Goethe, 24 April 1805

(. 995)



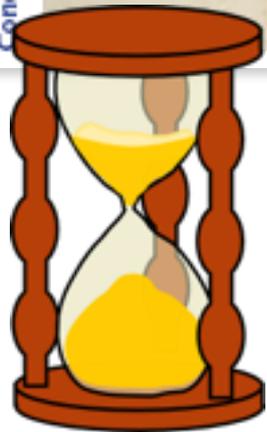
# Building a model

*“Prediction is difficult, especially of the future.”* Niels Bohr





# Ink Corrosion Evolution Model



Singular decay progression ?

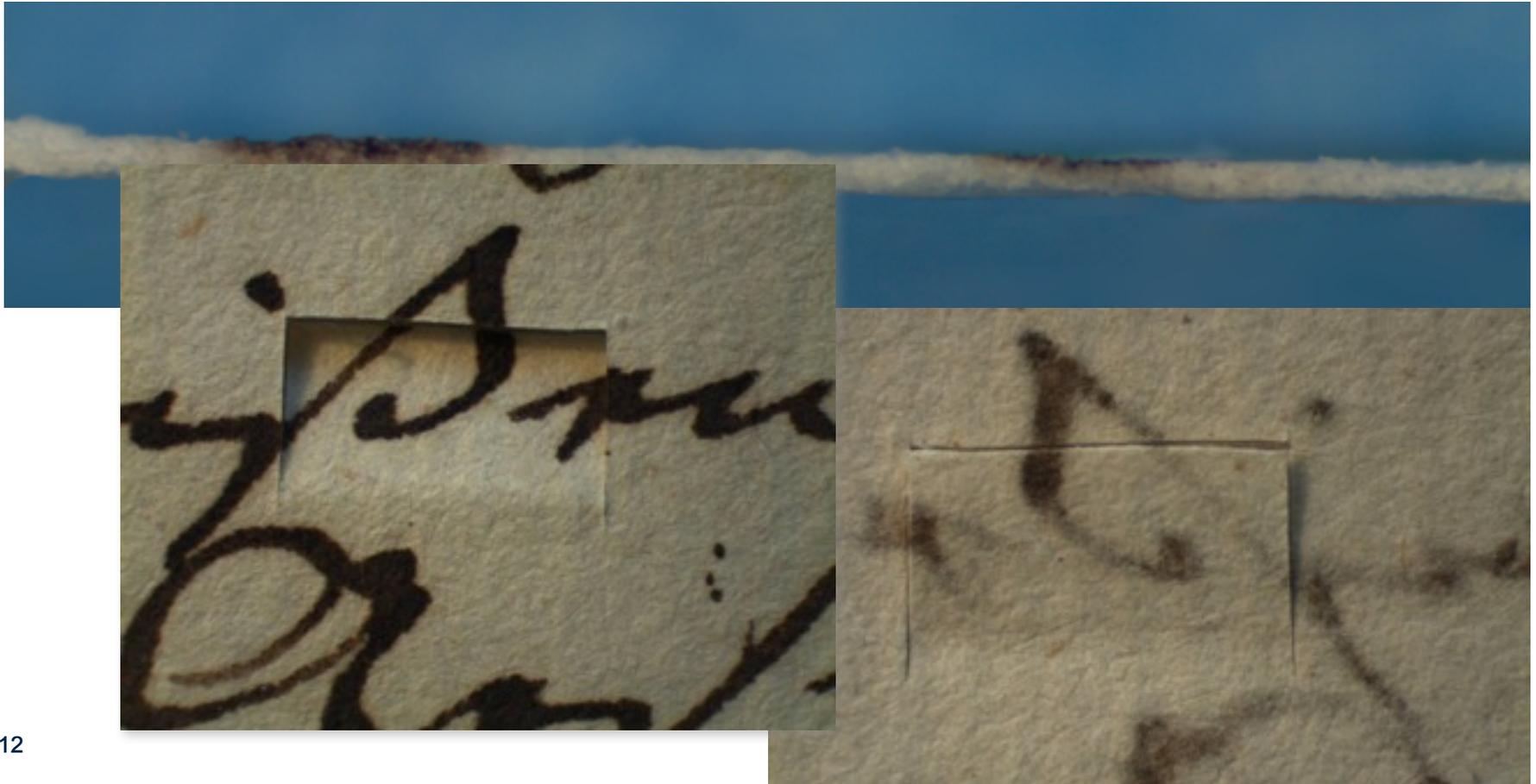


# Ink Corrosion Evolution Model





# Degree of penetration is crucial!

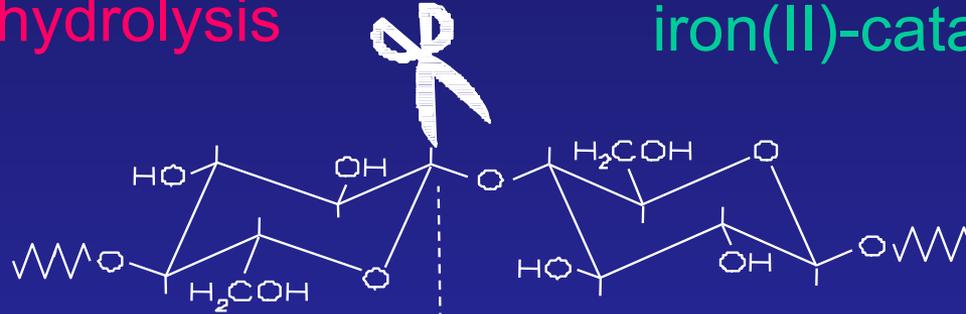


# Causes of ink corrosion

acid-catalysed hydrolysis

iron(II)-catalysed oxidation

