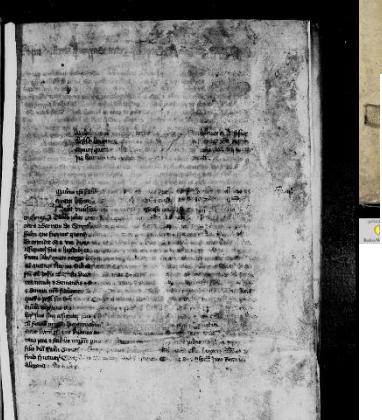




The Rest of the Story

Manuscript Fragments, Reused in Bindings, as Untapped Genealogical Sources

Opportunities for Family History and Manuscript Studies to Easily Provide Information for One Another, All with the Help of Machine Learning



Keith PRISBREY (FS Missionary)
David BLACK (FS Volunteer)
Family History Technology Workshop



27 February 2024

Check Current Version

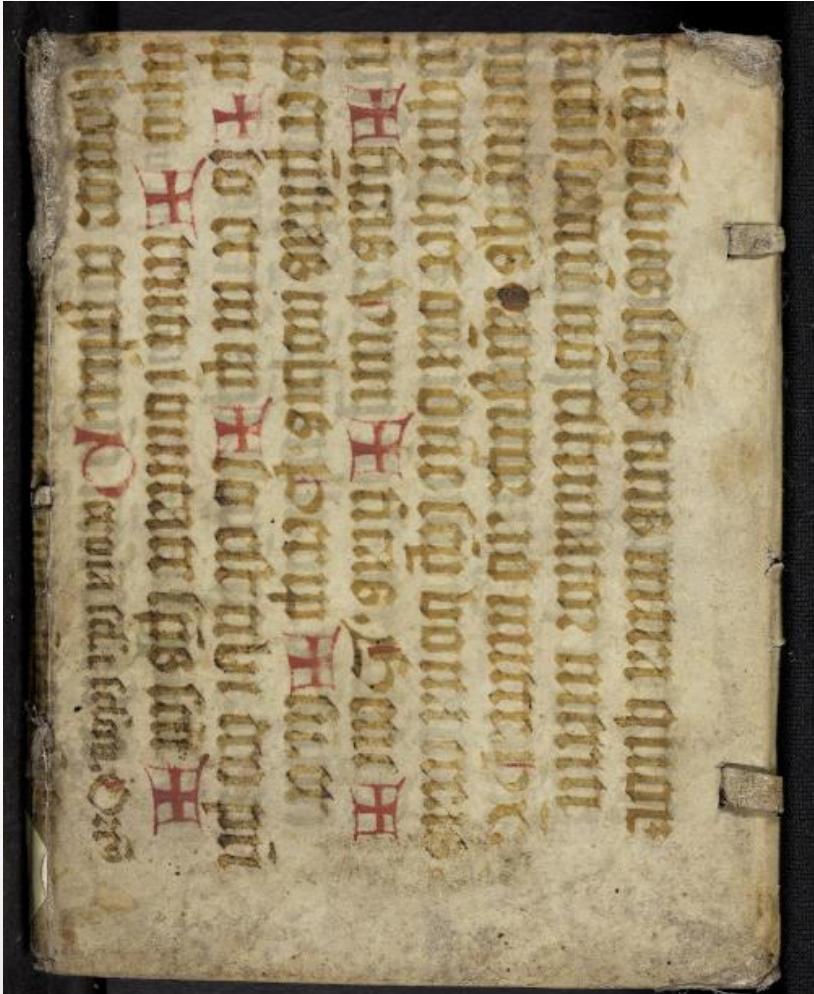
- The most current version of this **presentation** (the one now being given at FHTW 2024) can be found at Dave's Google Drive – shortlink
bit.ly/dk_rmf_pres
That's PDF.
- You can get the same place by scanning the giant QR code.



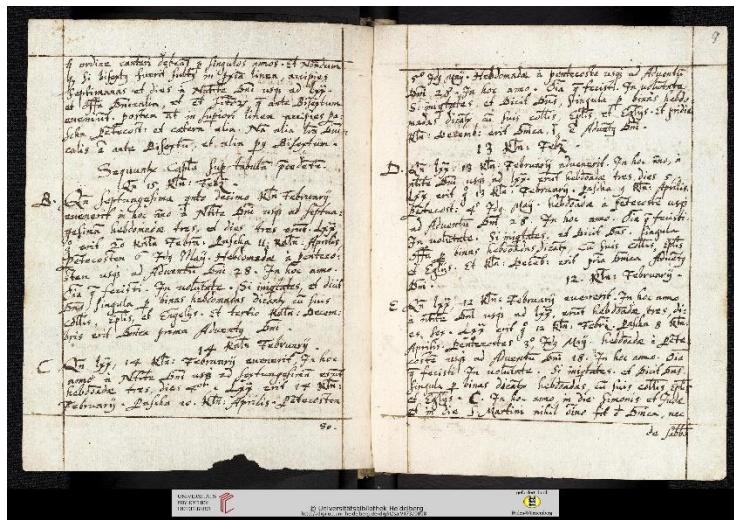
For the **paper**: **bit.ly/dk_rmf_paper** ; QR code in **backup slides**

Quick Taste

- To give you some idea what we're looking at, here



- Front cover/binding of a work, specifically a manuscript, called *Ordinarium cisterciense*, 17th century
- Cover is part of a completely different work – an unnamed missal from ~14th century

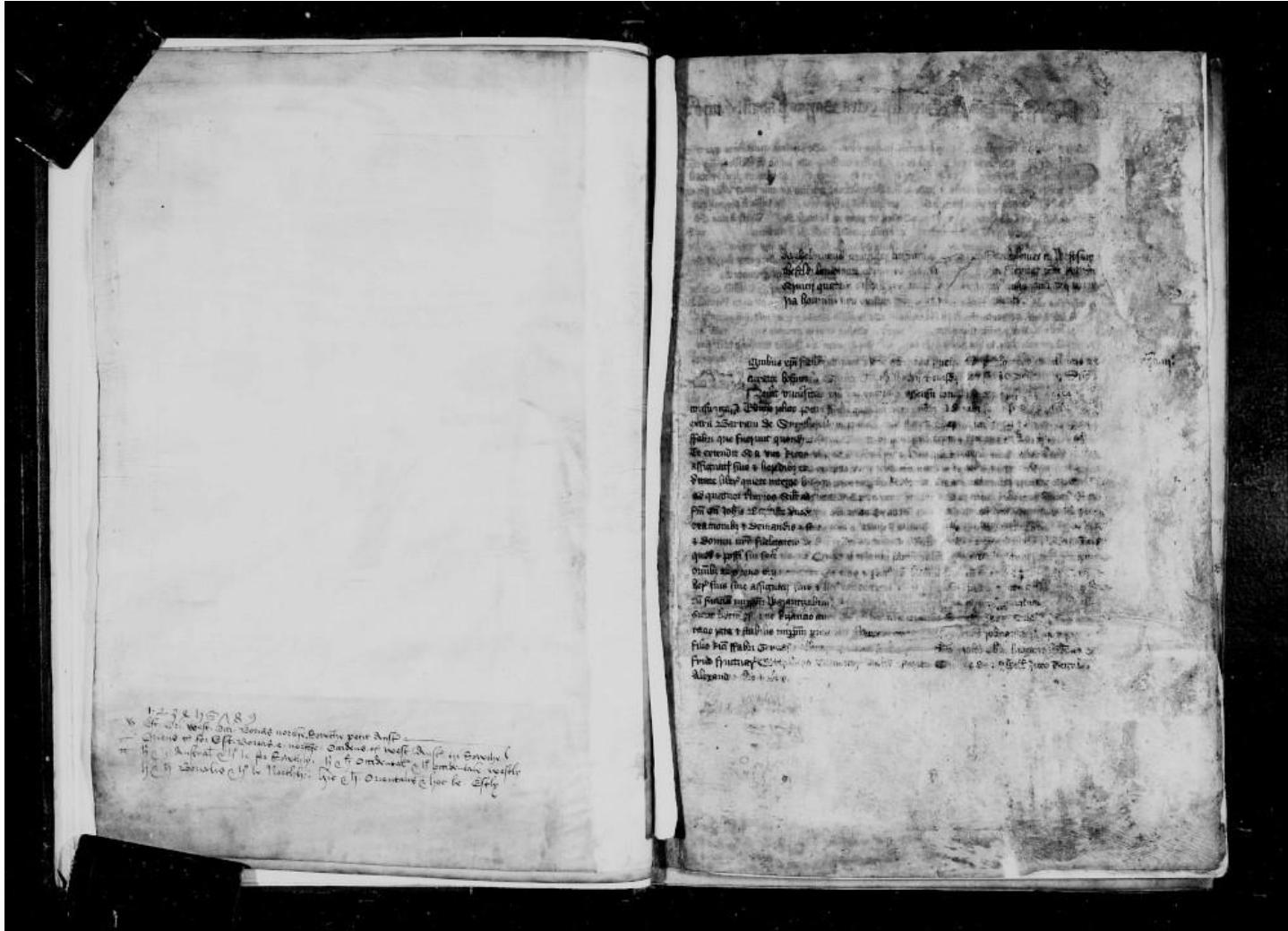


Quick peek inside →

3



Quick Taste

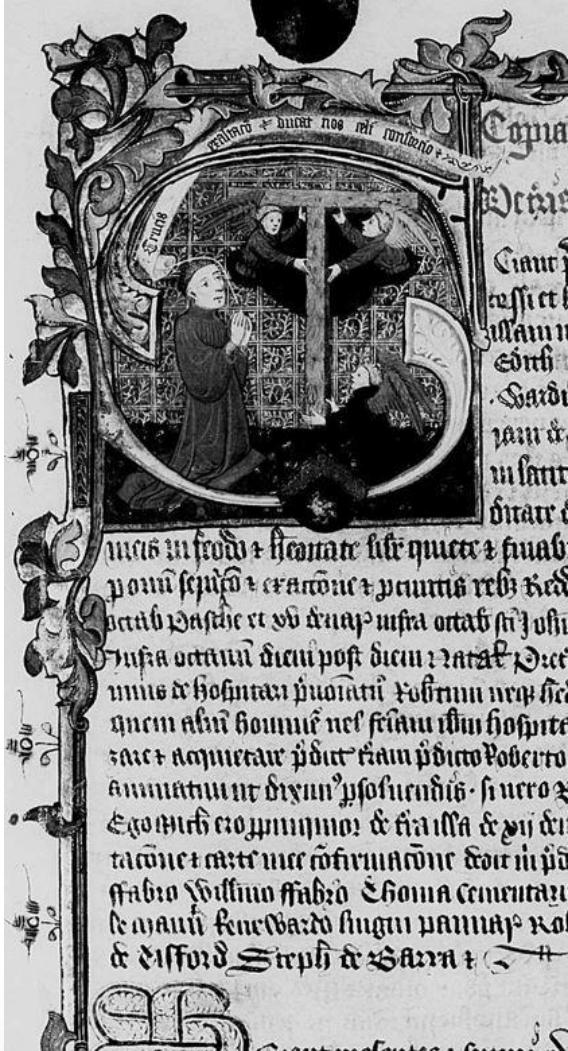


- Flyleaf (protective last page) from a London hospital's register of lands and privileges granted by charter; In FamilySearch collections



Quick Taste

Ff. 94 and 474 have illuminated borders and initials depicting the adoration of the Cross,

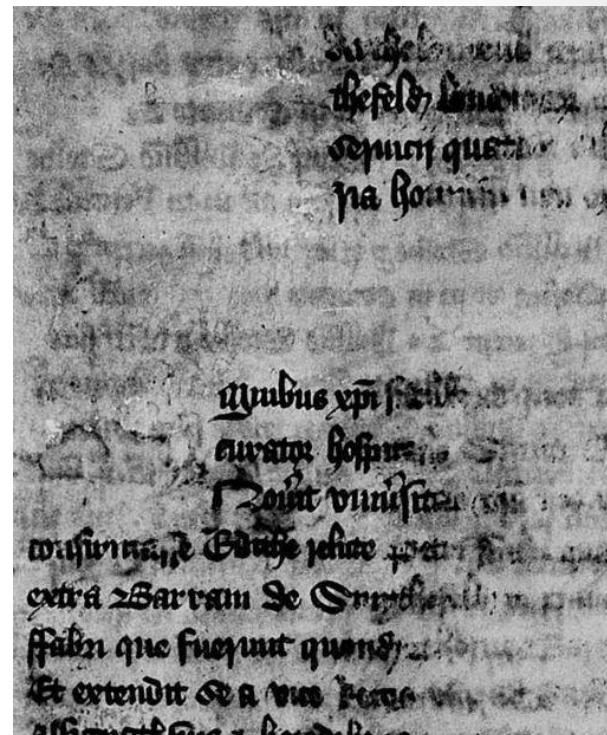


Not binding, but gold (or maybe silver)
Basically, just a really cool tangent

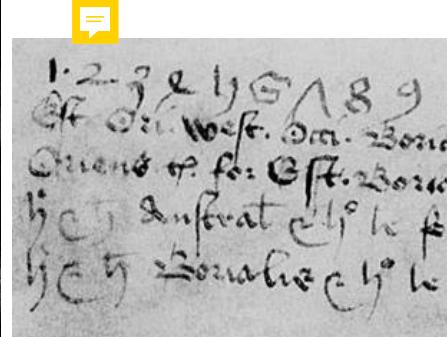
Interior page



LHS Flyleaf close-up



RHS Flyleaf close-up



TL;DR (Too Long; Didn't Read)

Three Main Points with a Plus-one and a Possible Bonus

1. Vast source of information in images of bindings on old books
 - * Includes genealogically-relevant data
 - * Previously found manually by practitioners of Manuscript Studies
 - probably long grad-student hours
 - not focused on gathering genealogical data
 - searches seem confined to university and state libraries
 - searches *haven't looked in genealogical databases*

TL;DR (Too Long; Didn't Read)

Three Main Points with a Plus-one and a Possible Bonus

2. Our Machine Learning Model can effectively find these data – we call them Reused Manuscript Fragments – from huge databases of document images, genealogical or otherwise

TL;DR (Too Long; Didn't Read)

Three Main Points with a Plus-one and a Possible Bonus

2. P.S. We have 43.8k files with document images relevant to this search (and similar ML searches to be discussed in the bonus)
 - * Carefully found and curated to focus on Reused Manuscript Fragments in bindings (and on the similar ML searches)
 - * Includes positive examples as well as negative, but care has been taken to include negative images very similar in all details to the positive examples but of course without text on the binding material
 - * Time only allowed the use of ~5k–10k of these images ...



