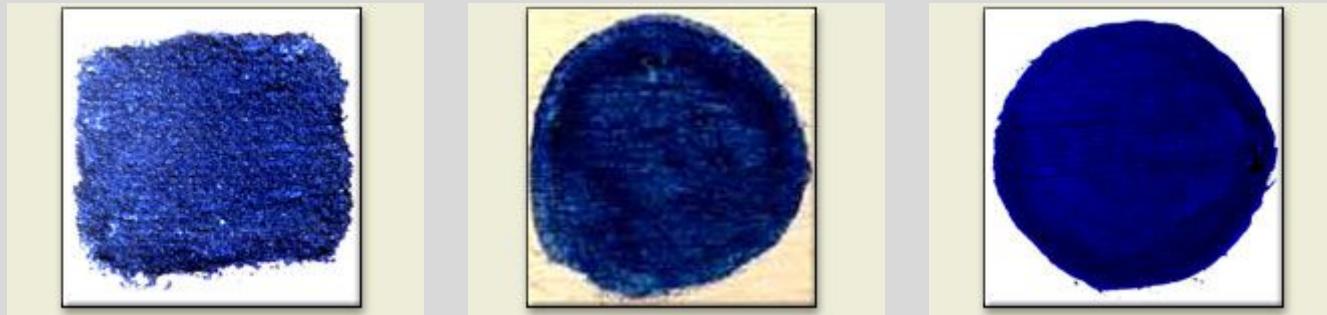


# Preparing and Painting Blue Pigment in the Renaissance



[The Making and Knowing Project](#), Columbia University

Last updated 2022-11-28, NJR

# The Making and Knowing Project

Intersections of Craft Making and Scientific Knowing

[ABOUT](#)[PEOPLE](#)[BNF MS. FR. 640](#)[PROJECT COMPONENTS ▾](#)[THE LAB](#)[COLLABORATIONS](#)[PUBLICATIONS & PRESS](#)[SUPPORT](#)

Za colophane nre autre sofi que  
renferme contre bonz la faire  
ayde cy pot plombe et fain fonder la  
nugent et boulleis en brasile bon bronze  
bonz c'infidele et grec et moussois.  
Il fait son eau de laquelle que  
plus forte soit de l'or et de l'argent  
que de l'or et de l'argent et de l'argent  
et de l'argent et de l'argent et de l'argent  
et de l'argent et de l'argent et de l'argent.