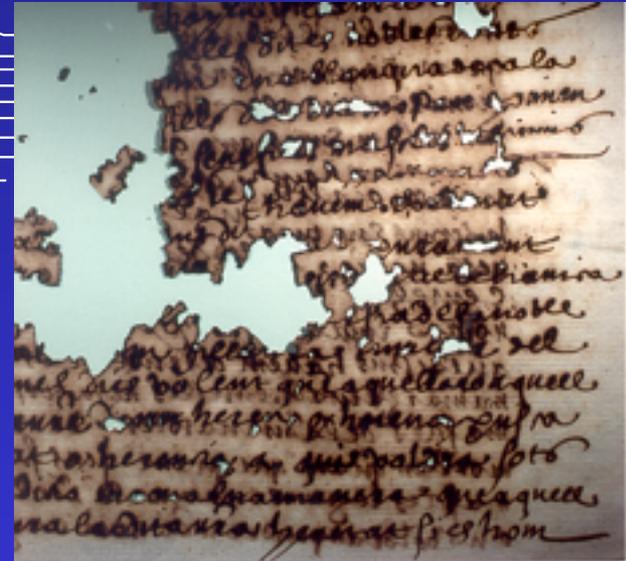
molecule



fibre

crystalline

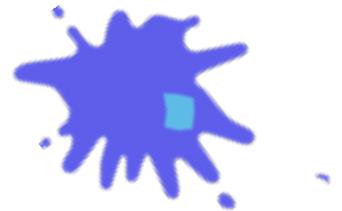
amorphous





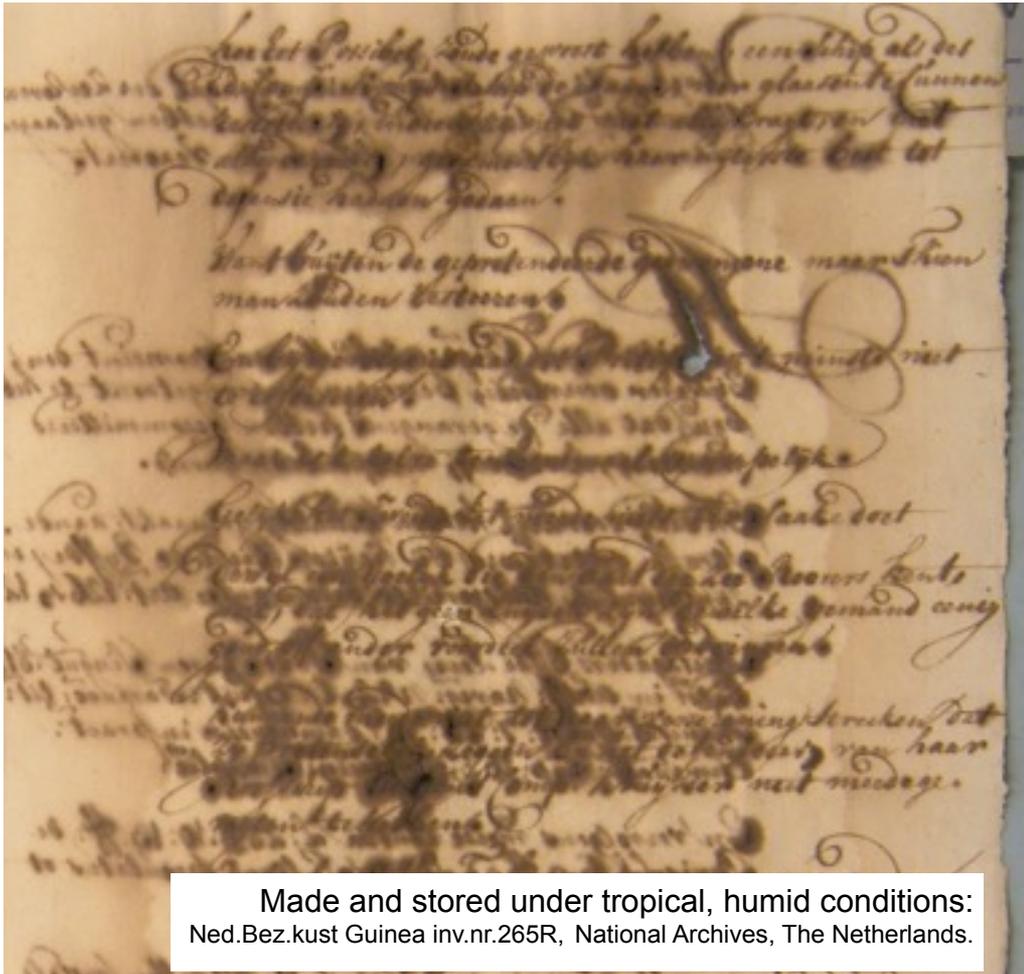
Be aware:  
only where ink and paper are in close  
contact, autocatalytic processes occur.

This changes if water comes into picture.

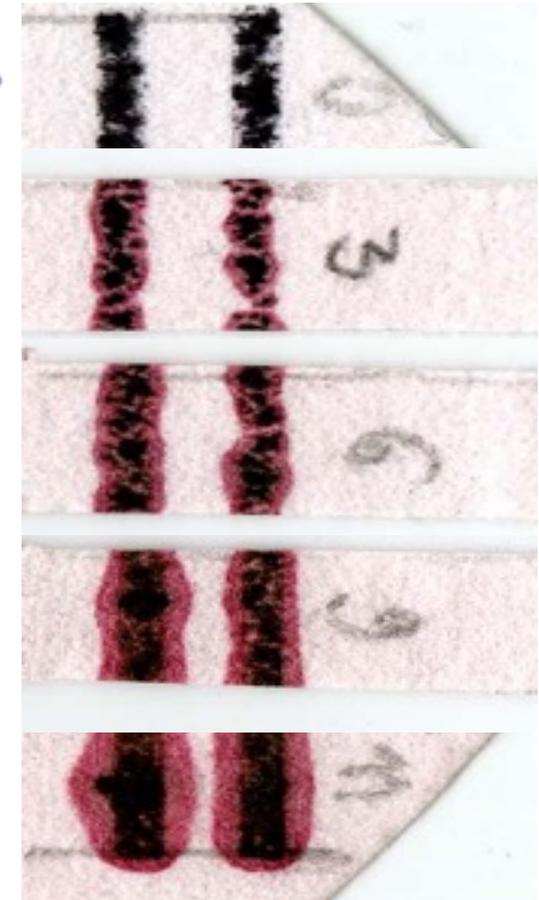




# Passing the critical water content



Made and stored under tropical, humid conditions:  
Ned.Bez.kust Guinea inv.nr.265R, National Archives, The Netherlands.