TL;DR (Too Long; Didn't Read)

Three Main Points with a Plus-one and a Possible Bonus

3. Potential interdisciplinary work

- * Information in the genealogical databases includes text of interest to practitioners of manuscript studies.
- * Information in the Manuscript Studies databases include text of interest to practitioners of family history.
- * Let's help each other out
 - share our interesting finds with them – happy grad students
 - ask to use our models on their databases



TL;DR (Too Long; Didn't Read)

Three Main Points with a Plus-one and a Possible Bonus

+1. Don Quixote

- * What?!?!
- * Trust me on this one
 - Volume I, Chapter IX



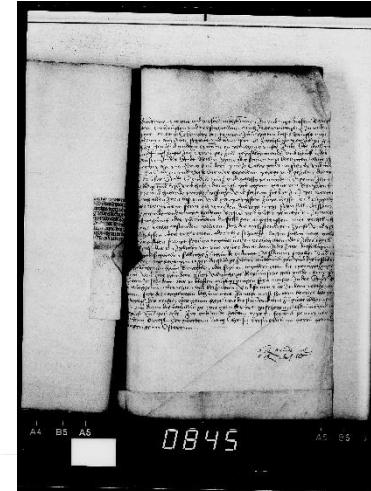
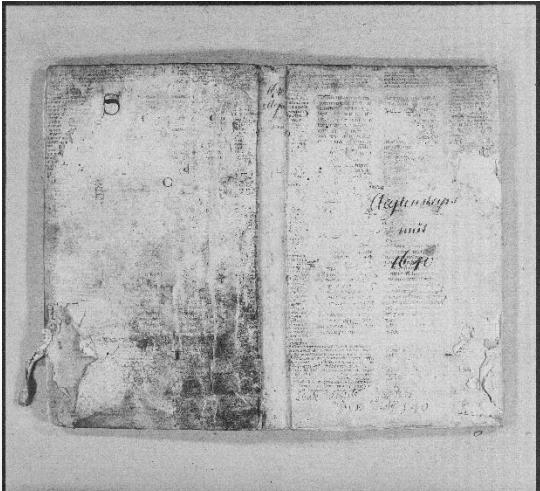
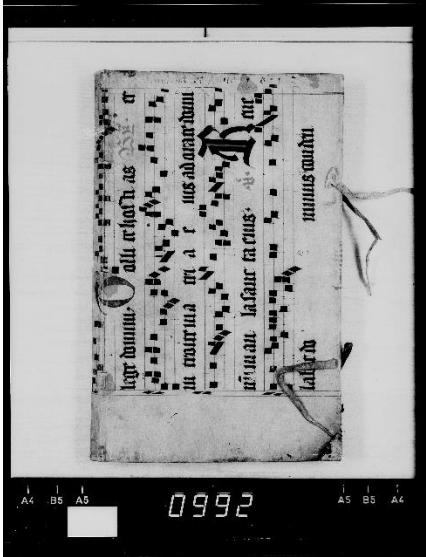
BONUS. Other relevant use cases for such a procedure

(10)

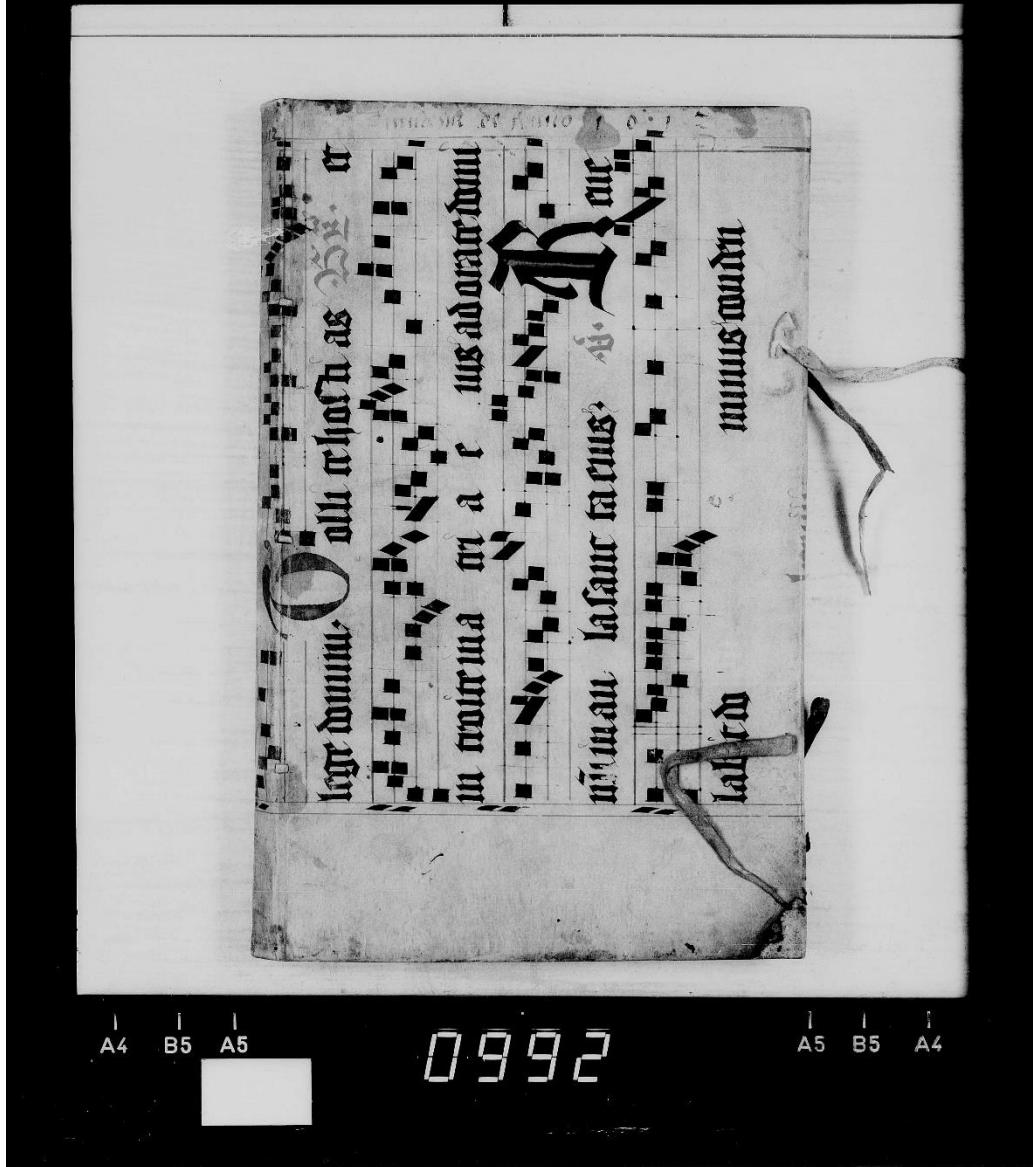
FH
TW

Some Reused Manuscript Fragments:

- We'll learn what we can find and why it even exists



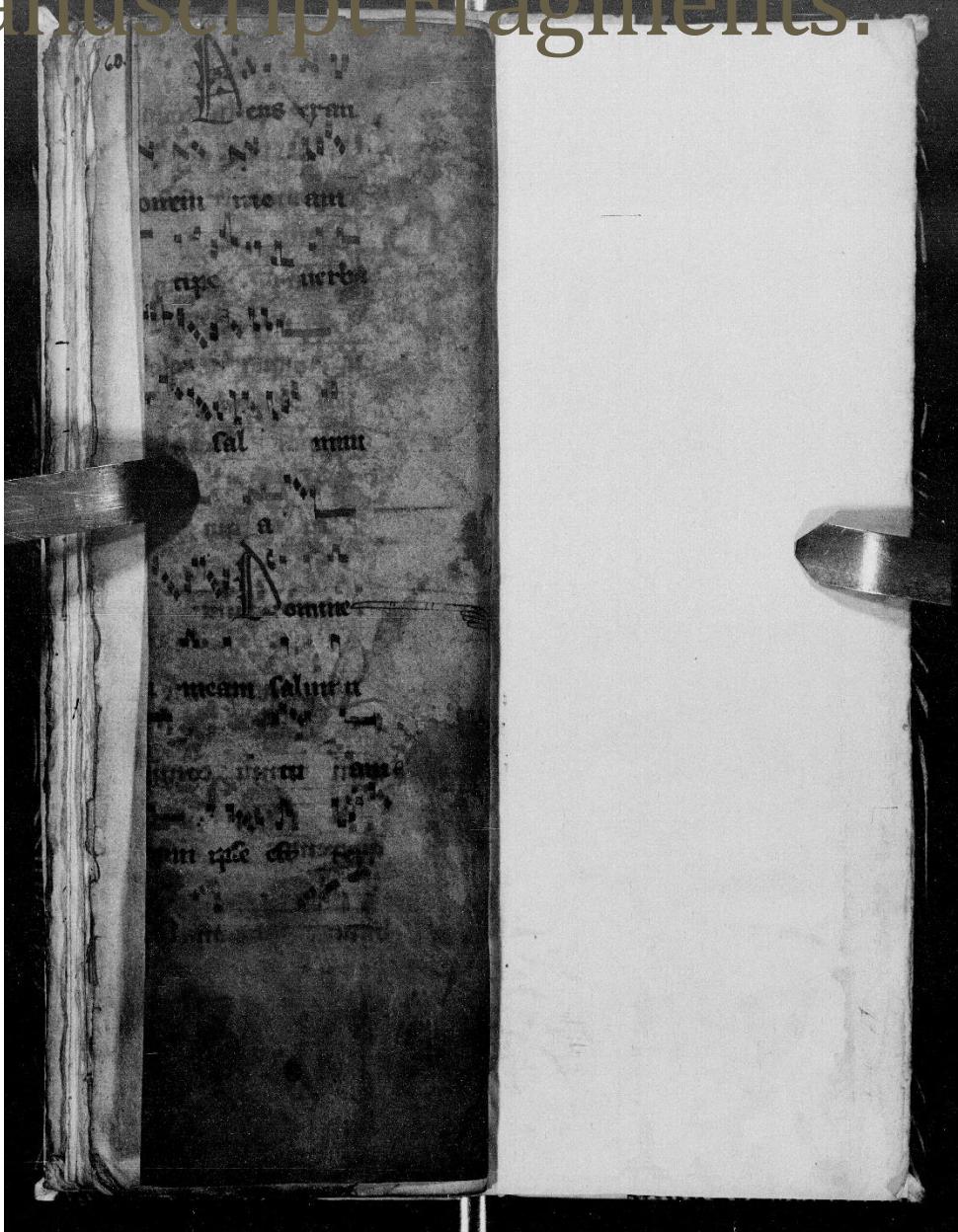
Some Reused Manuscript Fragments:



Some Reused Manuscript Fragments:



Some Reused Manuscript Fragments:



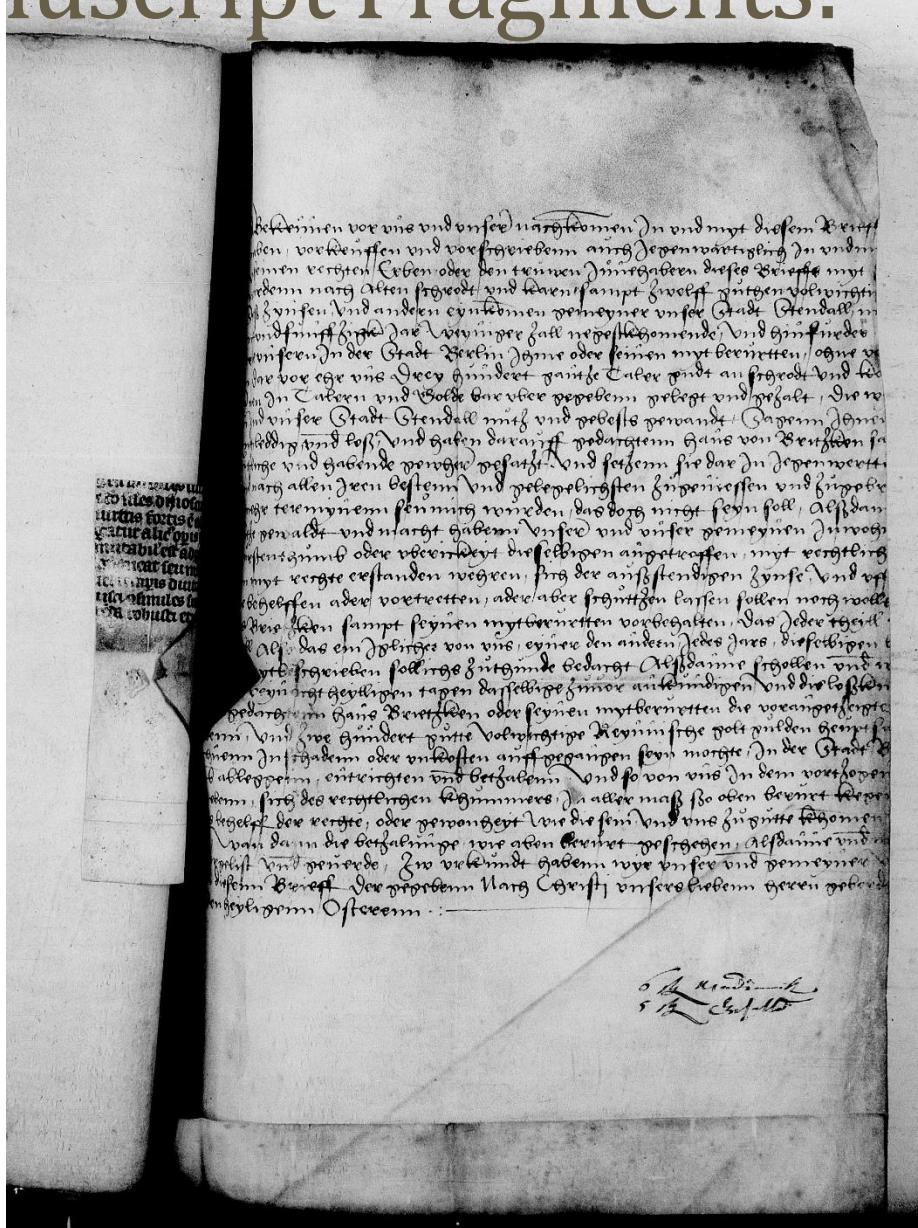
Some Reused Manuscript Fragments:



Some Reused Manuscript Fragments:



Some Reused Manuscript Fragments:

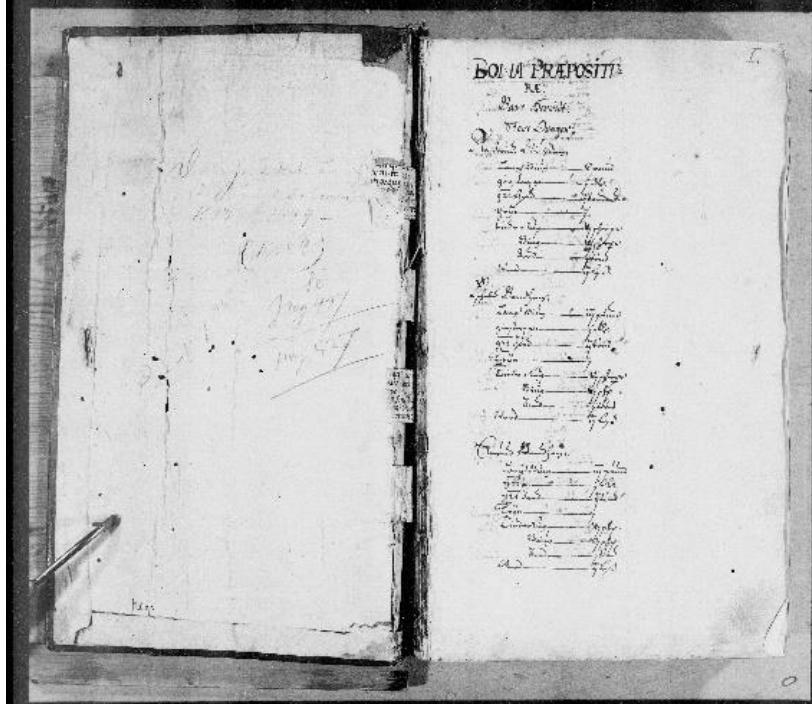
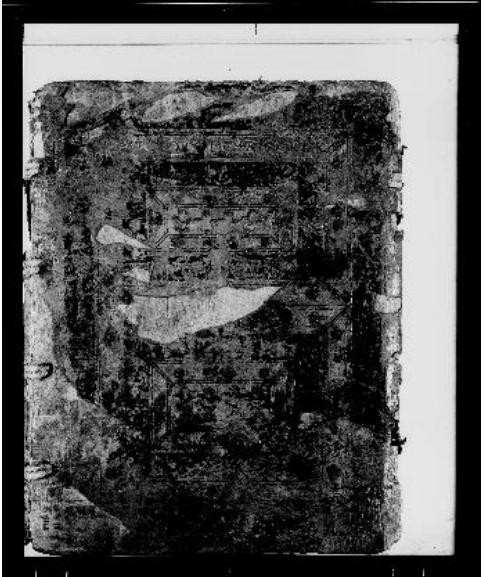