### Oras contefaceit

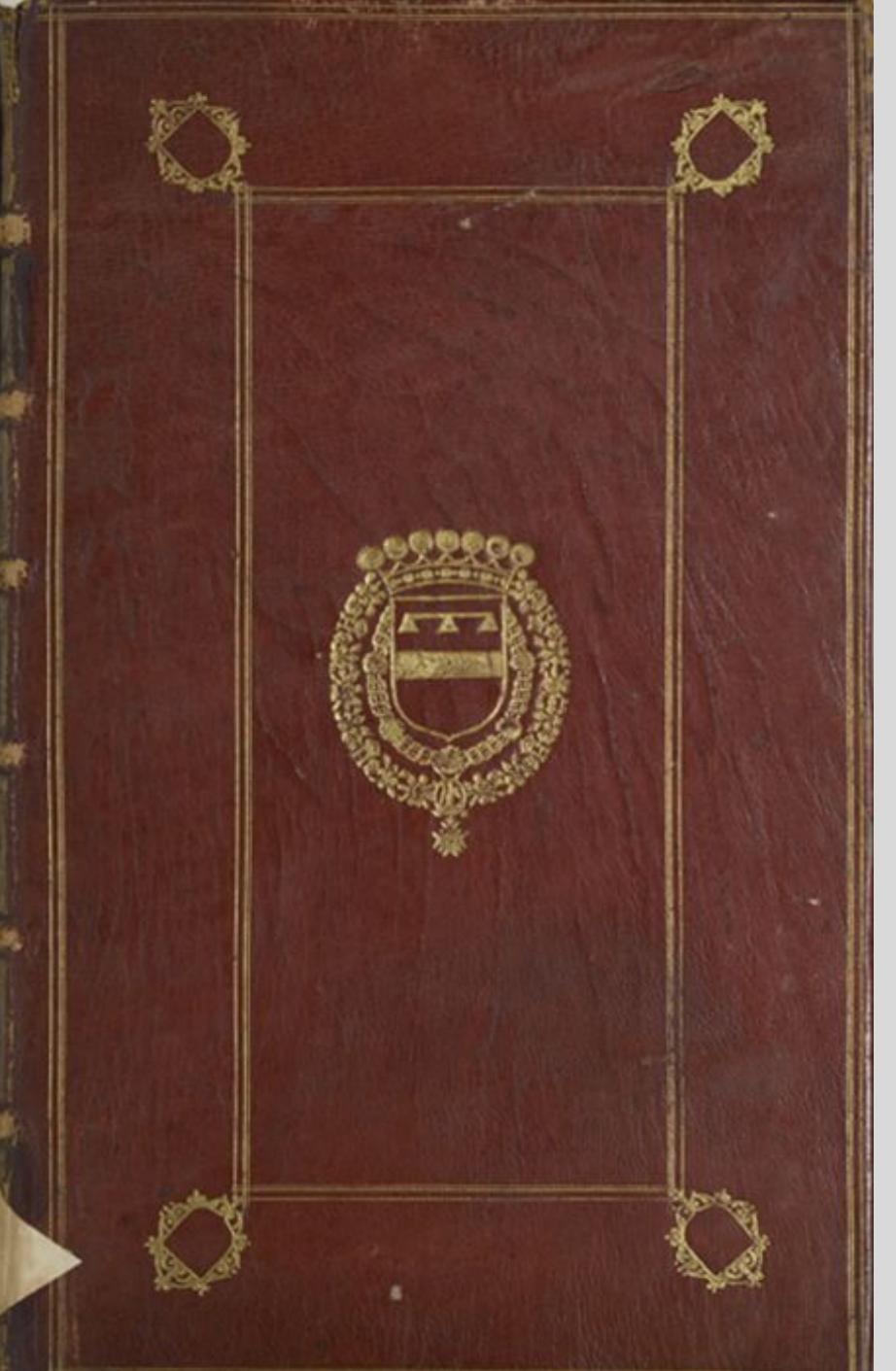
Il fault primitement faire le brancard de boges ou  
taine et ligandz eur  
comme que l'or et l'argent  
et cuire le fer au four  
dans bafou et lequel  
en la breteche faire  
l'assay. Lors come le  
par quelqu'heure ambe  
en assuyer lez clairs  
et lez gris coulant.  
Et tenuz l'air du  
Grainge et plus fort  
que le pourvoir. Car  
le Grainge lez domes  
four et lez foyers et  
le sang bleu et le  
la table ou boire  
foie et le fer et  
lez purfes pour  
confirmer lez ors  
et lez perles mesme la  
grande partie de magis  
parmy lez fer purfes  
pour le redier plus ferme  
Cela fait est lez purfes  
le fer lez ferme et  
tant mesme lez ferme  
il fer trop cors  
coufie et lez ferme  
faire lez mesme effect.

Il fait lez tourmentins et lez ferme et la faire  
dans cy pot insigne a nre grecle frondeur. Et metre dedans  
dans lez grecles et tourmentins et la plus blanche que tu  
pourras. Et la remue lez assy ensemble sur foie et garbos  
Et lez ferme incoustent. Et les assy fait. Magne fait lez ferme  
lez assy et lez adioynstes lez par de grecle d'auantage. Comme  
auant lez assy trop telle telle purfes effectif et mettre  
lez ferme et tourmentins auant lez assy lez ferme et corps  
qui lez plairas. Il fait lez ferme sans fer  
Magne ayant lez ferme il est plus effectif. Il s'aproprie  
sur lez tableaux et auant lez ferme pour corroyer  
lez ouvrages ne i'almie. Et lez ferme a combien que plier  
au iour au l'endemant. Et auant lez assy lez ferme que lez  
il fait communement grecle folie la th.

### Gros vernis pour les planchers

Il y a du bonz qui est long a p'cib et degout plan et deus  
moies apres quel a est applique aux planchers. Magne  
estymez et ne degout point comme cest un temps passe qui estime  
fait grecle et lez assy lez ferme dedans pour lez planches  
et grecle et auxy du bled. Et lez assy et ian l'assiette et lez  
grecle et auxy du bled la coulure de la tableaux. Cestuy et fait  
comme l'autre horfme que mest grosse tourmentin commun  
tableaux car ali  
ne fait que lez eau.