Spreading of iron(II) ions  
after 0,3,6,9,11 days RH 90%



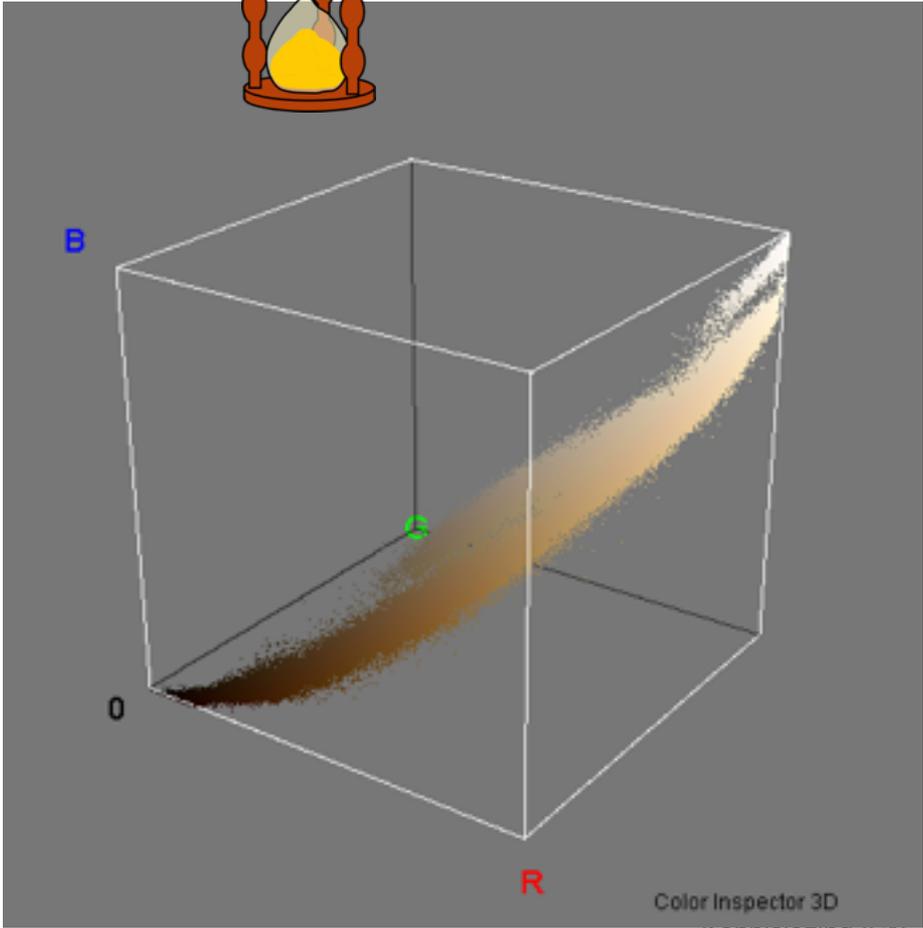
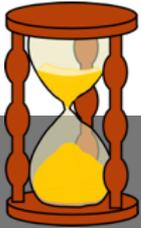
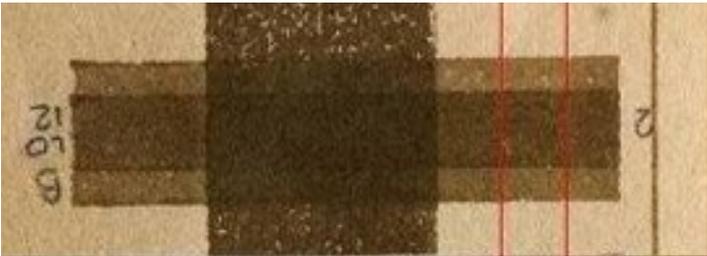
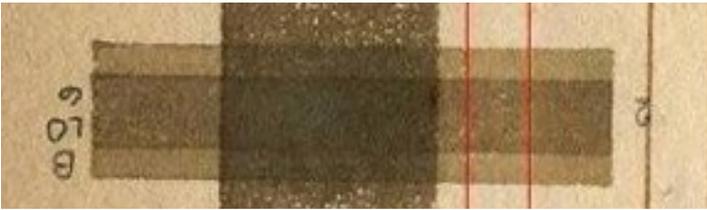
## Local stress at weak areas



“Wanderers Nachtlied”, Brief Goethes an Charlotte v Stein, 1776  
Ink Corrosion Expert Meeting 2009,  
Goethe & Schiller Archiv Weimar

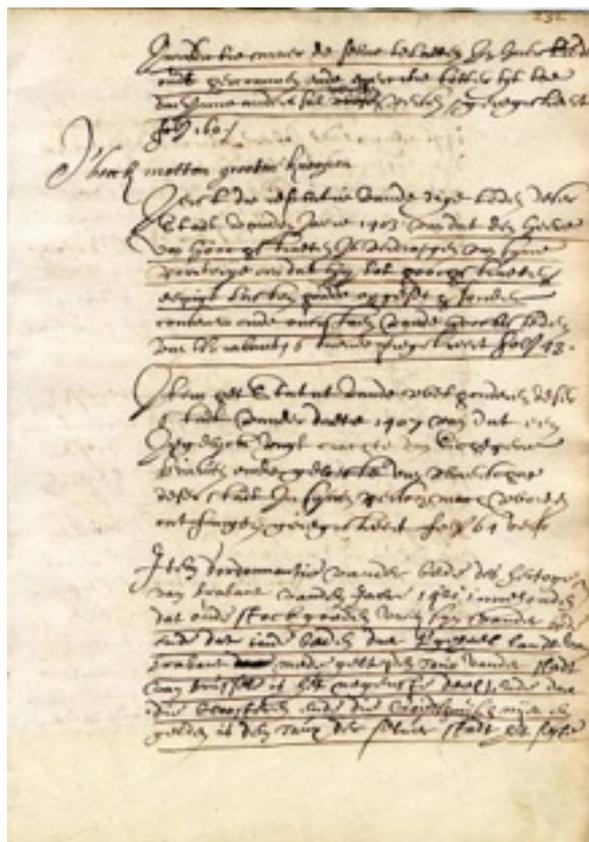
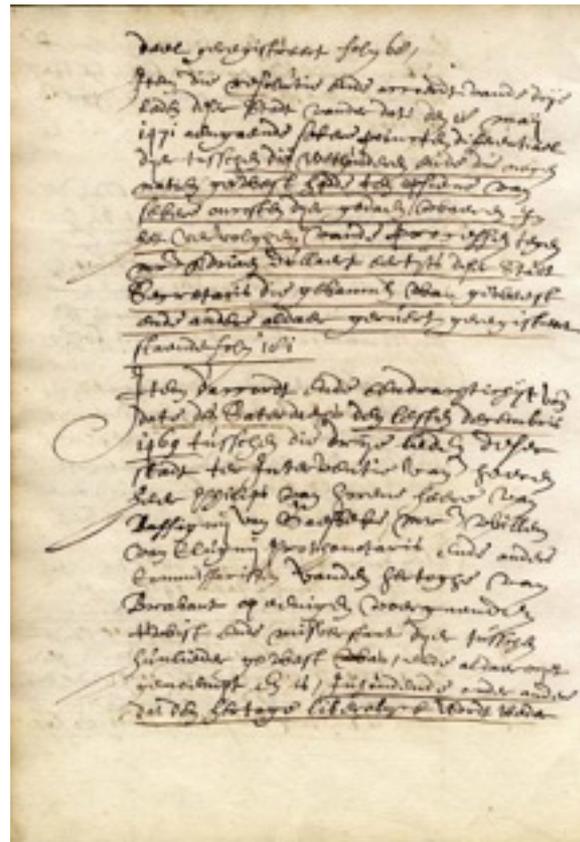
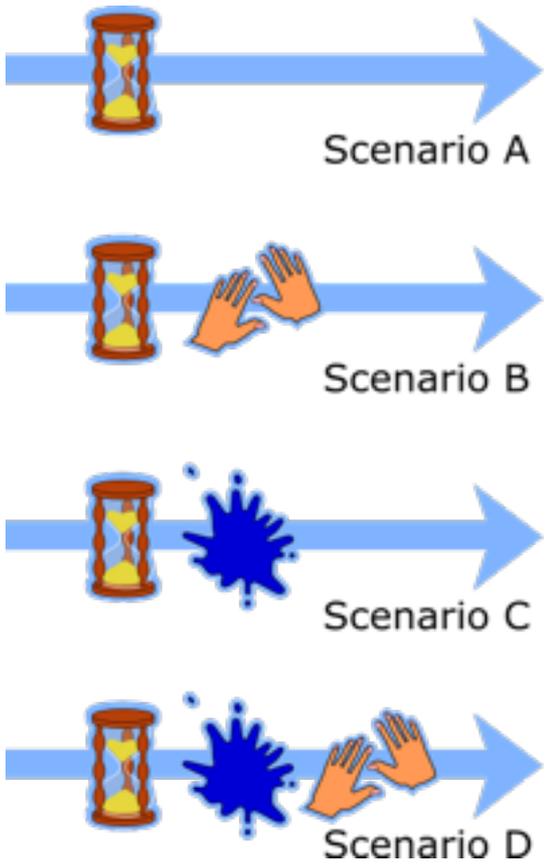