Three More Reused MS



- Look closely

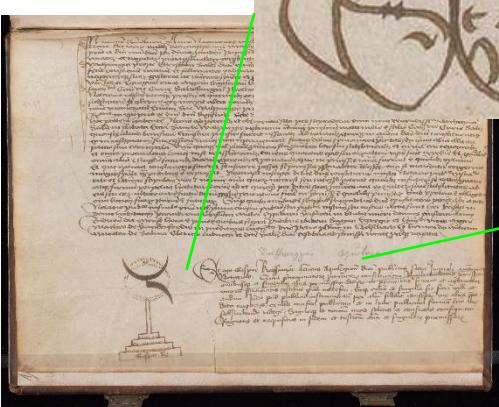
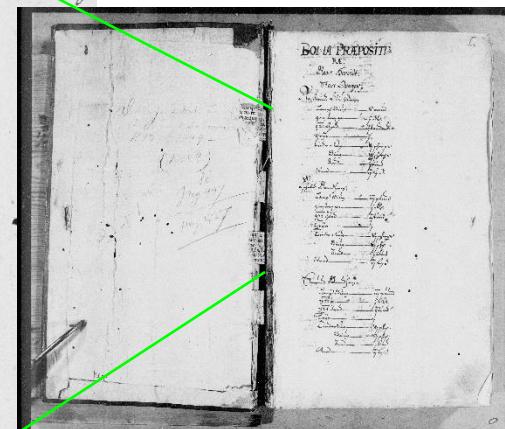
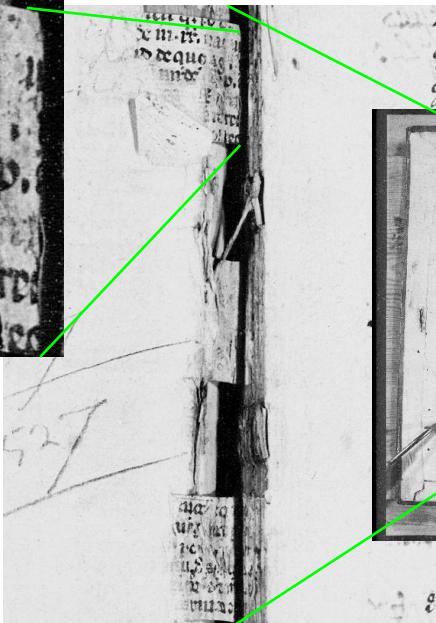
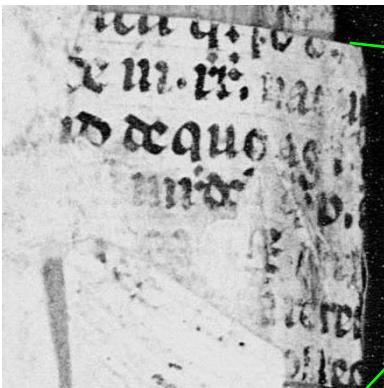
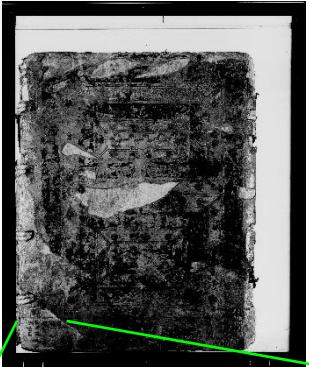
Fragments



Three More

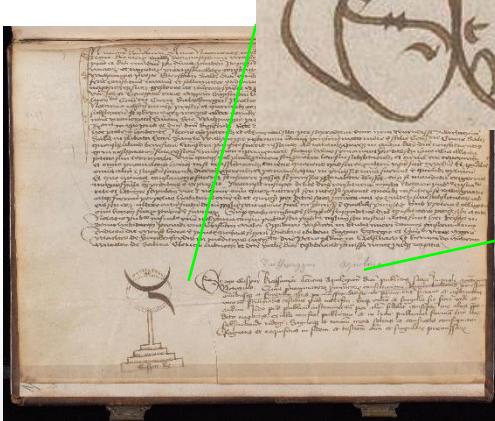
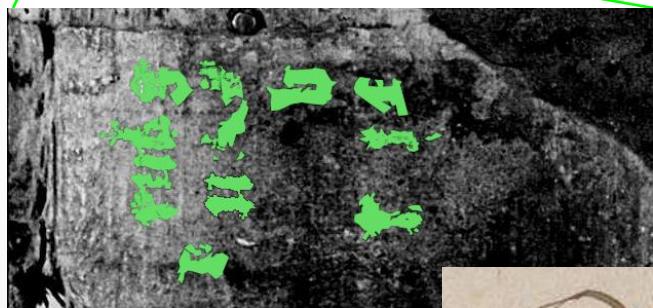
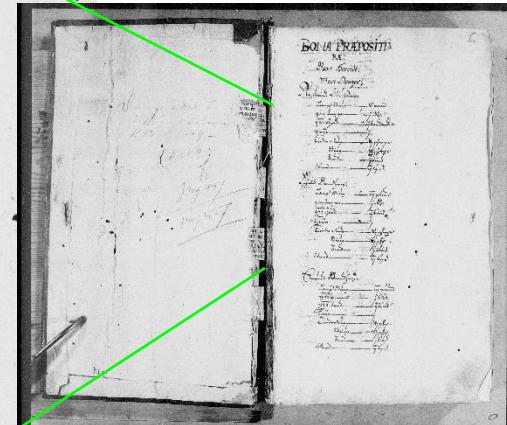
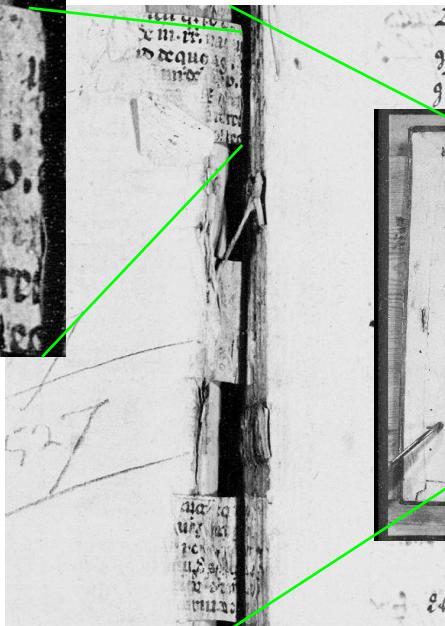
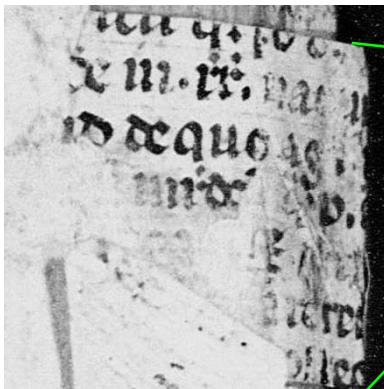
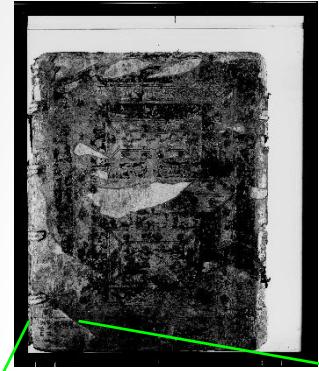


- Looking closely. You might have to look even more carefully.



*S*igis Gaspar Raffmeyer decanus aquilegiorum
Notarius. Quia pnominatori pnvatore

Three More



Et ego Gaspar Raffmeyer decanus aquilegiorum
Notarius. Quia prominatus procuratore



Define Fragment



- part of a document which has been separated from the rest.
For our purposes, this will almost always be one page, one bifolium, or one part of a page or bifolium

or, less formally

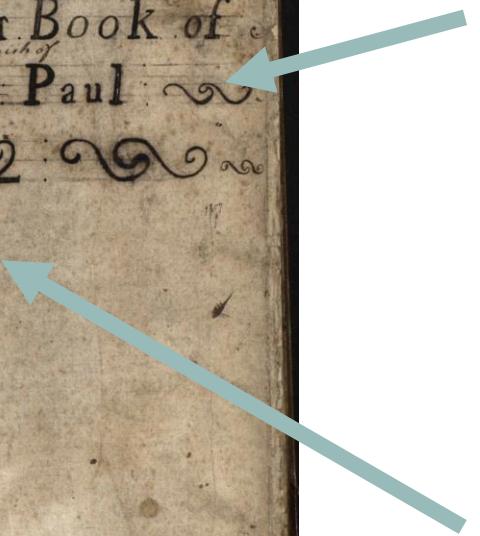
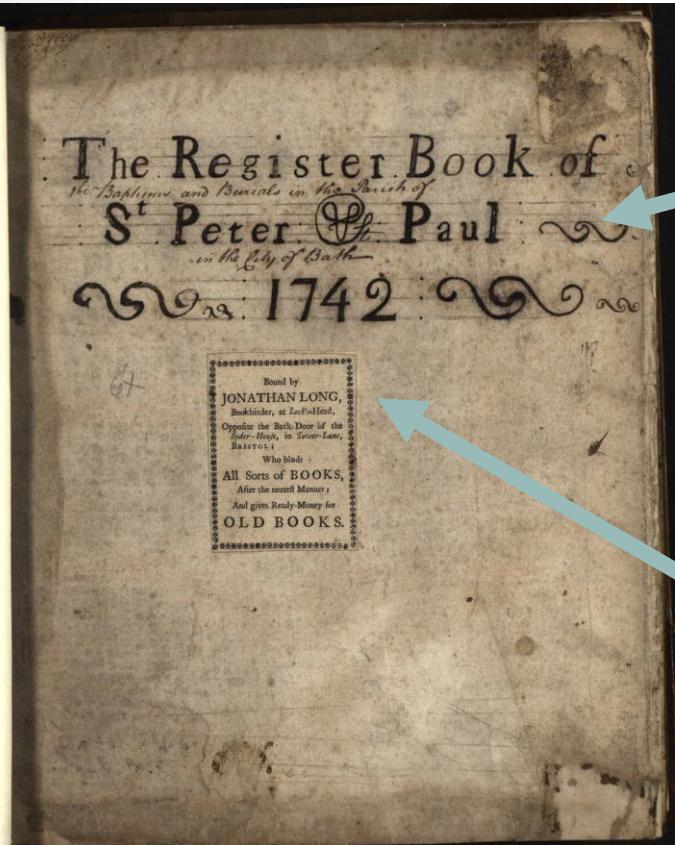
- a dismembered piece of a document

Define Manuscript



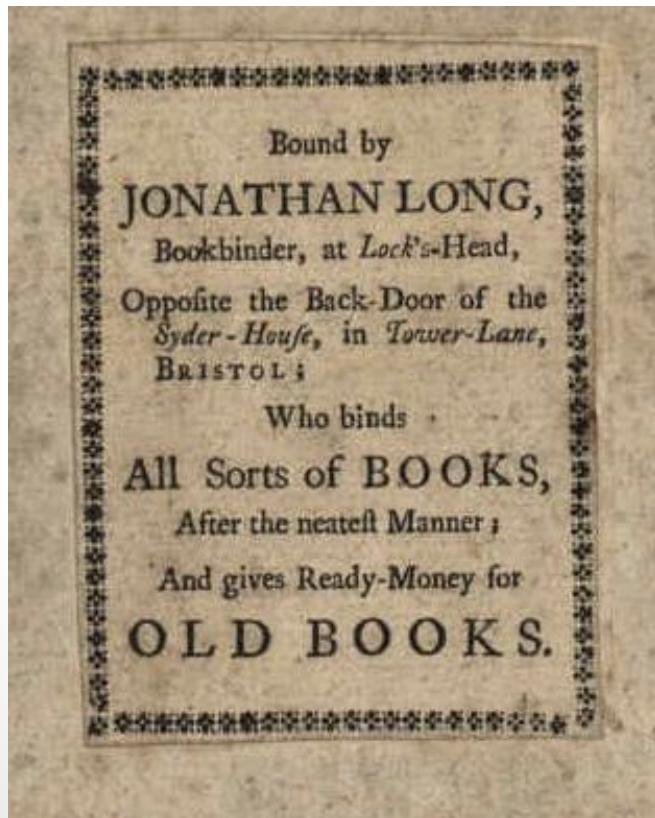
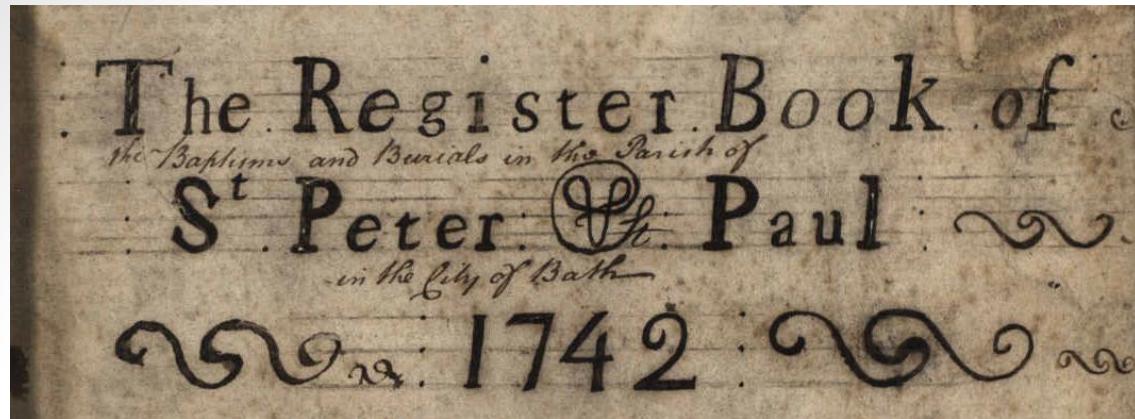
This is the manuscript part of the cover (the page is a cover).