On lez ferme faire regule la coulure pour i'endemant longe a la  
coulure et lez ferme sombre et souffre pour le plus Magne lez ferme  
et grecle et auxy.



# *Secrets of Craft and Nature in Renaissance France: A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*

<https://edition640.makingandknowing.org>

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Folio 3r

Coral contrefaict\*

La colophane nest autre chose que rousine recuite Pour bien la faire Ayes un pot plombe & fais fondre la resine & bouillir sur brasier une bonne heure & jusques a ce quelle ne demonstre estre point espessee ains claire & liquide comme eau & que facilement elle coule & file au bout dun baston avec lequel tu la broyes & en fais lessay Lors coule la par quelque gros caneva ou estamine bien claire de sorte quen coulant elle tombe dans du vinagre le plus fort que tu pourras Car le vinaigre luy donne force & tempeste destre si frangible Retire cela deux ou trois fois & elle sera belle & bien purifie pour contrefaire ton coral Tu peux mesler la quarte partie de mastic parmy ta rousine purifiee pour la rendre plus ferme et plus belle & si tu prenois la seule lame du mastic tant mieux seroit mais il seroit trop long soufre & vermeillon fait le meisme effect

Vernis pour tableaux

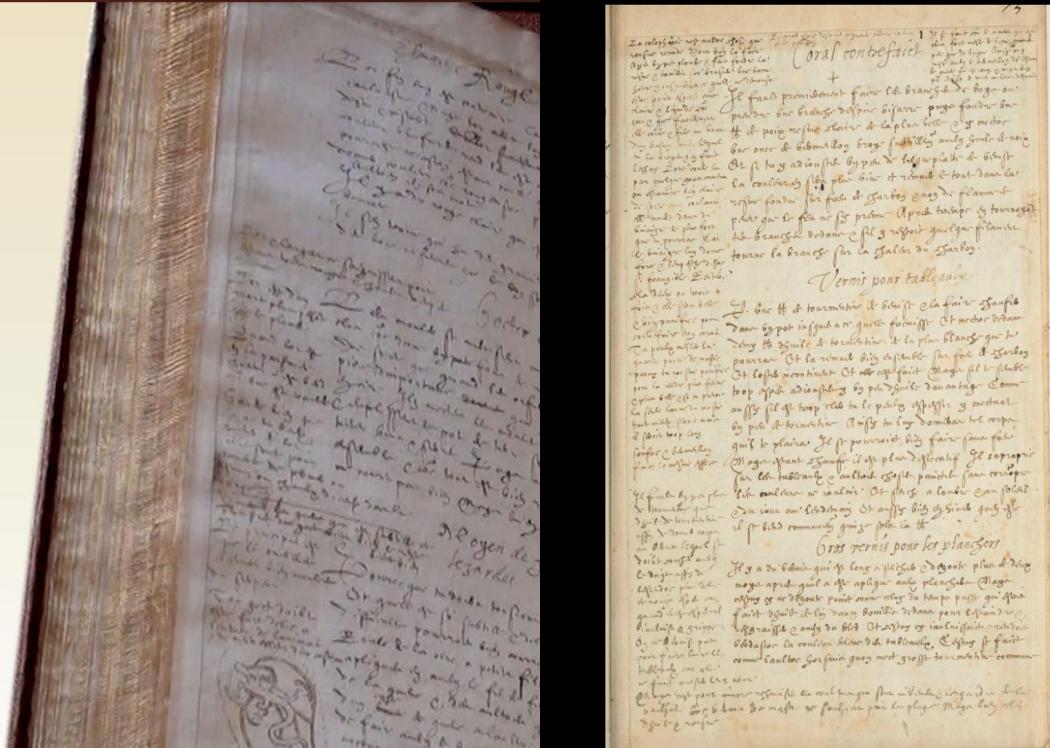
Il faut premierement faire les branches de bois ou prendre une branche despine bissare puis fondre une once de poix resine de la plus belle & y mettre une once de vermeillon broye subtillement avec huile de moutarde Et si tu y adjoindes un peu de laque plate de venise ou de laque de tournoya[n]t les branches dedans & sil restoit quelque filamente toume la branche sur la chaleur du charbon