# Colour and opacity shift



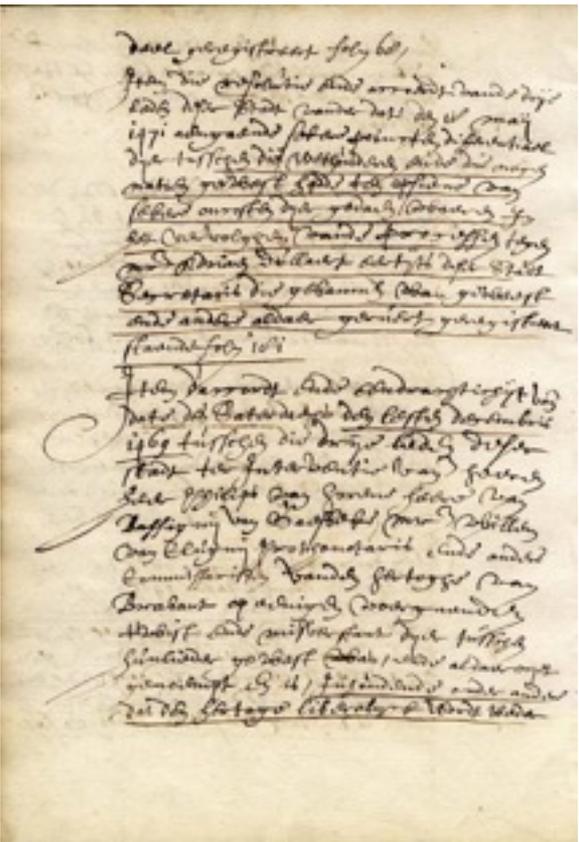
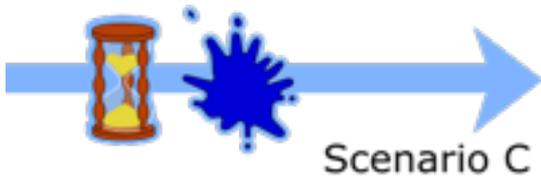


# Ink Corrosion Prognosis (100 years)





# Experimental Proof: 80°C, 90% RH



Deel geregistreert folij 60,

Iten die resolutie des artoent vanden dij  
keds deser Stadt vande dat de il enai  
1771 aenyaend soen poirtel difereutiae  
dye tusseg die (Wetent) and ande die mag  
naticy gerdost fadd tely affino day  
schien onstly dya godaly / arbuerz y  
lot vradvolgely, vande pproyffly tely  
and pdring dillact achttyb dese Stadt  
Secretaris die ybbannz (dab) gubbeest  
and ander aldair gerucht yney iten  
staend folij 101

Iten vassont and andrangt ingit by  
datu des Batendampe dya leffly desember  
1769 tusseg die dnyw ledly dese  
Stadt ter futevankiw bay fiderly  
siele yffilip day sonne fiderly bay  
Daffig my bay Gaeffel (Mr) vobilly  
day Eling my pproyffaris and ander  
Commiffarilly vandel firtogge bay  
Brabant op ahuigly (woery) nundly  
thubst and misseffant dya tusseg  
sindelide yrdest (dab) / ande aldair onst  
ylenoikupt by it / fuzendilid ande ande  
dal dya firtogge liberaly t vord vada

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Alle geregistreert folij 60,

Iten die resolutie ende arrest dander dier  
lede after Stadt vander dats de 11 may  
1571 aen gelyc soeken poirtelij differentie  
dye tusseghe die Westindien ende die may  
naticly verhoert sijn tely affieno may  
soeken onrechtlye dyer godelyc arbeyden  
sot. Overvolgelyc vanden procefflye tely  
mer psonen dillact achtelike dese Stadt  
Secretaris die vbbannij abas gubbeest  
ende anders aldere gerucht yerey isten  
staend folij 101

Iten vassont Ande Andrangt sijt bij  
dats des Batendampe deij leffij desember  
1569 tusseghe die dnyer lede deij  
Stadt ter futevantiu may selen  
siele vfflijt may sonen selen may  
vassing may vassing mer vobillij  
may elijny vproffnotaris ende anders  
commissarilij vandelij statogge may  
vbraut op elijny vover vandelij  
vdelij ende vmissarilij dyer tusseghe  
sindelide verhoert abas vover aldere onst  
vencolupt de 16/ fonsindend v onder ander  
val deij statogge liberalij v vover vover

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Dalle geregisteroot foly 60,

Iten die resolutie ende arrest dander dier  
lede deser Stadt vande datt de il enij  
1771 aenyaende soter poirtel differentie  
dye tusseghe die Westindien ende die may  
naticy verbaet sidd tely affuend may  
sotien onstely dier godely carbaren y  
soe vradvolgely vande proffer tely  
mer pdinge dillact achtel die Stadt  
Secretaris die vbbannu abas gubbeest  
ende ander aldair gericht yney isten  
staend foly 101