The manuscript on this particular Register Book cover (the Register book is a manuscript) is very neat.



This is the non-manuscript part of the cover. Specifically, it's the printed part.

The printed text here is an ad.



(23)

FH
TW

Why Manuscript?



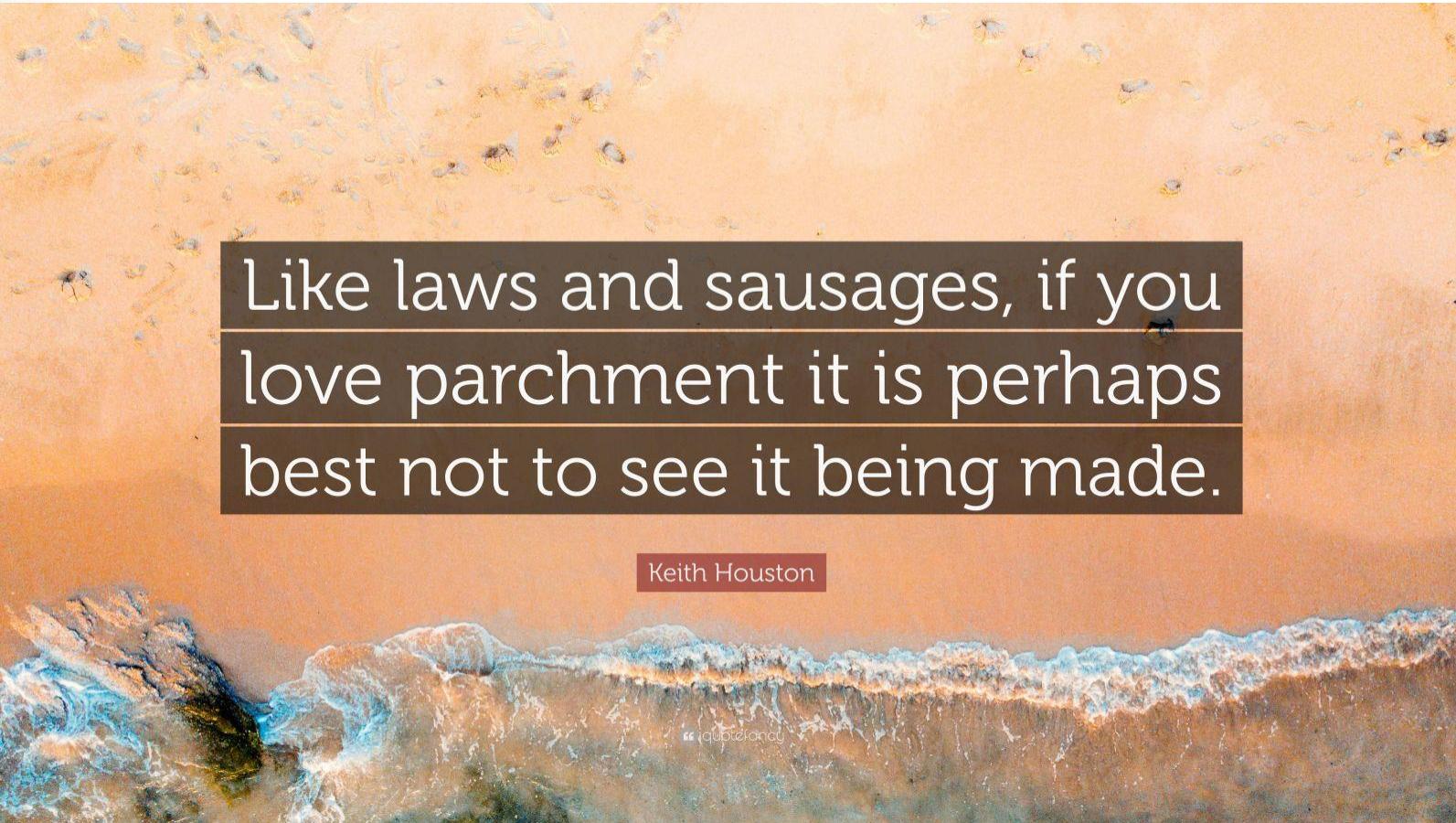
Don Quixote (?)

- There's the beginning of Don Quixote's adventures
- Narrator's aside (ChatGPT summary)

The suspenseful duel between the Biscayan and Don Quixote ends abruptly, as the narrator informs us that his initial source was missing pages. Fate intervenes in Toledo, where he finds a boy selling old, parchment manuscripts. Interesting Arabic texts and a translator are found.

- Cervantes tells us that the legendary adventures can continue; thanks to these pre-used manuscripts, we get **The Rest of the Story.**
- Let's find the rest of our ancestors' stories, and maybe it can be found "even [on] the torn pages from the streets."

Old, Parchment Manuscripts?



Like laws and sausages, if you
love parchment it is perhaps
best not to see it being made.

Keith Houston

"quotefancy"



Parchment is not Paper



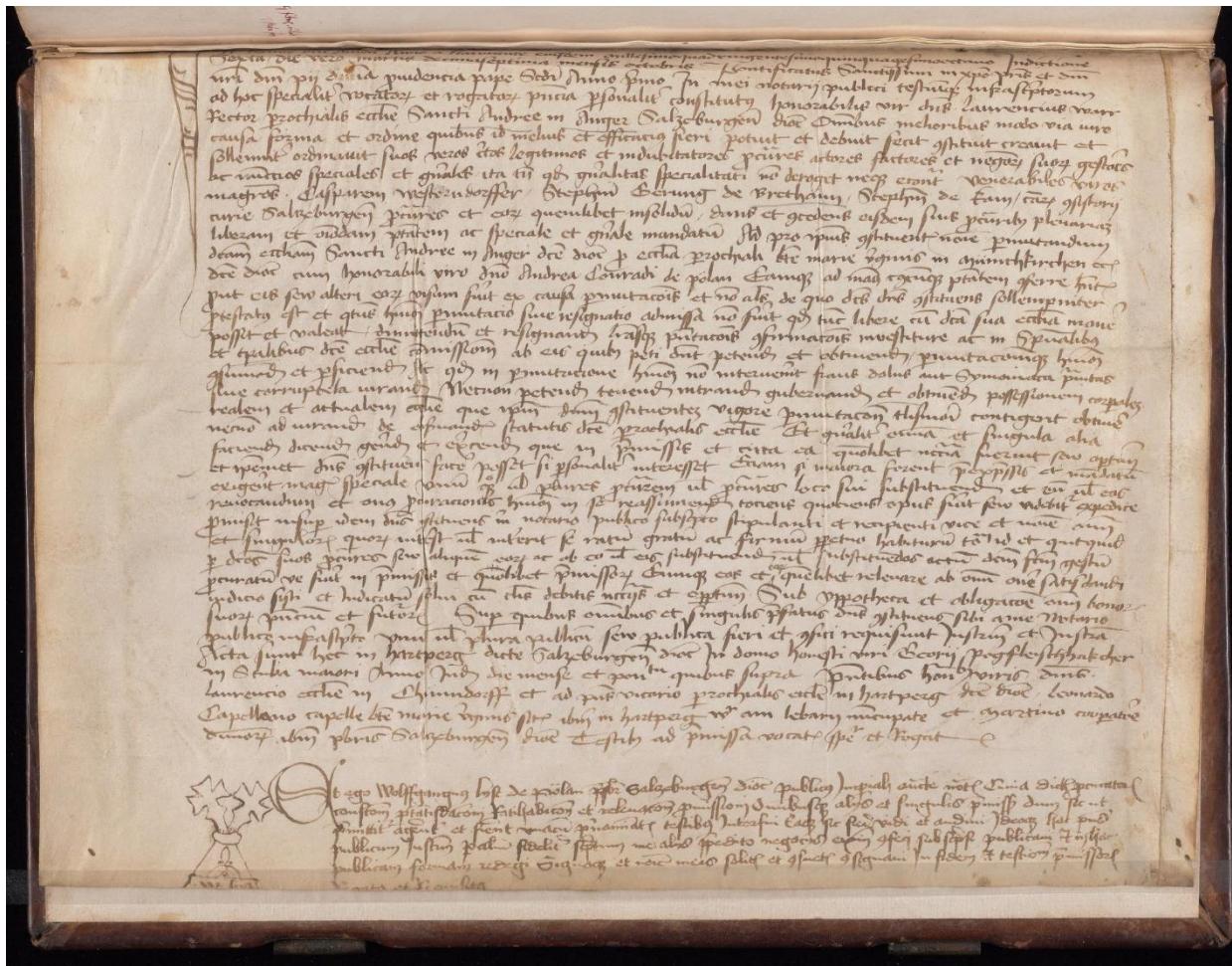
- How to say this?
- Vellum is a very nice kind of parchment.
- Veal is a very nice kind of meat.
- The meat, veal, comes from baby cows.
- The animal-skin writing surface, vellum, comes from ...
You guessed it
- Vellum comes from baby cows.
- Parchment comes from grown-up cows and sheep and goats.

Parchment is not Paper



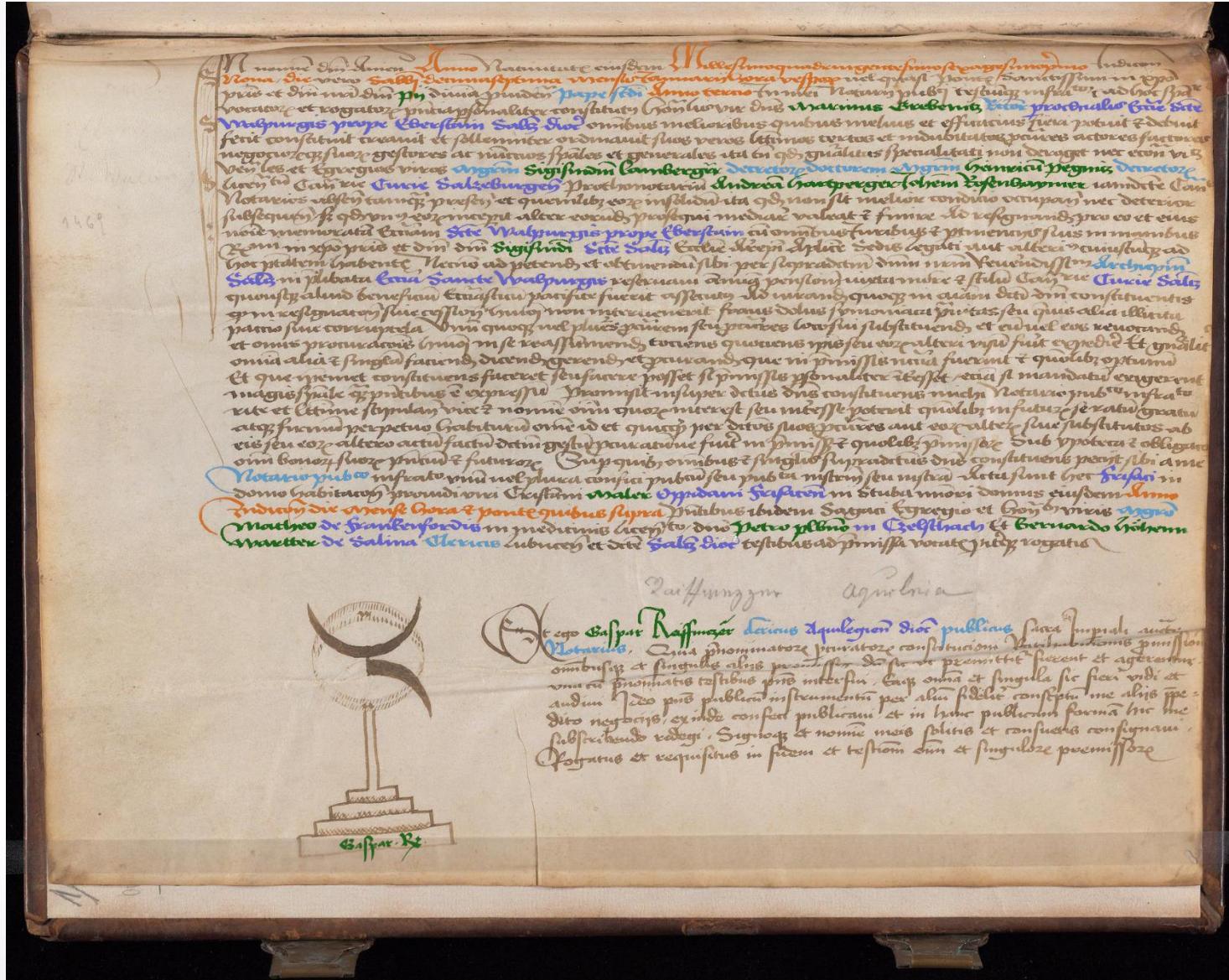
- If you've made it this far, I might as well tell you that DNA analysis on some manuscripts in a Swiss Abbey showed that seal skin was also used (at least at that particular Abbey).
- We're talking about parchment reuse, so I guess we can say these monks and book-makers were conserving animals.
Hooray!

Genealogically Relevant Info



Back flyleaf or pastedown from a MS copy of Caesar's Gallic Wars

Genealogically Relevant Info



Date

Place

Occupation or Title

Name _____

Secundum dictum **A**men. **A**mo lacunam eisdem **M**ilefus iniquitatem genere suorum reges in meos. **I**udicium
Roma die vero **S**alvatoris **C**ommunione **M**ercatorum **L**ocorum **V**erborum vel quas **R**ome **C**onstitutum in **E**piscopis et **d**omi **m**odificis **P**ro*cur*is **D**ivina prouiderat **P**apa **F**elix **A**mo **C**etero **T**unc **N**atura **P**ubli **T**estimoniis **I**nseparabili **C**ad hoc **S**edate
Vocatur et **R**egatur **C**ontrarymaliter **C**onsulatus **G**eneralium **D**e **M**aximus **E**cclesiasticus **P**rocurator **B**eaute **S**ane
Smagistris **P**apae **E**berstein **S**alz **D**ic **L**ombardis **M**elioribus **Q**uibuscum **M**elius et **E**fficiens **S**tea potuit et debuit
ferre **C**onsulatus **T**rauerit et **S**olemner **O**rdinatus **S**uos **V**ero **L**itteras **T**extos et **M**andibulatus **P**ueros **A**ctores **F**actores
Negotiorum **S**toriarum **G**estiores ac **M**ilitares **S**patiales et **G**enerales ut in **qd** **Q**ualitate **S**pecialitate non deroget nec econtra **V**eritas
Diversas et **E**tymologias **V**eritas **A**nglicum **S**igismundum **C**anbergensem **D**ecretorum **A**nglicum **H**annibal **P**egnae **D**ecretorum
Canbergensem **C**anis **C**anis **S**alzburgensis **P**rothonotarii **A**ndreas **H**artpreeger **C**lohem **E**isenbarmi **U**amonte **C**anis
Notariorum **C**ulterum **T**anquam **P**resbiteri et **Q**uenilibet **E**ccl^{esi}astis **M**isericordia **I**ta **qd** **N**on sicut **M**elior **C**onorno **D**icapani nec **D**eterior
Subsequitur **S**ed **Q**uod non **E**ccl^{esi}astis **A**ltius **E**ccl^{esi}astis **P**rotagori **M**edie **V**aleat et **Fuisse **A**le **R**es grandis **P**ro eo et eius
Non memorata **E**cclesia **S**ite **M**agistrorum **P**rope **E**berstein **C**ui **O**mnibus **S**uicibus et **P**rimogenitis suis in manibus
Ecclesie in **E**piscopis et **d**omi **d**omi **S**igismundi **C**ite **S**alz **E**ccl^{esi}astis **A**ptice **S**edes **C**egiti aut **A**ltius **C**onsulatus ad
Hoc **M**atteri **H**abente **N**atura ad **P**etendit et **O**btemperantur **S**ibi per **S**uperadditum **d**omi **m**ini **Reuendissimi **S**alz** **A**ctuorum **S**alz
Salz in **P**lumbatu **E**cclesia **S**ante **M**agistrorum **R**eservacioni **A**ccordis **P**ensionis **U**ita **M**ore et **S**tilus **C**anis **C**anis **C**anis **S**alz
Quoniam alius **B**eneficii **E**ccl^{esi}astii **P**arifice fuerit **A**ssistens **A**ld **M**irandus **Q**uod in **C**anam **d**omi **d**omi **C**onsulantis
Sep*tem*bris **G**loriarum **S**uiccessorum **I**nuo non **I**ntervenient **S**icut **D**olus **S**onoratus **P**rietas seu **Q**ui **C**ilia illuc
Primo **S**uic **C**onvicta **D**omi **Q**uod non **P**lures **G**randis **S**eu **P**arvulus **C**onstituent, et **C**uidat **E**ccl^{esi}astis **R**enovanda
Et **O**mnis **P**romulgatio **I**nuo in se **R**eassumenda **E**ccl^{esi}astis **Q**uoniam ipsa **S**eu **E**ccl^{esi}astis **R**alteri **q**uo **f**uit **E**xpedie **E**t **Q**ualitas
Omnia **A**lia et **S**ingula **S**uare, **D**icendo **G**erendo, et **P**arvando que in **P**romulgatione **s**uerint et **Q**uilibet **O**ptimum
Et que **q**uenet **C**onstituens **f**aciat **S**eu **S**uare posset **S**ic **P**romulgatio **P**enalitate **I**te **s**et **E**cclesia **S**ic **M**andatis **E**xigent
Magistris **H**abere **q**uod **P**rohibitus est **E**xpresso **P**romulgat insuper dictis **D**omi **C**onstituentis **M**odis **N**otario **P**ublio **C**onstatato
Rite et **L**itteris **S**ignificatiis et nomine **O**mni **Q**uod intereat **S**eu **M**ercede **P**otest **Q**uilibet **I**nfusor **S**eruato **G**ratia
Aut **S**icut **F**ormis **P**erpetuo **H**abituum **O**ne id et **q**uod per dictis **S**uicprocessus aut **E**ccl^{esi}astis **E**st **S**uic **S**ubstitutus ab
Ries **S**eu **E**ccl^{esi}astis **A**ltius **A**ctus **F**actus **D**icitur **G**estib^{us} **I**nterventione **f**uit in **P**romulgatione **q**uodlibet **P**rimis **S**ecundis **D**ub **V**otato et **O**bligato
Omnibus **S**uicprocessus **P**rohibit et **F**uturo **S**up*er* **Q**uibus et **S**ingulis **S**up*er*dictis **D**omi **C**onstituentis **P**arcent **S**ibi **A**me
Notario **P**ublico **I**nficato **V**nu **N**el **P**luvia **C**onfia **P**ublio **S**eu **P**ubli **M**item **S**eu **M**ateria **A**cta sunt **h**ec **S**cripta in
Domo **H**abituallis **P**rovinciione **E**ccl^{esi}astii **M**aler **O**rdinari **S**cripta in **D**triba **M**oysi **D**omi **e**isdem **A**mo
Dicitur die **M**ense **A**go*ri* et **P**onte **Q**uibus **S**yria **N**ubibus ibidem **S**agaa **E**cclesio et **H**ec **D**omi **A**nglicus
Mathew **D**e **F**rankfordio in **M**edium **L**icentia **D**omi **P**etro **P**ellio in **C**iechbach et **B**ernardo **H**olmum
Matter **D**e **S**alina **C**lericis **S**ubiectis et **D**ictis **S**alz **D**ice **T**estibus ad **P**rimissam **V**eritatem **q**uod **R**ogatio**



Decreto Gaspari Raffiniger decanis Aquilegren dioc publinc sara impriali autem
Notariis. Quia promissatore procuratore constitucion publicam pum non
omnibusq et singulis alijs presulz de se premitte fecerent et agerant
vna et uniuersitate testibus pme interfici. Trop omnia et singula sic fieri vidi et
audim. Ideo pme publico instrumento per alii fideli conscripsi me alijs pre-
dicto negotiis exinde confit publicam et in hanc publicatione forma hic me
subscrivendo redigi. Signoq et nomine meo multis et consuectis consignari
Probatu et requisitus in fidem et testimoniū dum et singulare premissore

In nomine domini Iesu Christi anno incarnationis eiusdem Mense Maie quodam genere anno sexagesimo quinto dicitur
 Roma die vero anno 1500. Denominatio nomen eiusdem pape et deo gratias. Notarii publici in episcopatu
 eius et diu in eisdem papa et deo gratias. Notarii publici in episcopatu eius et diu in eisdem papa et deo gratias.
 Notarii et rogatores publici generaliter constituti. Nam huius dñe Maximus Grabenitz Etate procuratice fidei dñe
 Magistrus pape Ecclesiam Salz dñe omnibus melioribus quibus melius et efficiens fieri potuit et debuit
 fieri constitutit creatus et plenius ordinavit suos reuos litteras textos et indubitate piores actores factores
 negotiorum suorum gestores ac notarios publicos et generaltes ita ut in quod qualitas specialitati non deragat nec econtra
 Veritas et honestas viras regiam Sigismundum Lamberti Directorum Argent Hanoveri Regis Directorum
 locum sed Canicurie Curie Salzburgensis Procuratorum Andreae Gregorii Schenckenbavariae iudicante Canicurie
 Notarios publici tamquam preser et querilibz eoz inserviant ita quod non sit melius conditio occupari nec deterior
 subsequens si quodcumque excepit alicet eorum procuratori medietate velut et finire ad respondeant pro eo et eius
 nomine memorante etiam dñe Walpurgis pape Ecclesiam cu omnibus curibus et priuatenis suis in manus
 Eam in episcopatu et domum dñe Sigismundi Etate Salz Ecclesie decipit Sedis legatis aut alteri ramis burg ad
 hoc statim habentes. Nam ad petend et obtinend sibi per seipsum dnm memorem dñe Sigismundi Etate
 Salz in plebata Canicurie Sante Walpurgis restaurari annis pensioni uirtutum et filio Canicurie Curie Salz
 quoniam alium beneficium Ecclesiastici parvum fuerat assiduo illius uocatio quoque in eam dñm constituentis
 quoniam res ipsa sua est illius quoque non interuenient fratre dolus formulari pietatis seu quis alia illius
 patris sua corrigenda. Unum quoque vel plures pietatis suae partes locis substitutum, et adiuuare reverend
 et omnes procuratores unius in se recessum totiens quoniam ipsa seu ex parte altera ipsa fuit expedite et generalit
 omnia alia et singula facienda dicenda gerenda et prouera, que in priuilegia nostra fuerint et quilibz optimum
 Et que nemet constitutus fuerit se uscire posset et priuilegia personaliter et possit etiam si mandatis exigerent
 magistris publicis ex parteibus et expressis. Promulgat insuper deus dñe constituentis nichil. Notario publico infra te
 rite et littere stampatae nec et nomine omnium quoque inter se intercessione poterit quilibz inservire se ratu grauit
 atque summa perpetuo habituone omne id et quoque per dicos suos pietates aut eoz altere suos substitutus ab
 his seu eoz altero actu factu datum gestu pietatis fuit in priuilegio quilibz pietatis dubius pietatis et obligatio
 omnibus suorum pietatis et futurorum. Supradictis omnibus et singulis stampatibus dñe constituentis posset sibi a me
 Notario publico inservire vel plura confia publico seu publico instrumento seu instrumento litterarum hinc fidelio in
 domo habitacione prouidiori Ecclesiam malorum Oppidanum Sacrae in dubia mori dominus eiusdem anno
 Indictionis die anno 1500. Cora et ponte quibus supra dictibus ibidem Sagam Gregorio et Henr. vii regis Argent
 Mattheo de Frankfordio in predictis litteris dico Petro pleno in Cellebratis Et Bernardo Graben
 Maurer de Salina Clericus cubicularius et dico Salz dico testibus ad priuilegia vocata iudic regata



Daifungzum agnolonia
Gaffar Raffaele deus Aquilegianus dico publicus Notarius. Quia promissore procuratore constitutioni Notarii publici pietatis pietatis
 omnibus et singulis aliis pietatis de se et premitis fierent et agerentur
 vnu et promissis testibus pietatis inter se. Cup omnia et singula sic fieri vnde et
 audiun. Hodo pietatis publico instrumento per alii fideli conscripsi me alios pietatis
 pietatis negotiis exinde conscripsi publico et in hunc publicatione forma hic
 subserviendo redigi. Signo pietatis nomine meis solitis et consuetis consignari
 Rogatus et requisitus in fidem et testimoniom eum et singulare premissore

In nomine domini amen. Anno incarnationis eiusdem millesimi
 et nonagesimi sexagesimi annorum. Salle demissima mensis iunii
 prius et dñi mardi dñi p̄i dñia iudicis pape sti. anno tercii
 vocatus et rogatus p̄i personaliter constitutus. Et hoc iurum
 salzburgis prope Eberstein Salle dñi omnibus meliorib⁹
 fuit constitutus creavit et solemniter ordinavit suos venos
 negotiorumque gestores ac iuratos scilicet et generales ita
 veniles et Gregorianos viros. Argem Sigismundum Lamberti.
 Litteras ad Canonicas Tunc Salzburgenses Prothonotarium dñi
 Notariorum vel senatus tamq; presen⁹ et quamlibet eorum insidiu ita
 subsequens si qđm ex eo remept altero evocat, prelegat me
 noī memorata etiam sita. Salzburgis prope Eberstein
 anno in xpo p̄i et dñi dñi Sigismundi. Sitae Salle Ecclesie de
 hoc statim habentes, nemo ad petendit et obtinendit alibi p̄
 Salle in p̄ibatu. Etiam Sancte Walburgis reservari dñi
 quoniam aliud beneficium Ecclesiasticum parifice fuerit assentus.
 qđm resgnatorum sive cōfessorum huius non intravererit fra
 patio sive corruptela. Unde quocq; vel plures paucem seu per
 et omis procuratis huius in se reassumens, taciens qu

Millesimo quinquaginta primo sexto sexagesimo anno. Inde
 maris hora vespere vel quasi nocte. Ponit sanctissimum in xpo
 no te rōto in mei Naturam plib⁹ testiumq; infector⁹ ad hoc p̄ad
 silvam dñi Maximus Grabenitz. Etiam procuratio sita
 velocibus quibus melius et efficiens fieri potuit et debuit
 sive venos latinas certas et indubitate paucis actores factores
 tales ita tū qđm qualitas specialitati non derigit nec econtra
 regis directoris doctrinam. Argem Henricum Regniz. Directore
 etiā Andrea Hartpreger Schlem Rosenthaler iamdicto Can
 didu ita qđm non sit meliore condicio occupari nec deterior
 mai mediae valeat et finire ad resgnand⁹ pro eo et eius
 Eberstein cui omnibus suis tribus et primenans suis in manibus
 Ecclesie dicēti apostoli sedis legati aut alteri cōstitutus ad
 alibi per legem dñi num se uendissim. Archipin
 in aliis pensioni uixit inde et filius Canonicus Tunc Salle
 sanctus ad uicand⁹ quocq; in aliā dñi dñi cōstituentis
 erit frater delius sonorata pietatis seu quis alia illititu
 seu uirina loculi substituend⁹ et quocq; eis reuocare

Monasterio domini domini anno lacavitate eiusdem monasterii
Vixit die vero salis dicens septima mensis tamquam
pries et dominus meus dominus p[ro]p[ter]e d[omi]ni p[ro]p[ter]e p[ro]p[ter]e anno tere
vocatur et rogatur p[ro]p[ter]e p[ro]p[ter]e p[ro]p[ter]e constitutus non lucidus
Sancte Walburgis prope Eberstein salis die omnibus miliebus
finit constituit creavit et solemniter ordinavit suos venos
negotioresque suos gestores ac numerus sp[irit]uales et generales ita
veniles et egregios viros **angrum Sigismundum Lamberti**
lucem bidicat in Turic Salzburghes Prothonotarium anni
Notariis vellet tamq[ue] presen[ti] et quemlibet eore insolidu ita
subsequens si qd[em] non experiret alter ex eis p[ro]segnari in
no[n] memorata Etiam **sit[us] Sancte Walburgis prope Eberstein**
anno in xpo pries et domini **sigismundi** **sit[us] Salis Ecclesie**
horae platem habentes nec ad pretendit et obtinendit sibi
Salis ni p[ro]libata Etiam **Sancte Walburgis** reservauit anni
quiescit aliud beneficium Etiam p[ar]tifice fuerit offecit
ep[iscop]i resignationis sive cessionis huius non interuenient fr[ater]o
nam sine corruptela domini quoq[ue] vel plures p[ar]ticipem seu p[ar]
et omnis procuracionis huius in se reclassification, tuncens qu

Nihil est quoque digne genitissimo spages in eodem iudicem
 natus. Vix vestigia vel quasi honeste sanctorum in populo
 non tenuit in mei Nationis plumbi testium infra et ad hoc haec
 si uox dñe **Maximus Baebenitz**, **rector procurialis** bni sacre
 celioribus quibus melius et efficacius fieri potuit et debuit
 et venes letimos certos et indubitatos paucis actores factores
 ales ut in quod qualitas specialitati non derogat nec econtra
 reges dominorum portorem **Argum Hamicu Regnis**, **rector**
 cuius **Andreas Hartpreger** schem **Rosenkam** iam dicitur Cam
 didu ita quod non sit meliore condicio occupari nec deterior
 qui mediane valeat et finire ad resignandis pro eo et eius
 heretum cu[m] omnibus suis fratribus et cotinens suis ministris
 Ecclesie decim' apostoli sedis legati sunt ultrae' cuiuslibet ad
 nisiibi per se praeeditum dum non levendissim' **Archipin**
 in anima pensioni iuxta modum et stilum Camere **Civice Salis**
 servato illi incondicioneque in fidem dicti domini constituentis
 erat frater Dolus formonatus prietas seu quis alia illata
 non minime consuetudini substituenda et induit enim reuocare

Date

Place

Occupation or Title

Name

Do we see more like that?



- Yes
- Enough to make it worth our while to do a big search.

ML Info

- How we find it?
 - Transfer Learning from a Residual Neural Network
 - Dataset of 622 images, 10% showing manuscript reuse, 95:5 split
 - 30 epochs and 96.77% accuracy
 - Four more sets of ~1k images with different train:test splits and different ratios of MS reuse to no reuse.