Iten vassont Ande andrangt sigit by  
datt des Batendampe dely leste desember  
1769 tusseghe die dnyo lede die  
Stadt ter futevankie may seldely  
siele vgilicht may sonne seldely may  
vassig may vassig (mer vobillie  
may elijny vproffonotaris ende ander  
commissarische vandel stotoge may  
vbraut op elijny vwoery nundely  
thelst ende vmissarische dier tusseghe  
sindelude verbaet abas / vrede aldair onst  
vencolupt by it / fonsindend v onder ander  
dal die stotoge liberaly v vord vada

Dalle geregisteroot foly 60,

Iten die resolutie ende arrest dander dier  
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sotien onstely dier godely carbaren y  
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siele vgilicht may sonne seldely may  
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Dalle geregistreert folij 60,

Itan die resolutie dier artoent vanden drij  
kledij dier Stadt vanden datt die il enaij  
ij71 aenyaalend soteren poirtelij d'interhuase  
dier tusselgij die (Wetgij) en die d'inter  
naticij g'edogt & g'ad t'lij affilno (Wag  
soteren onroftgij dier g'edogt / (Arbueren) g'  
lot (Arbueren) vanden f'or (Wag) t'lij  
en d'interhuase d'interhuase d'interhuase  
G'eregisterit die g'ebannij (Wag) g'edogt  
en d'interhuase d'interhuase g'edogt g'edogt  
staend folij 101

Itan v'arrent die d'interhuase g'edogt  
d'interhuase d'interhuase d'interhuase  
ij69 tusselgij die d'interhuase d'interhuase  
stent ter f'interhuase (Wag) g'edogt  
s'el g'edogt (Wag) g'edogt (Wag)  
Wag g'edogt (Wag) g'edogt (Wag)  
Wag g'edogt (Wag) g'edogt (Wag)  
Commisf'aritij v'andij f'interhuase (Wag)  
Brabant op d'interhuase (Wag) g'edogt  
d'interhuase en d'interhuase d'interhuase  
s'el g'edogt (Wag) g'edogt (Wag)  
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d'interhuase d'interhuase d'interhuase

0/14 days

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ij69 tusselgij die d'interhuase d'interhuase  
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s'el g'edogt (Wag) g'edogt (Wag)  
Wag g'edogt (Wag) g'edogt (Wag)  
Wag g'edogt (Wag) g'edogt (Wag)  
Commisf'aritij v'andij f'interhuase (Wag)  
Brabant op d'interhuase (Wag) g'edogt  
d'interhuase en d'interhuase d'interhuase  
s'el g'edogt (Wag) g'edogt (Wag)  
g'edogt (Wag) g'edogt (Wag) g'edogt  
d'interhuase d'interhuase d'interhuase

3/14 days



Deel geregistreert foly 60,

Iten die resolutie ende arrest dander dier  
lede neder Stadt vander dats de 11 may  
1571 aenghelend soter poirtelc d'interhuase  
dye tusschen die Westindien ende die may  
naticly verhoert sijn tely affenno may  
schien onrechtlyc dyc godelyc arbeyden y  
soe vradvolgelyc vander procefflyc tely  
mer p'dicary d'illust' achtelc d'ie Stadt  
Secretaris die ybbann' abas g'bbest  
ende anders aldair g'wilt yney isten  
staend foly 101

Iten v'arrest ende v'andringhijc by  
dats des Batendays de 11 desember  
1569 tusschen die d'ny' lede d'ie  
Stadt ter f'nterbandic may f'ndic  
siele y'gelyc may sonne f'ndic may  
vassig may v'assicel mer v'obillyc  
may eling may v'roffnotaris ende anders  
commissaricly v'andic f'rtogge may  
v'rabant op eling v'voren v'ndic  
th'ist ende v'voren f'ndic d'ie tusschen  
s'ndic v'voren abas v'voren aldair onst  
v'voren d' 16 f'ndic v'voren v'voren  
dat die f'rtogge lib'aly v'voren v'voren

0/14 days

Deel geregistreert foly 60,

Iten die resolutie ende arrest dander dier  
lede neder Stadt vander dats de 11 may  
1571 aenghelend soter poirtelc d'interhuase  
dye tusschen die Westindien ende die may  
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schien onrechtlyc dyc godelyc arbeyden y  
soe vradvolgelyc vander procefflyc tely  
mer p'dicary d'illust' achtelc d'ie Stadt  
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may eling may v'roffnotaris ende anders  
commissaricly v'andic f'rtogge may  
v'rabant op eling v'voren v'ndic  
th'ist ende v'voren f'ndic d'ie tusschen  
s'ndic v'voren abas v'voren aldair onst  
v'voren d' 16 f'ndic v'voren v'voren  
dat die f'rtogge lib'aly v'voren v'voren

5/14 days

Dalle geregisteroot foly 60,

Itely die resolutie dier artoent vanden drijen  
kleden dier Stadt vanden dats de 11 may  
1571 aenlycende saken poirtelij differentiael  
dier tusschen die (Wetende) en die dier may  
naticly geredict saken tely affien no may  
saken onrechtly dier geadely (Arbueren) 7  
80. Onvervolgely, vanden saken saken tely  
mer saken dillact achttyt dier Stadt  
Secretaris die vobannus (Abas) gubbeest  
and anders aldair gendert yerey isten  
staend foly 101

Itely vanden dier and vanden dier  
dats des Batendage de 11 des dier  
1569 tusschen die dier kledely dier  
Stadt ter saken dier may saken  
saken saken may saken saken may  
saken may saken saken (mer) saken  
may saken saken saken and anders  
Commisfaritly vanden saken saken may  
Brabant op dier dier (dier) vanden  
saken and saken saken dier saken  
saken vanden saken saken aldair onrecht  
saken saken saken and anders  
dats des saken saken saken saken

0/14 days

Dalle geregisteroot foly 60,

Itely die resolutie dier artoent vanden drijen  
kleden dier Stadt vanden dats de 11 may  
1571 aenlycende saken poirtelij differentiael  
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naticly geredict saken tely affien no may  
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Itely vanden dier and vanden dier  
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1569 tusschen die dier kledely dier  
Stadt ter saken dier may saken  
saken saken may saken saken may  
saken may saken saken (mer) saken  
may saken saken saken and anders  
Commisfaritly vanden saken saken may  
Brabant op dier dier (dier) vanden  
saken and saken saken dier saken  
saken vanden saken saken aldair onrecht  
saken saken saken and anders  
dats des saken saken saken saken