Foundational Models

- Some things almost always work well.
 - Let's keep using them.
- Some things have been done well, and very thoroughly, with lots of data.
 - We can use these models as a starting point and fine-tune them to our needs.
 - The fine tuning is known as Transfer Learning.
 - This allows people and/or institutions who don't have the same amount of data as Google or Amazon to participate in moving Machine Learning/Artificial Intelligence forward.
 - It's been especially important with Computer Vision, lately.

ML Info

- What did we use?
 - ResNet-50
 - Trained on ImageNet (huge)
 - Our model changed weights for that model, so it would work for ours
 - (Okay, it's more complex than that, but it gives the right idea)
- Info about ResNets, residual functions, and deep neural nets, such as ResNet-50 with 50 layers, in the [backup slides](#) (hopefully by workshop time) 

Other Use Cases

BONUS. Other relevant use cases for such a procedure

- * Find predictably at-risk documents – iron gall ink corrosion
 - words that eat themselves
 - causes holes in documents and fragile, shatter-prone pages
- * Find stitching – of interest to Manuscript Studies people
 - How books were made
 - From parchment makers and from monastic embroiderers
- * Find manicules – *Nota Bene* | (U+261{A-F}) | 
 - Drawings (later, typeset) of a hand with pointing index finger
 - This allows us to see what readers and writers considered most important
- * Find palimpsests
 - Bring this up, or wait to see if there's a question about it?

These other use cases are described, illustrated, and discussed in the backup slides. If you have any interest, please have a look, and please feel free to [contact us](#).

BACKUP SLIDES

{ 40 }



To Contact Us

- This info is for Dave. Dave can get a hold of Keith, if desired.
- The best way (and easiest to put online without exposing email to spam) is either through
 - sending me a LinkedIn message (much preferred)
 - <https://linkedin.com/in/thedavidwblack>
 - raising an issue on the repo for this project on my GitHub account.
 - <https://github.com/bballdave025>
 - This project's repo is named manuscript-waste-reuse-finder.
 - The complexity of this method makes it a second choice for me, but you're welcome to use it if you're not on LinkedIn or if you vastly prefer not to use it.
- After contacting me via one of these means, I can send you more direct contact info.
- **If we're at the workshop, please come over for a chat. I'll be happy to give you more direct contact info.**

Check Current Version

- The most current version of this **presentation** (the one now being given at FHTW 2024) can be found at Dave's Google Drive – shortlink bit.ly/dk_rmf_pres
That's PDF.
- You can get the same place by scanning the giant QR code.
- For updates after the workshop:
github.com/bballdave025/manuscript-waste-reuse-finder/



Check Current Version

- The most current version of the **paper** by Dave and Keith (the one accompanying the presentation now being given at FHTW 2024) can be found at Dave's Google Drive – shortlink below. You will get a PDF.
- You can get the same place by scanning the giant QR code.
- bit.ly/dk_rmf_paper ; That's PDF.
- For updates after the workshop:
github.com/bballdave025/manuscript-waste-reuse-finder/



Brown Paper Bag Book Covers



r/nostalgia • 6 yr. ago
ChBrewdog

...

Who remembers covering your text books with brown paper covers and then doodling on them?



(44)

FH
TW

Brown Paper Bag Book Covers



Actual Example: Not Quite Brown Paper Bag Book Covers

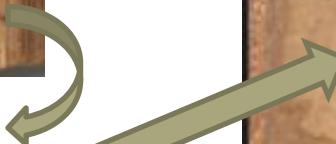


Paste-down

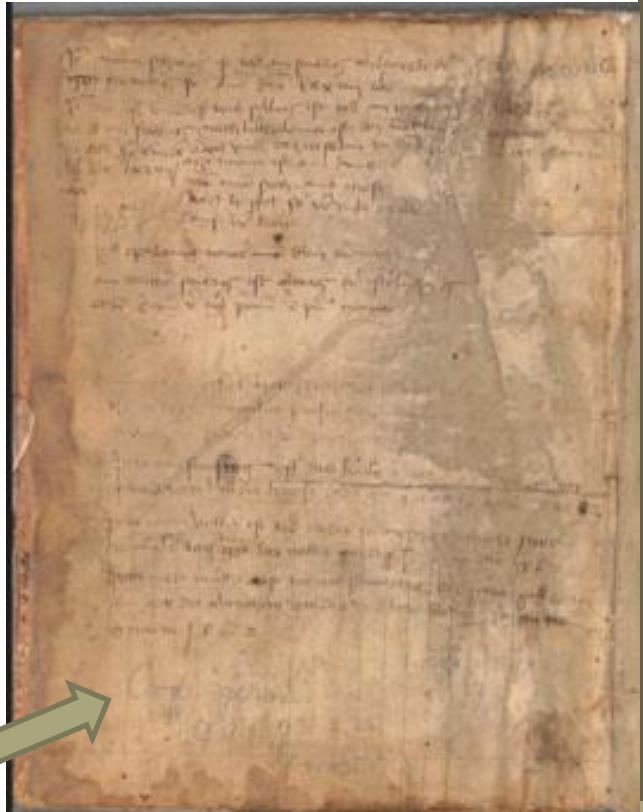
1. Put glue on this right-hand page



2. Turn the page



3. Get this for your new left-hand side

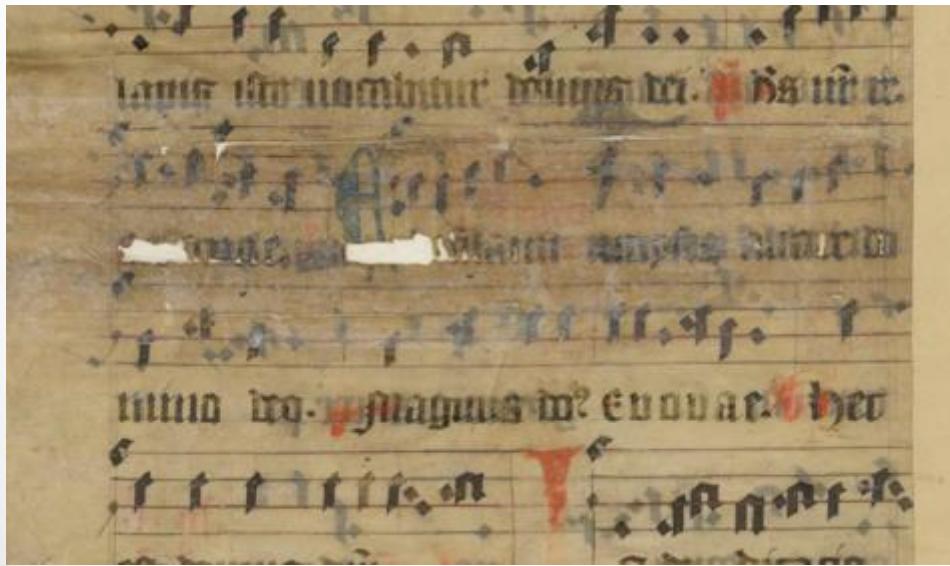


(47)

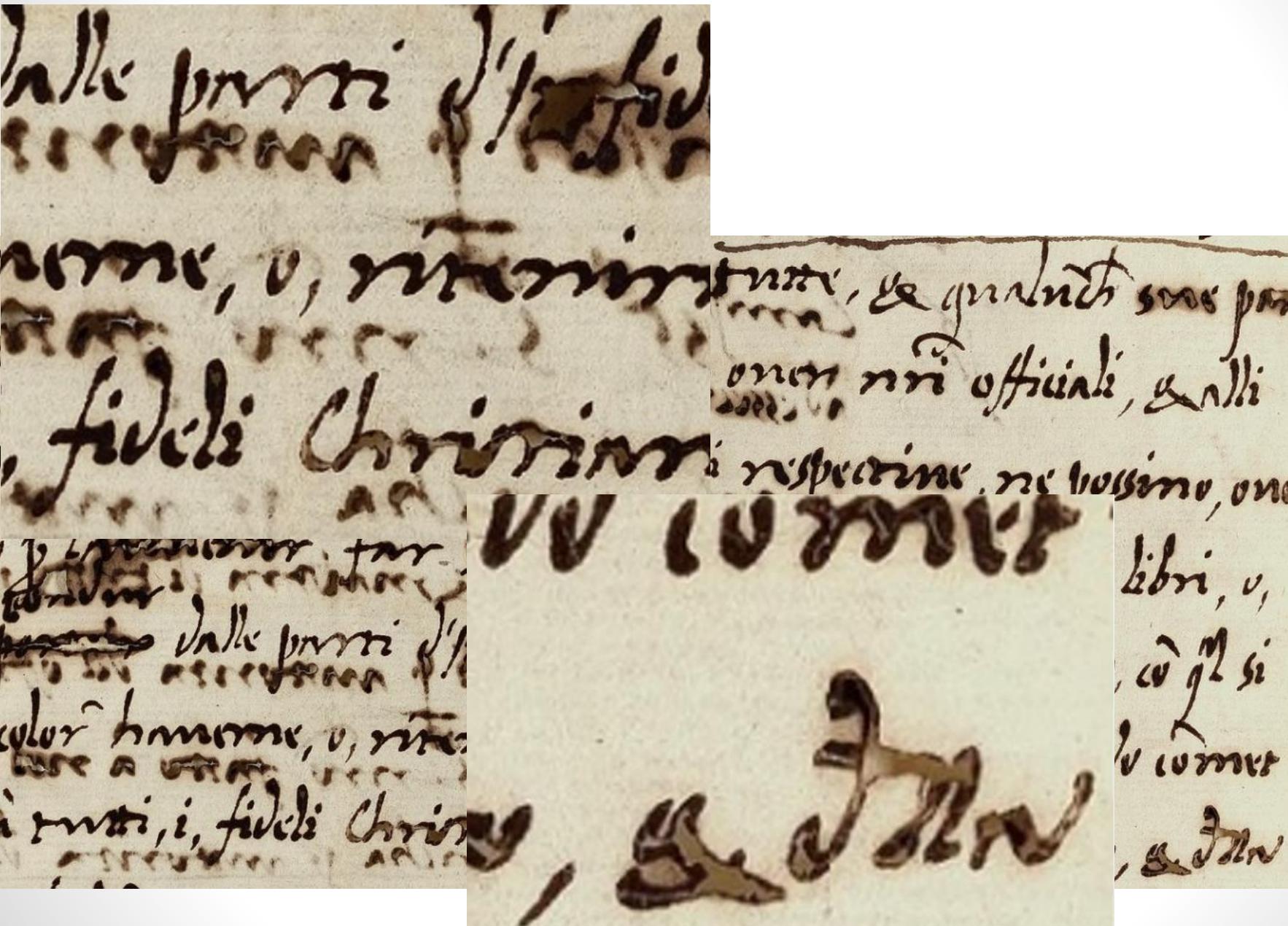
FH
TW

Use Case 1 – Ink Corrosion

- Iron Gall Ink



Use Case 1 – Ink Corrosion

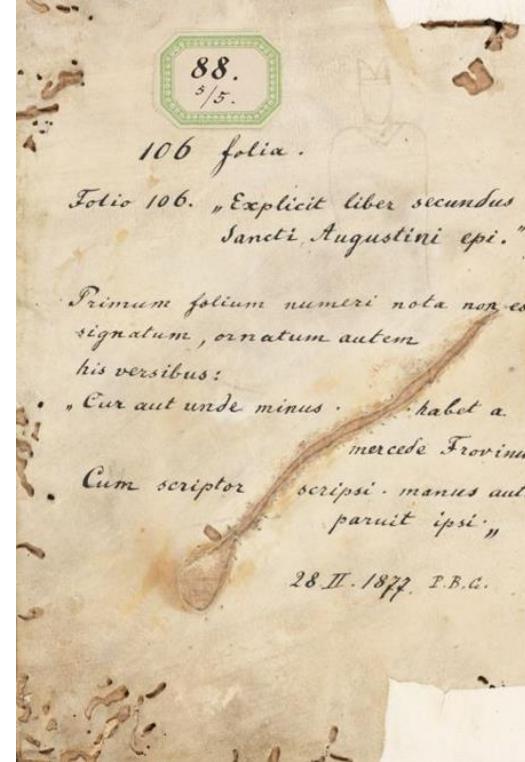


Use Case 1 – Ink Corrosion

- Four stages of degradation, see [iron gall ink website](#) (also see the [prognosis](#) tab) or [British Library Conservation blog](#).
- We could make sure the model worked on cell-phone photos. This could provide motivation for archives to allow digitization of their holdings.
- The current dataset only has stage 4 marked – mostly because I'm not an expert in recognizing the earlier stages, but I can see a hole in the page that follows the general outline of the writing.
- Further data could be gathered, *with* experts, to identify stage 2 and 3 degradation.
- Don't use compulsory means, but motivation likely follows hearing, “Your pages will shatter within 50 years. We're willing to work with experts in handling and digitizing the documents, so you can keep your information.”

Use Case 2 – Stitching

- Part of the parchment-making process



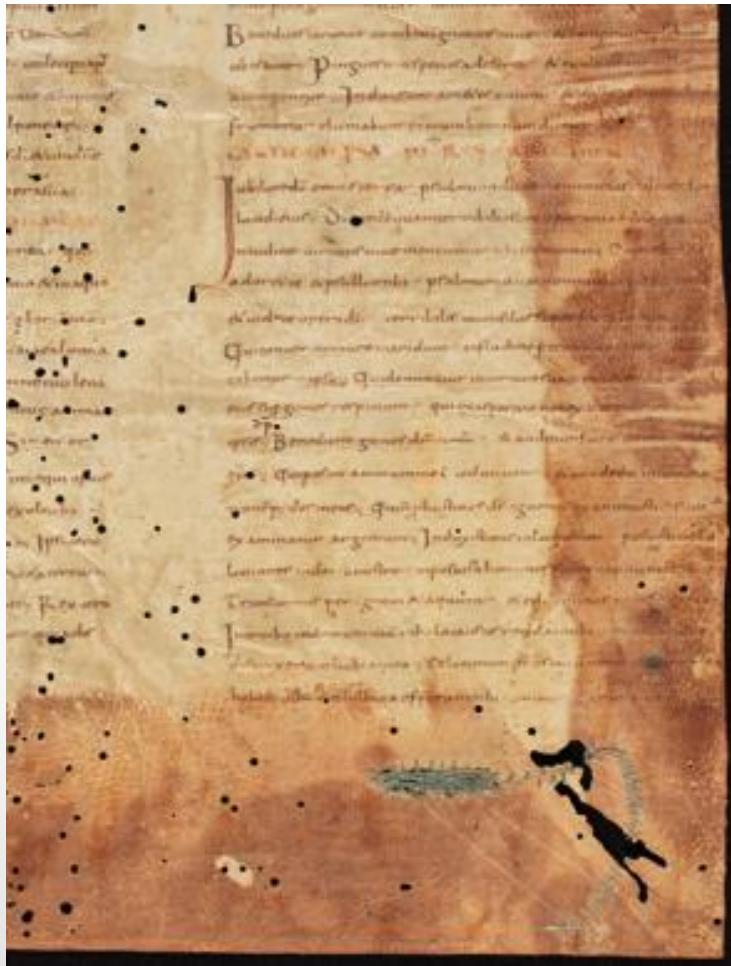
Use Case 2 – Stitching

- Research by
- Embroidery, likely by monks or nuns



Reuse Case 2 – Stitching

- Who stitched these? I don't know.