6/14 days

Dalle gheregisteroort folij 60,

Iten die resolutie And' arrouant vanden dijse  
leeds deser Stadt vande dats de il enaij  
1771 aenyaende soteren poirtelij differentiael  
dye tussegelij die (Wetgint) and' and' and' and'  
naticly geredest fadd' tely affieno' may  
soteren onroftelij dya gadael/ (Arbouer) y  
lot' (Vredvolgery) vande fpro' effe' tely  
and' p'driang' dillact' abtyt' dyle Stadt  
Beynotaris die ybbann' (Abas) gubbeest  
and' and' aldair' gend'ot' yney' it'een  
staend' folij 101

Iten vassont' And' and' vassont' ingit' by  
dats die (Baterdag) die (Lest) desember  
1769 tussegelij die d'ny' leed' d' d' d' d'  
Stadt ter f'nter' d'entiv' (May) f' d' d' d'  
siele' yffilij' (May) f' d' d' d' d' d'  
Daffig' in' (May) f' d' d' d' d' d'  
(May) (L'ny) yff' d' d' d' d' d' and' and'  
Commis' f' d' d' d' d' d' d' d' d' d'  
Braubant' op' d' d' d' d' d' d' d' d' d'  
d' d' d' and' m' d' d' d' d' d' d' d' d' d'  
f' d'  
g' d'  
d' d' d' d' d' d' d' d' d' d' d' d' d' d'

0/14 days

Dalle gheregisteroort folij 60,

Iten die resolutie And' arrouant vanden dijse  
leeds deser Stadt vande dats de il enaij  
1771 aenyaende soteren poirtelij differentiael  
dye tussegelij die (Wetgint) and' and' and' and'  
naticly geredest fadd' tely affieno' may  
soteren onroftelij dya gadael/ (Arbouer) y  
lot' (Vredvolgery) vande fpro' effe' tely  
and' p'driang' dillact' abtyt' dyle Stadt  
Beynotaris die ybbann' (Abas) gubbeest  
and' and' aldair' gend'ot' yney' it'een  
staend' folij 101

Iten vassont' And' and' vassont' ingit' by  
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1769 tussegelij die d'ny' leed' d' d' d' d'  
Stadt ter f'nter' d'entiv' (May) f' d' d' d'  
siele' yffilij' (May) f' d' d' d' d' d'  
Daffig' in' (May) f' d' d' d' d' d'  
(May) (L'ny) yff' d' d' d' d' d' and' and'  
Commis' f' d' d' d' d' d' d' d' d' d'  
Braubant' op' d' d' d' d' d' d' d' d' d'  
d' d' d' and' m' d' d' d' d' d' d' d' d' d'  
f' d'  
g' d'  
d' d' d' d' d' d' d' d' d' d' d' d' d' d'

7/14 days





Dalle geregisteroot foly 60,

Itely die resolutie dier artoent vanden drijen  
kaden deser Stadt vande dats de 11 may  
1571 aen gelyc saken poirtelike differentie  
dier tusseghe die (Wetende) ende die omme  
natich gelyc saken telyc appelen (Wey  
saken onroftly dier gelyc / arbeyden / y  
sot. Overvolgelyc, vanden pro- / effly telyc  
mer p'driang dillacht achttyt d'p't Stadt  
Secretaris die ybbannig (Wab) gylbeest  
ende anders aldair gelyc / yney isten  
staent foly 101

Itely vassont Ande Andrangt sigijt by  
dats des Batendampe dely leffly desember  
1569 tusseghe die d'nyd l'edely deser  
Stadt ter f'nter d'antiv (Wey) gelyc  
saken gelyc saken gelyc saken (Wey  
Wassig in (Wey) gelyc saken (Wey) gelyc saken  
Wey Elig in g'roffanotaris ende anders  
Commisfaryen vanden f'rtogge (Wey  
Brabant op alnigly (Wey) gelyc saken  
Hedist ende misf'nter d'nyd tusseghe  
s'ntliede gelyc saken (Wab) / aldair on-  
gelyc saken (y) 16 / f'nter d'antiv / ander ander  
dat d' f'rtogge lib'alyt / v'ndt v'ndt

0/14 days

Dalle geregisteroot foly 60,

Itely die resolutie dier artoent vanden drijen  
kaden deser Stadt vande dats de 11 may  
1571 aen gelyc saken poirtelike differentie  
dier tusseghe die (Wetende) ende die omme  
natich gelyc saken telyc appelen (Wey  
saken onroftly dier gelyc / arbeyden / y  
sot. Overvolgelyc, vanden pro- / effly telyc  
mer p'driang dillacht achttyt d'p't Stadt  
Secretaris die ybbannig (Wab) gylbeest  
ende anders aldair gelyc / yney isten  
staent foly 101

Itely vassont Ande Andrangt sigijt by  
dats des Batendampe dely leffly desember  
1569 tusseghe die d'nyd l'edely deser  
Stadt ter f'nter d'antiv (Wey) gelyc  
saken gelyc saken gelyc saken (Wey  
Wassig in (Wey) gelyc saken (Wey) gelyc saken  
Wey Elig in g'roffanotaris ende anders  
Commisfaryen vanden f'rtogge (Wey  
Brabant op alnigly (Wey) gelyc saken  
Hedist ende misf'nter d'nyd tusseghe  
s'ntliede gelyc saken (Wab) / aldair on-  
gelyc saken (y) 16 / f'nter d'antiv / ander ander  
dat d' f'rtogge lib'alyt / v'ndt v'ndt

10/14 days





Dese geregisteract folij 60,

Iten die resolutie des artocht vanden dij  
lede neder Stadt vande dats de il enaij  
ij7i aenya adms sctand poirtel difentiaale  
dye tusseg die (Wetland) and ande di ony  
naticy go dact fadd tely affidnd may  
schand ony tely dya godaly / adbaerly y  
lot vradvolgely vrand fpro r effe tely  
and p dinary dillact abtyt dyle Stadt  
Beynotarib die ybbannly adba gubbeest  
and ande aldair gerucht yney isten  
staend folij 10i

Iten varront and andvragt ingijt by  
dats des Batendage dely leste des dember  
ij69 tusseg die dnyo lede dyle  
Stadt ter fute dactiw may fadnd  
siele yggelyt may foneu fadnd may  
Baffig may Baffel (mr) vobilly  
may Elig may pnotarib and ande  
Commiffarib vande fctogge may  
Brabant of alnigly (woer) nundly  
thdyt and miste fane dyle tusseg  
fynliede go dact adba / ande aldair ony  
genochupt by it / fonsidnd ande ande  
dat dyle fctogge liberaly t vord vada

0/14 days

Dese geregisteract folij 60,

Iten die resolutie des artocht vanden dij  
lede neder Stadt vande dats de il enaij  
ij7i aenya adms sctand poirtel difentiaale  
dye tusseg die (Wetland) and ande di ony  
naticy go dact fadd tely affidnd may  
schand ony tely dya godaly / adbaerly y  
lot vradvolgely vrand fpro r effe tely  
and p dinary dillact abtyt dyle Stadt  
Beynotarib die ybbannly adba gubbeest  
and ande aldair gerucht yney isten  
staend folij 10i

Iten varront and andvragt ingijt by  
dats des Batendage dely leste des dember  
ij69 tusseg die dnyo lede dyle  
Stadt ter fute dactiw may fadnd  
siele yggelyt may foneu fadnd may  
Baffig may Baffel (mr) vobilly  
may Elig may pnotarib and ande  
Commiffarib vande fctogge may  
Brabant of alnigly (woer) nundly  
thdyt and miste fane dyle tusseg  
fynliede go dact adba / ande aldair ony  
genochupt by it / fonsidnd ande ande  
dat dyle fctogge liberaly t vord vada

13/14 day

Dese geregisteroot foly 60,

Itely die resolutie andt arrendt vanden dijst  
leeds deser Stadt vanden dats den 11 maij  
1571 aenyaende soken poirtelc differentiael  
dye tusschen die Westindien ende die oer  
naticy verdoest saken telyt appelen may  
soken onroestlyc dyc geadelyc / arbauerlyc /  
sok vradvolgelyc vanden soken offelc telyc  
andt soken dillact soken dats deser Stadt  
Secretaris die vobannus soken gubbeest  
andt anders aldair gendert yney isten  
staend foly 101

Itely varendt andt andrangt sigt by  
dats des Batendamys dyc leestlyc desember  
1569 tusschen die dyncs leedlyc deser  
Stadt ter soken dentic may soken  
soken offelc may soken soken may  
soken may soken soken soken soken  
may soken soken soken soken andt anders  
Commisfaritlyc vanden soken soken may  
Brabant op delyc dyc soken  
soken andt soken soken dyc soken  
soken soken soken soken aldair onroest  
soken soken soken soken andt anders  
dats dyc soken soken soken soken

Dese geregisteroot foly 60,

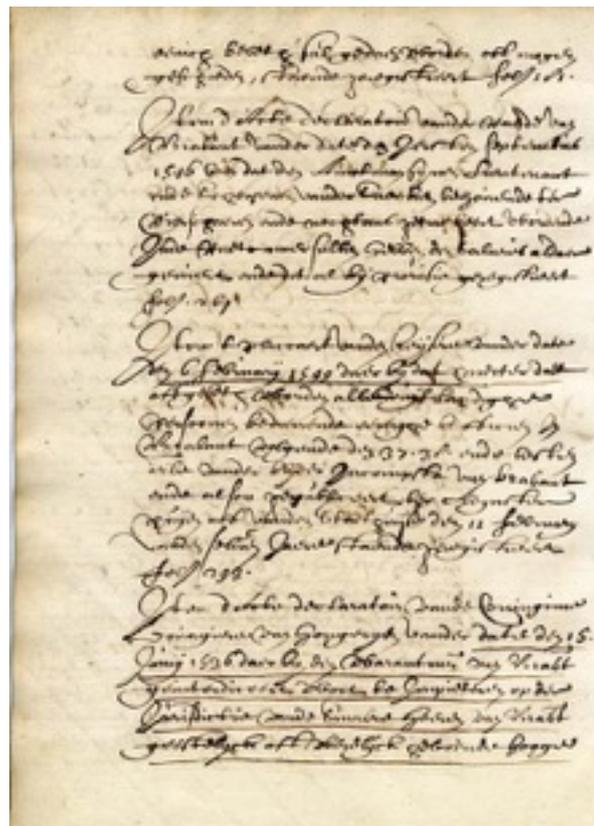
Itely die resolutie andt arrendt vanden dijst  
leeds deser Stadt vanden dats den 11 maij  
1571 aenyaende soken poirtelc differentiael  
dye tusschen die Westindien ende die oer  
naticy verdoest saken telyt appelen may  
soken onroestlyc dyc geadelyc / arbauerlyc /  
sok vradvolgelyc vanden soken offelc telyc  
andt soken dillact soken dats deser Stadt  
Secretaris die vobannus soken gubbeest  
andt anders aldair gendert yney isten  
staend foly 101

Itely varendt andt andrangt sigt by  
dats des Batendamys dyc leestlyc desember  
1569 tusschen die dyncs leedlyc deser  
Stadt ter soken dentic may soken  
soken offelc may soken soken may  
soken may soken soken soken soken  
may soken soken soken soken andt anders  
Commisfaritlyc vanden soken soken may  
Brabant op delyc dyc soken  
soken andt soken soken dyc soken  
soken soken soken soken aldair onroest  
soken soken soken soken andt anders  
dats dyc soken soken soken soken





# Experimental Proof: 80°C, 50% RH



aminc beatt & sal godes woerden, oft maget,  
ghe godes, / Franck yonghe lichte soel 101.

Item d'elcke declaratoir vander Stads Vre  
Abraham vander date des Jers ten septembel  
1546 wils dat des Amptman by me. Sintermant  
vnd d'le geynre vander Castele bezijnende ten  
Wijck gans vnde moeghant ghetraffheit vborvnde  
Jude stede omme sulke gelyc, die kaluut adare  
geincet vnde d'ol by p'romis geygheficht  
soel 267.

Item d'elcke declaratoir vander Keijser vnder date  
des 6 february 1599 dars by dat conctie datt  
athy oft & alvond, alle dinghe las dygent  
persoon, bedumende vnges & theng by  
Abraham vander date des 37. 31. vnde wils by  
arlic vander stede Quompta vuy Abraham  
vnde also geygheficht by theng ten  
gelyc vnt vander Stede gelyc des 11 february  
vander stede Jure Franck yonghe lichte  
soel 293.

Item d'elcke declaratoir vander Keijser  
Keijser vnder date des 15  
Jany 1536 dars by des Abraham vnt vuy v'raab  
gint vnder vnt v'raab, so Impittorie op die  
Jurisdiction vnde v'raab gelyc, vuy v'raab  
gint v'raab oft v'raab gelyc v'raab

aminc beatt & sal godes woerden, oft maget,  
ghe godes, / Franck yonghe lichte soel 101.

Item d'elcke declaratoir vander Stads Vre  
Abraham vander date des Jers ten septembel  
1546 wils dat des Amptman by me. Sintermant  
vnd d'le geynre vander Castele bezijnende ten  
Wijck gans vnde moeghant ghetraffheit vborvnde  
Jude stede omme sulke gelyc, die kaluut adare  
geincet vnde d'ol by p'romis geygheficht  
soel 267.