Use Case 3 – Manicules

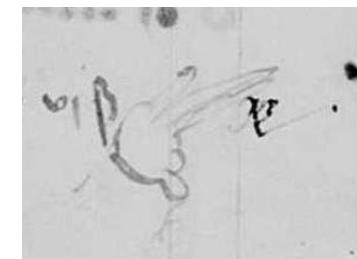
- Find out what readers, annotators, and writers considered important.
- I've found these in 3 FamilySearch films. Two of them were very genealogical.

... q. p̄dica.
hic acer
ie. suscepit



~~... Intra et ex bello, vnde in
qui permissus est Walter de
Wolkensteyn. Regency ipsius
vnde dicitur. Tunc ipso regem
notis wolkensteyn~~

... invenimus ut est q̄ p̄c
ardunat. et in terra
um p̄tira orium ad
fertur. Non conuenit
me terrestriū caverna
cibz inquam et
et levitate sensibz
affert tenebris et
et tristia atqz pm
atius uidetur eo
q. v. m. M. M.

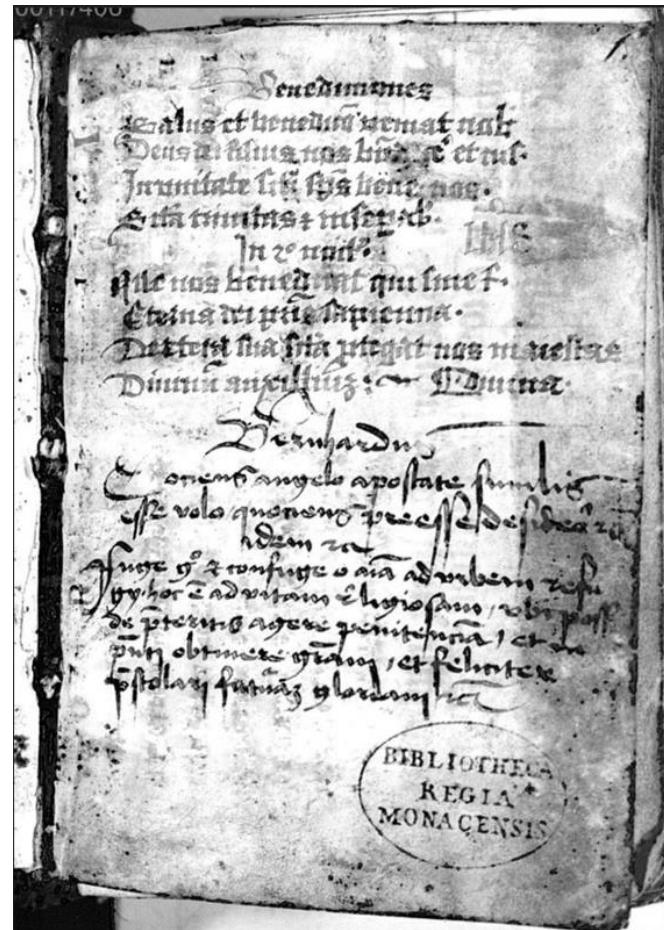
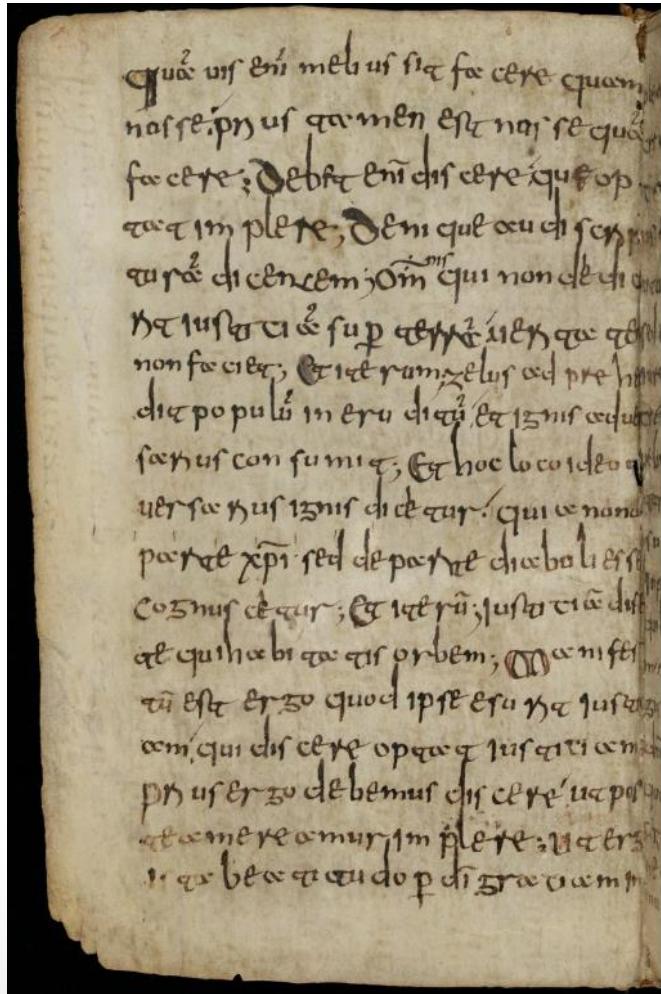


... omni e s. p̄n. Et h̄ q̄ e de bonis capillis p̄m p̄d
cibus capillis p̄m. in den. dedit p̄m. et sicut et

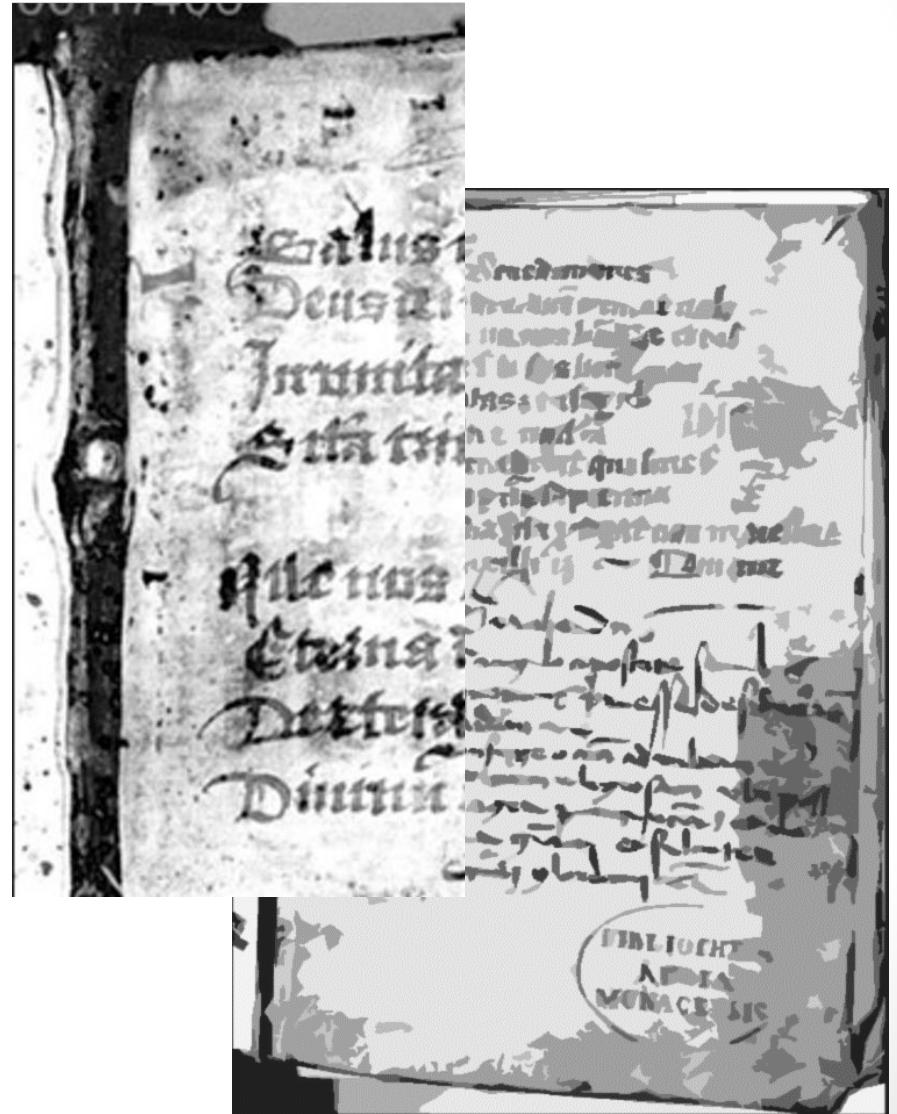
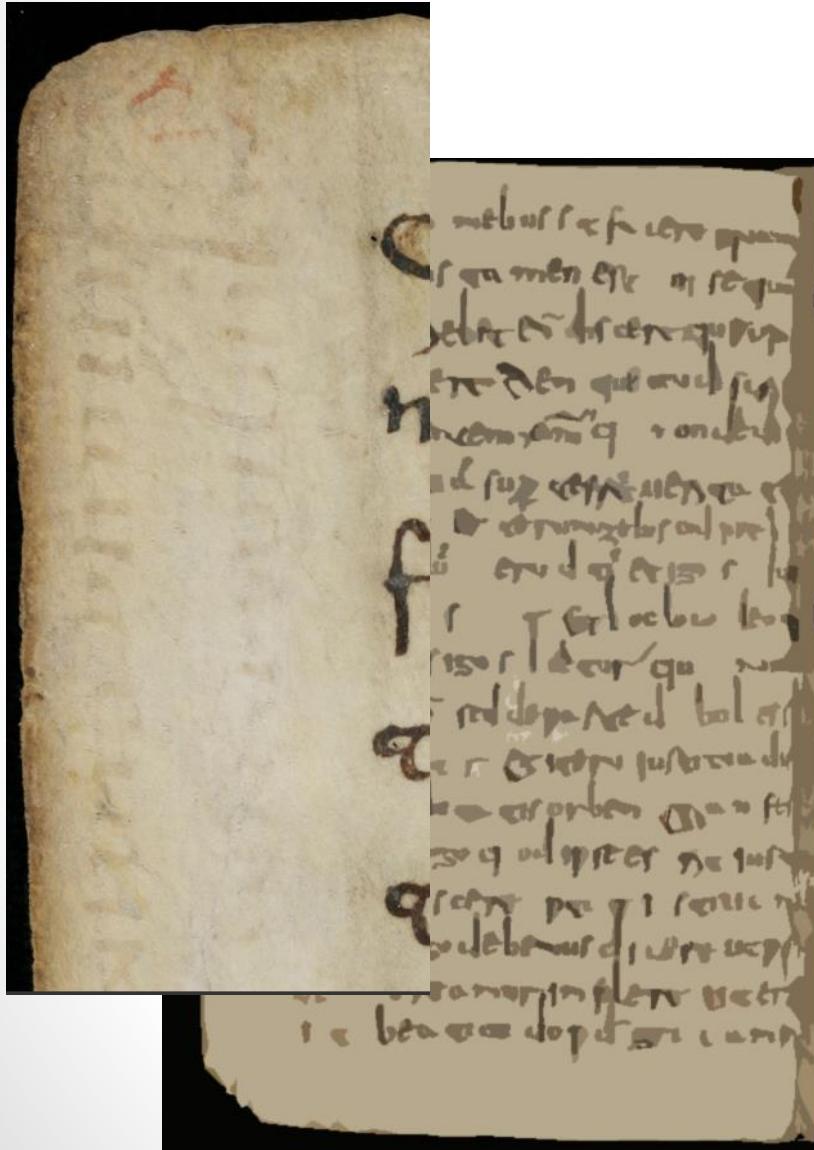
Use Case 4 – Palimpsests

- From the MOOCs I've taken, it seems these have been “studied out”.
- Also, there's likely not much genealogical data.
- Still, the fact that no one has searched through large genealogical databases makes the search an intriguing one.
- Our ~50k image dataset has examples of palimpsests.

Use Case 4 – Palimpsests



Use Case 4 – Palimpsests



Use Case 5 – You Tell Me

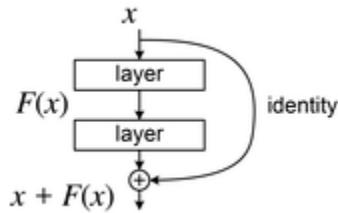
- Please, share your ideas with us. We're sure you have creative and important things for which we can search, especially that relating to genealogy.

ResNets and Residual Functions

- A way to allow really deep networks
 - ~~Avoid exploding and vanishing gradient issues~~
 - Well, actually it's to ameliorate degradation, but we're fixing a problem that comes from having many layers
- Allows the model to learn from its mistakes
- Residual functions replace layers
- The deviations of the dependent variable observations from the fitted function are the *residuals*
 - $\text{fitted_value} - \text{actual_value}$
- A residual function is somewhat different, but has the same idea of something akin to an error.

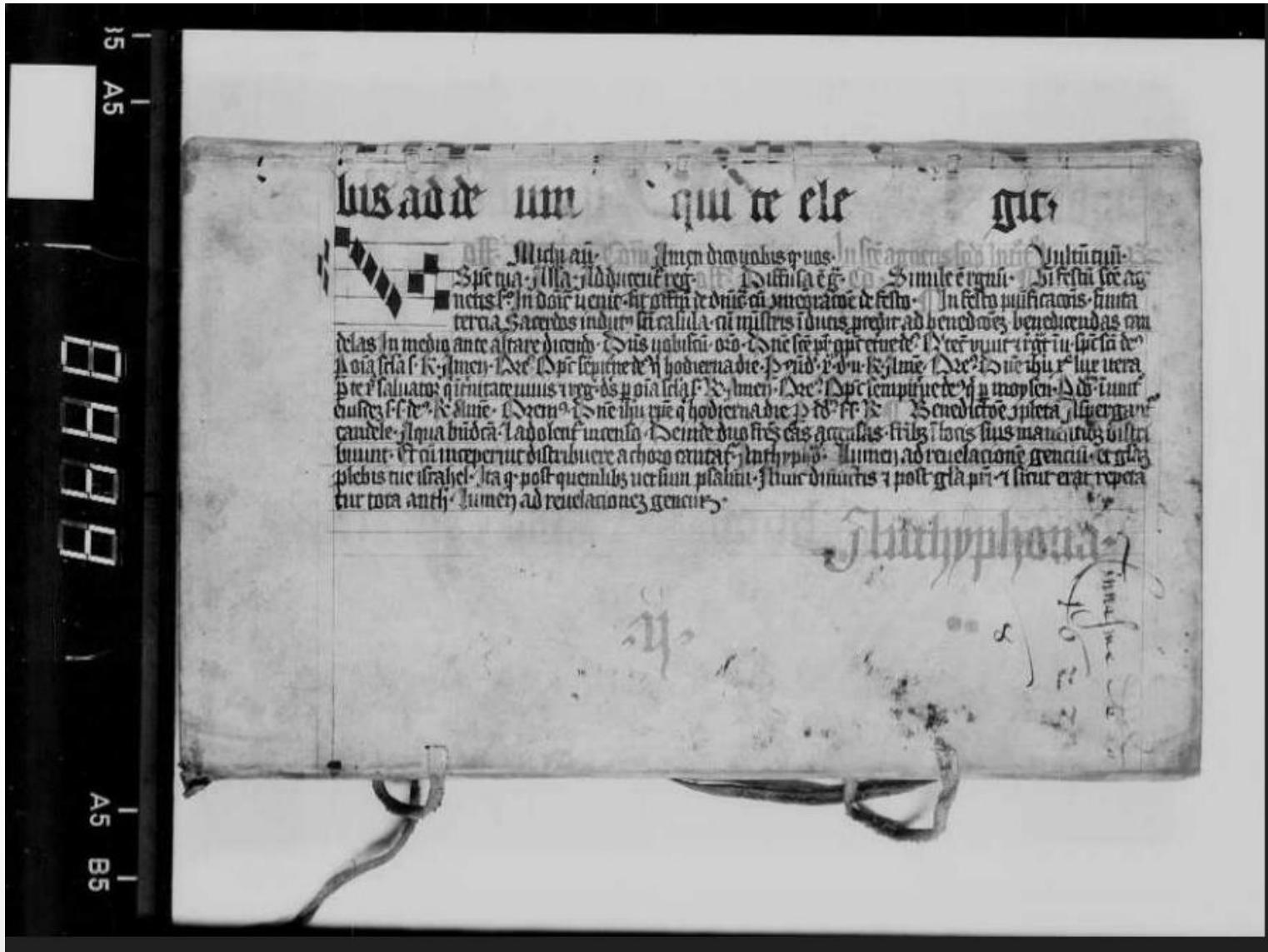
ResNets and Residual Functions

- Residual functions replace layers
 - They're sometimes called skip connections



- x is input
- $H(x)$ is the expected output
- $F(x)$ is the mapping learned by the skipped layers
- $H(x) = F(x) + x = F(x) + I(x)$ where $I(x)$ is the identity function/mapping
- So we define the (experimental) $H(x) - x$ as the residual
- The network (the two layers) try to learn the residual, just the residual, rather than acting as a simple part of the complete network
- This makes optimization easier (possible).