Item d'elcke declaratoir vander Keijser vnder date  
des 6 february 1599 dars by dat conctie datt  
athy oft & alvond, alle dinghe las dygent  
persoon, bedumende vnges & theng by  
Abraham vander date des 37. 31. vnde wils by  
arlic vander stede Quompta vuy Abraham  
vnde also geygheficht by theng ten  
gelyc vnt vander Stede gelyc des 11 february  
vander stede Jure Franck yonghe lichte  
soel 293.

Item d'elcke declaratoir vander Keijser  
Keijser vnder date des 15  
Jany 1536 dars by des Abraham vnt vuy v'raab  
gint vnder vnt v'raab, so Impittorie op die  
Jurisdiction vnde v'raab gelyc, vuy v'raab  
gint v'raab oft v'raab gelyc v'raab

winck beatt & sal godes vordere, oft meger,  
gode godes, / Ende godes tucht soel 101.

Item d'elke declarator vander Stadt van  
Brabant vander date des Jers ten septembel  
1546 dat des Antwaerpen, Pratermant  
vnd d'le godes, vander Cateche beginnende te  
d'wys godes vnd moeghant godes tucht vborinde  
Jude stude omme sulke godes, die baluut adant  
godes vnd d'le by godes godes tucht  
soel 267.

Item d'elke declarator vander Cateche vander date  
des 6 february 1549 dat by dat Conclie dat  
at godes & godes, alle godes tucht  
godes, beduende vnges d'elke by  
Brabant vnges des 37. 31. vnd d'le by  
vnd d'le vnder godes godes van Brabant  
vnd al so godes tucht by godes tucht  
godes vnd vnder, stad godes des 11 february  
vnder, godes godes godes tucht  
soel 293.

Item d'elke declarator vander Cateche  
vander date des 15  
Janij 1536 dat by des vnder die van  
godes tucht vnd d'le vnder, de godes tucht op die  
godes tucht vnder godes godes van Brabant  
godes tucht oft d'elke godes tucht godes

winck beatt & sal godes vordere, oft meger,  
gode godes, / Ende godes tucht soel 101.

Item d'elke declarator vander Stadt van  
Brabant vander date des Jers ten septembel  
1546 dat des Antwaerpen, Pratermant  
vnd d'le godes, vander Cateche beginnende te  
d'wys godes vnd moeghant godes tucht vborinde  
Jude stude omme sulke godes, die baluut adant  
godes vnd d'le by godes godes tucht  
soel 267.

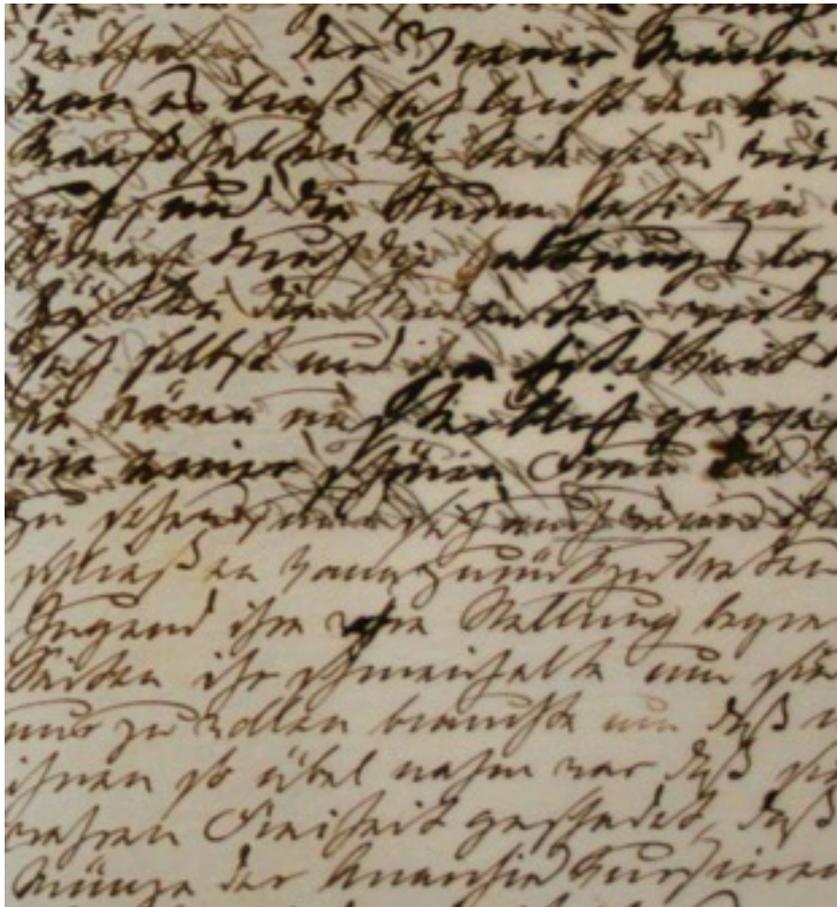
Item d'elke declarator vander Cateche vander date  
des 6 february 1549 dat by dat Conclie dat  
at godes & godes, alle godes tucht  
godes, beduende vnges d'elke by  
Brabant vnges des 37. 31. vnd d'le by  
vnd d'le vnder godes godes van Brabant  
vnd al so godes tucht by godes tucht  
godes vnd vnder, stad godes des 11 february  
vnder, godes godes godes tucht  
soel 293.

Item d'elke declarator vander Cateche  
vander date des 15  
Janij 1536 dat by des vnder die van  
godes tucht vnd d'le vnder, de godes tucht op die  
godes tucht vnder godes godes van Brabant  
godes tucht oft d'elke godes tucht godes





# What we have learned



Ink corrosion is limited to areas where ink and paper are in close contact

Damage prognosis instead of condition rating

Water and improper handling are the 2 major risk factors

Advise: Keep objects dry (under 65% RH) and handle them well

No preventive active treatment is needed





# Acknowledgement

This project is a contribution to the joint paper conservation research program of three Dutch national institutions: Instituut Collectie Nederland (ICN), Nationaal Archief (NA) and Koninklijke Bibliotheek (KB), coordinated by Bureau Metamorfoze.

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Zeeuws Archief Middelburg  
University Library Leiden

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Instituut Collectie Nederland  
Ministerie van Onderwijs, Cultuur en  
Wetenschap

THE INK CORROSION CHAPTER

# Back to the Future

Frank Ligterink  
Birgit Reissland  
Claire Phan Tan Luu  
Norbert Ligterink

March 2010