Surprises, Wows, Favorites

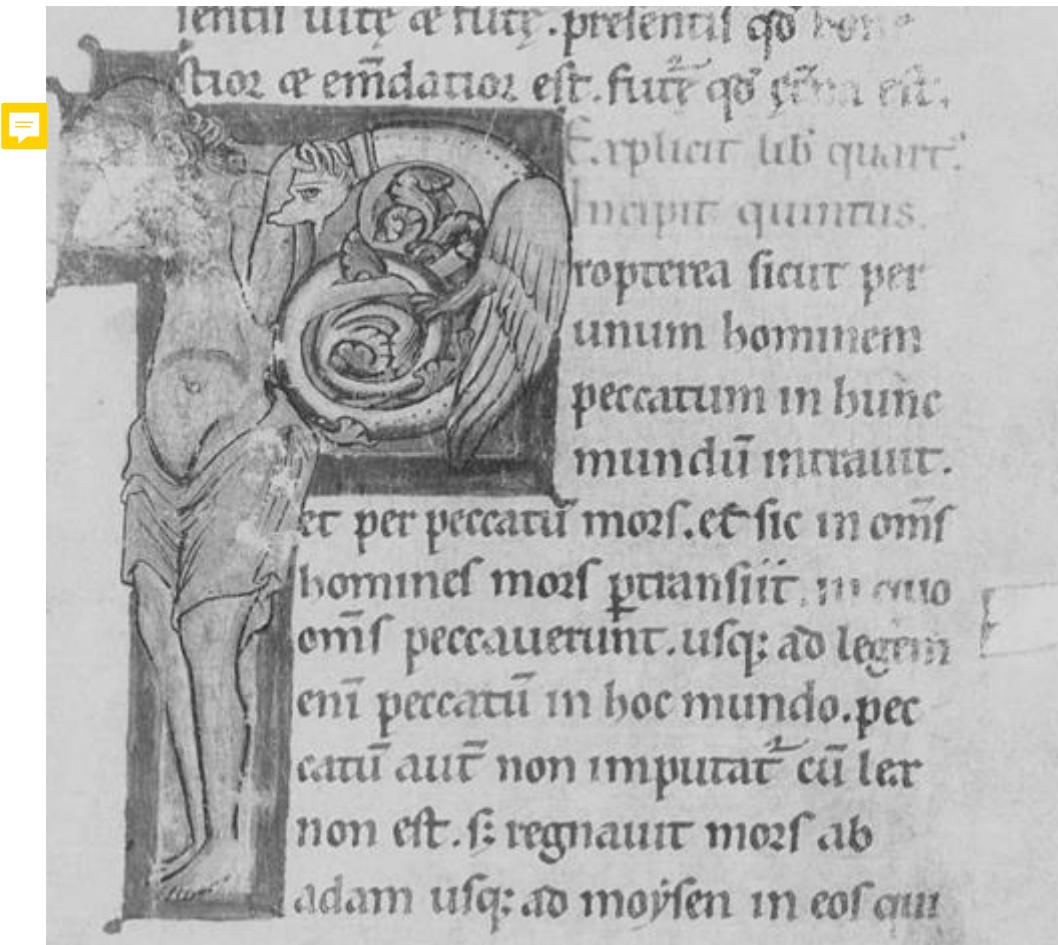


Surprises, Wows, Favorites

ie negant̄. Om̄s ḡe... teſ...
q̄t fecisti. uenient q̄ adorat̄
corā te dūne. & glificab̄ no-
tiū. qm̄ magi' eſtu. & t̄
ensimutabilia. tu eſ d̄s ſolu-
magni. nemo ſe dicat ma-
nu. futuri etant qui ſe du-
mous/ conī hof d̄s. T̄o

I didn't find anyone. Well, I found nobody. Well, I found *nemo*. In Latin, *nemo* means nobody.

Surprises, Wows, Favorites



Mark 5:12 on a front cover

Surprises, Wows, Favorites



Surprises, Wows, Favorites

From J. Gent's Mag. 1770. p. 421.

The following Recipe to prevent Infection deserves to be render'd as public, as possible //

It is call'd ye Thieves Vinegar, having been made use of by some abandoned Wretches, who plundir'd ye dying, & y^e dead in one of ye great Plagues abroad; & acknowledge it to their Confessor before their Execution //

To prevent Infection //

Take of Rue, Wormwood, Sage, lavender, Mint, & Rosemary, of each one handful, put these altogether w^t a Gallon of y^e best Vinegar into a Stone-pen, cover'd over w^t paste, & let them stand w^t in y^e warmth of a fire, to infuse for eight Days: then strain them off, & to every quart bottle put three quarters of an ounce of Camphire. Let y^e Camphire be dissolv'd before it is put into Bottles.

Rub y^e temples, & loins w^t this preparation before going out in a morning, wash y^e mouth, & snuff up some of it into y^e nostrills. Carry a piece of Spung, & has been dip't into it, to smell to pretty ffa //

This Recipe will be certainly useful to Hospitals, & Workhouses. The Clergy may avail themselves of it in their attendance upon the sick, & perhaps the Head of y^e faculty may not think it unworthy of their regard.

A medicine for y^e Bite of a mad Dog, taken f^r y^e Church of Cathrop, Lincolnshire, where almost y^e whole Parish were bit by a Mad-dog. Take y^e leaves of Rue pick'd for y^e Stalk & bruised, 6 Ounces, Garlick pick'd, & bruised - Venice treacle, & Metridate & scrapings of Pewter, of each 4 Ounces; Boyl these over a slow fire in two Quarts of strong Ale 'till one Pint be consum'd; bottle it, & give of it Nines spoonfuls to a man or woman, seven mornings fasting: & 6 spoonfuls to a Dog. - they at Cathrop who us'd this Medicine recover'd, & they who did not, died. //

The Register of the Parishes of Lancashire
from the 25 of March, Anno 1718.

1718

	April
Bapt:	21 Baby daughter of John & Jane Cooper.
Bapt:	22 George son of George & Mary Thompson will come
Bapt:	23 Maria Richards & Maria Ford.
Bapt:	24 Jane wife of George West with infant.
Bapt:	25 Thomas son of Thomas & Mary Dyer.
Bapt:	26 Robert Isaac with infant.
Bapt:	27 Edward Wright with infant.
Bapt:	28 Thomas Bullock & Martha Bush.
Bapt:	29 Elizabeth Butler with infant.
Mar:	11 Francis Collier & Joan Shippin
Bapt:	29 John son of John & Anne Viny
Saints:	16 Catharine daughter of Thomas & Elizabeth Walker.
Bapt:	5 William son of John & Elizabeth Foster
Bapt:	13 Thomas & Mary Butler.
Bapt:	17 William Thomas & Mary Green.
Bapt:	22 Elizabeth Gause of John & Elizabeth Cole.
Bapt:	25 Elizabeth son of James & Sarah Hall.
Bapt:	27 Anne daughter of George & Mary King
Bapt:	14 Jane daughter of George & Mary King
Bapt:	20 John Lewis with infant.
Bapt:	15 Jane daughter of John & Anne Collier.
Bapt:	19 Richard Lewis with infant.
Bapt:	5 Elizabeth daughter of John & John Allen.
Mar:	9 William Blaize & Martha Rustle.
Bapt:	14 Henry son of Thomas & Mary Green.
Bapt:	14 Elizabeth daughter of John & Joan Allen will come
Bapt:	20 Jane daughter of Joseph & Anne King
Bapt:	11 John son of Thomas & Sarah Gillings
Bapt:	17 Henry son of Thomas & Martha Stock.
Bapt:	18 Hannah daughter of Thomas & Jane Harris.
Mar:	4 Jeremiah Rawell & Rebecca Shattock.
Bapt:	4 Hannah daughter of Thomas & Jane Harris will come
Bapt:	12 James son of James & Elizabeth Foster.
Bapt:	4 Henry son of Thomas & Martha Stock with infant.
Bapt:	19 Thomas son of Philip & Joan Johnson.
Bapt:	26 John son of Mr Peter Lovell & Elizabeth his wife.
Bapt:	14, 19. Mary daughter of Thomas & Martha Willis.
Bapt:	25 Richard son of Nathaniel & Lucy Bottom.
Mar:	30 William Bowring & Elizabeth Anderson.
Bapt:	29 Joseph Mottrick with infant.
Bapt:	10 William Reed & Mary Emery both of Fleetwood.
Bapt:	3 Anne daughter of John & Joseph Dow.
Bapt:	12 James son of James & Edith Spring, Lathom.
Bapt:	13 Anne & Richard Williams both of Fleetwood.
Bapt:	14 John Williams with infant.

Surprises, Wows, Favorites

Barrett Thomas Water the sonne of John Water was buried the 13th day of April
1635 Edward Wilson secomitts was buried the 6th day of April 1635.
John Murfords Albermar was buried the tenth day of May 1635.
Elizanna Goldsmith daughter of George Goldsmith was buried the 20th day of May
1635 Elizabeth Blisterer the daughter of John Blisterer was buried the 28th of May
1635 Katherine Allin the wife of James Allin of Petworth in the County of
Sussex was buried the 29th day of May 1635.
Edward Roberts the sonne of John Roberts was buried the tenth day of June 1635.
Jane Colington his wife of William Colington was buried the 12th of June 1635.
Margaret Pwall daughter of George Pwall was buried the 18th day of June 1635.
Margery Player the wife of Edward Player was buried before the last of June 1635.
Robert Butler sonne of Robert Butler was buried the 24th day of June 1635.
John Moore was buried the 24th day of June 1635.
John Attevans by sonne of Henry Attevans was buried the 1st day of July 1635.
William Linn was buried the 3rd day of July 1635.
Edward Colington was buried before the last of July 1635.
Edward Long sonne of Edward Long was buried the 2nd day of July 1635.
John Griffor sonne of John Griffor was buried the 1st day of July 1635.
Elizabeth Griffor daughter of John Griffor was buried the 15th day of July 1635.
Anne Parades her wife of Hugh Parades was buried the 14th of July 1635.
Watson Waller by sonne of Watson Waller was buried the 19th of July 1635.
Margaret Plant by wife of John Plant was buried the 22nd day of July 1635.
John Long the sonne of John Long was buried the 1st day of July 1635.
Edward Water sonne of John Water was buried the 1st day of August 1635.
Anne Belknap daughter of Queen Belknap was buried before the 1st day of August 1635.
George Egerton sonne of George Egerton was buried the 25th of August 1635.
Edward Bram sonne of Laurence Bram was buried the 26th day of September 1635.
Anne Parke daughter of Willia Parke was buried the 29th of December 1635.
Chapman Stabler sonne of John Stabler was buried the 3rd day of January 1635.
Anne Amie South was buried the 24th day of January 1635.
Anne Waller daughter of Walter Waller was buried the 3rd day of February 1635.
Anne Waller daughter of Walter Waller was buried the 12th day of February 1635.
Robert Chayre sonne of Robert Chayre was buried the 23rd of March 1635.
Richard Gwynne the wife of Thomas Gwynne was buried the 12th day of April 1636.
John Ward sonne of John Ward was buried the 3rd day of May 1636.
Edward Player sonne of Anthony Player was buried the 4th of May 1636.
Anne Alexander a stranger was buried the 20th day of May 1636.
John Stubbs swinneson was buried the 26th day of May 1636.
Anne Hamond Waller was buried the 5th day of June 1636.
John Gray a stranier was buried the 12th day of June 1636.

John Clarkwell was buried the 9th day of August 1636
Mary Collier daughter of Robert Collier was buried the 12th of January
Eustis Long sonne of Eustis Long was buried the 24th day of December 1636
Peter Chamber's neare brother was cleane buried the 25th of December 1636
Alice Collier widow was buried the 13th day of November 1636
George Collier sonne of George Collier was buried the 28th day of November 1636
Dorcas Greene daughter of Edward Greene was buried the 14th day of December 1636
Robert Collier sonne of Robert Collier was buried the 20th day of December 1636
Abraham Robertsward buried the 26th day of January 1636
John Clorye was buried the first day of February 1636
Joseph Collier milton was buried the 1st day of March 1636
George Collier sonne of George Collier was buried the 24th of March 1636
James Parker daughter of Thomas Parker was buried the 27th day of March 1636
Elizabeth Morley daughter of Robert Morley was buried the 29th day of March 1636
Dorothy Pytche widow was buried the 1st day of April 1636
John Collier was buried the 20th day of April 1636
Elizabeth Davis or the wife of Edward Blaize in Southwarke at London was
buried the 20th day of May anno domini 1637
Anne Carter widow was buried the 30th day of May 1637
John Lee of Chipping Sodbury in Gloucester shire was buried the 26th day of June 1637
William Hayes sonne of Anthony Hayes was buried the 7th day of August 1637
William Martin sonne of Thomas Martin was buried the 12th day of August 1637
Mary Martin daughter of William Martin was buried the 14th day of August 1637
John Adams of the 22nd of Pauls lane was buried the 15th day of August 1637
Anne Goldsmith daughter of John Goldsmith was buried the 16th day of August 1637

Buried by
2 buried Sept 18
In this road buried
Henry Cleator m
d of Antys. Planch
f his wife of Alnwick no
name of Edward Cleator
some of his M. W. & great
d daughter of Robert
Sept 15 from 18 years
of his life



How I feel when I don't find **The Rest of the Story**