Coral contrefaict\*

Il faut premierement faire les branches de bois ou prendre une branche despine bissare puis fondre une ib de poix resine de la plus belle & y mettre une once de vermeillon broye subtillement avec huile de moutarde Et si tu y adjoindes un peu de laque plate de venise la couleur en sera plus vive et remuer le tout dans la resine fonde sur toue du charbon et non de flamme de peur que le feu ne se prennent Apres tempre en tournoyant les branches dedans & sil restoit quelque filament toume la branche sur la chaleur du charbon

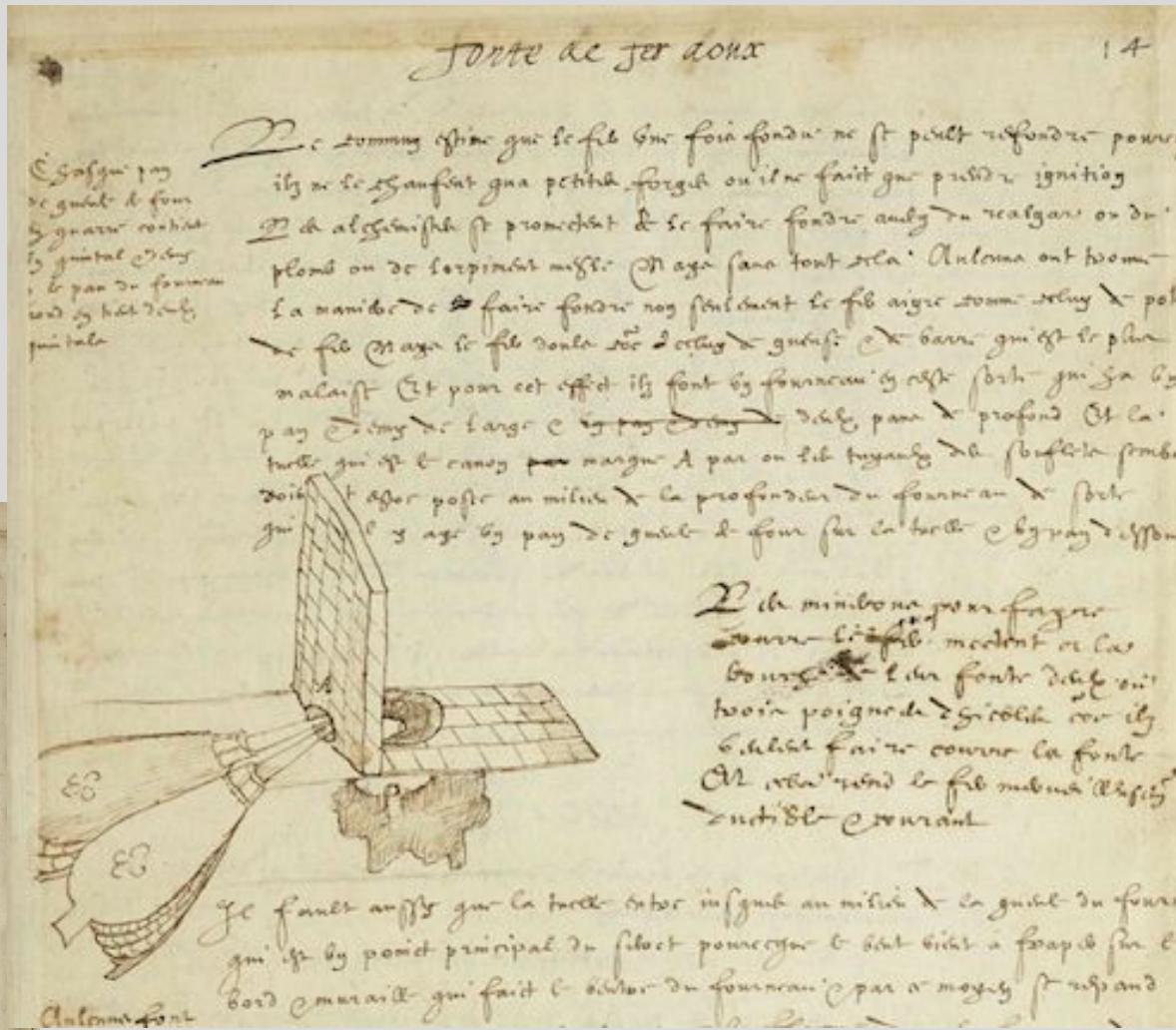
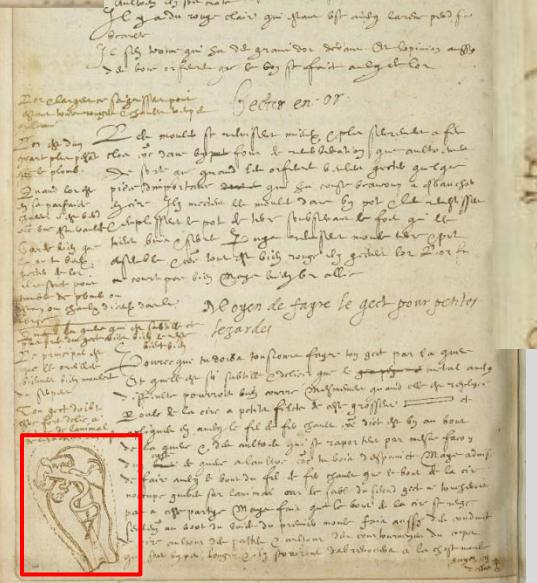
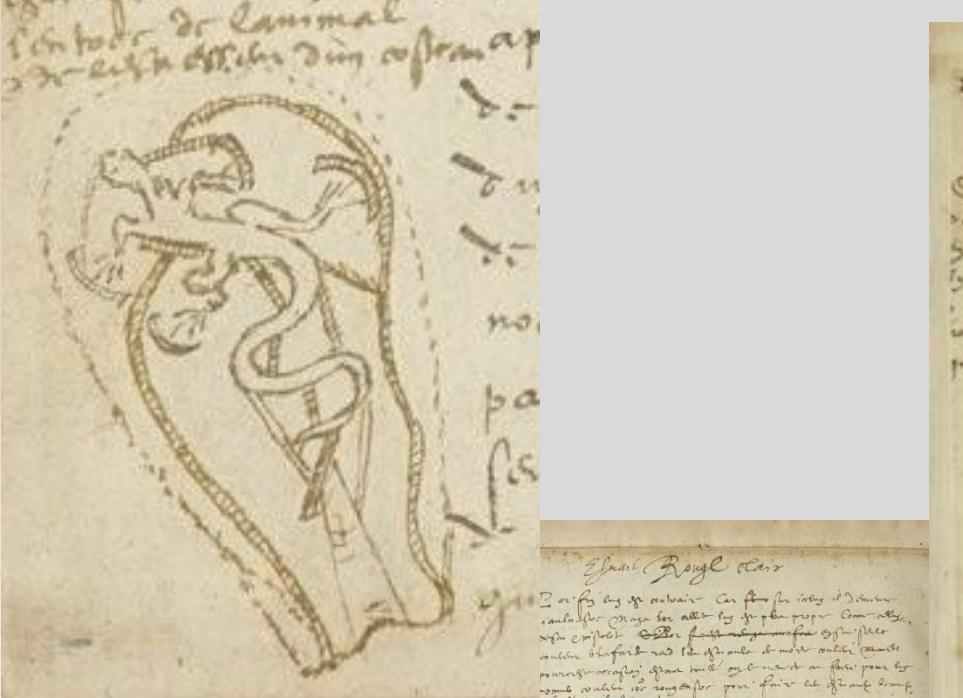
Vernis pour tableaux

P[rendre] une ib de tourmentine de venise & la faire chaufer dans un pot jusques a ce quelle fuisse et metre dedans demy ib dhuile de tourmentine de la plus blanche que tu pourras Et la remuer bien ensemble sur toue du charbon Et luster inconlent Et elle est faict Mais si tu semble trop espes adoucies y un peu dhuile davantage Come aussy sil est trop clef tu le peux essuyer y mecant un peu de tourmentine Ainsi tu luy donneras tel corps quil te plaira Il se pourroit bien faire sans beur Mais estant chauffe il est plus dessiccat il sappropre sur les tableaux & autres choses pincées sans corro[mpire] les couleurs ne jaillir El seiche a lombre & au soleil & du jour au lendemain Et aussy bien en hiver que en esté il se vend communem[ent] quinze sols la ib





Wenzel Jamnitzer and Jost Amman, ca. 1578, “Ein gar kunstlicher und wolgezirter Schreibtisch,” Fold-out leaf, showing the surveying of a mine. vol. 2, fol. 54. National Art Library Special Collections, MSL/1893/1600–1601. Victoria and Albert Museum, London.



BNF, Ms. Fr. 640, fol. 124v

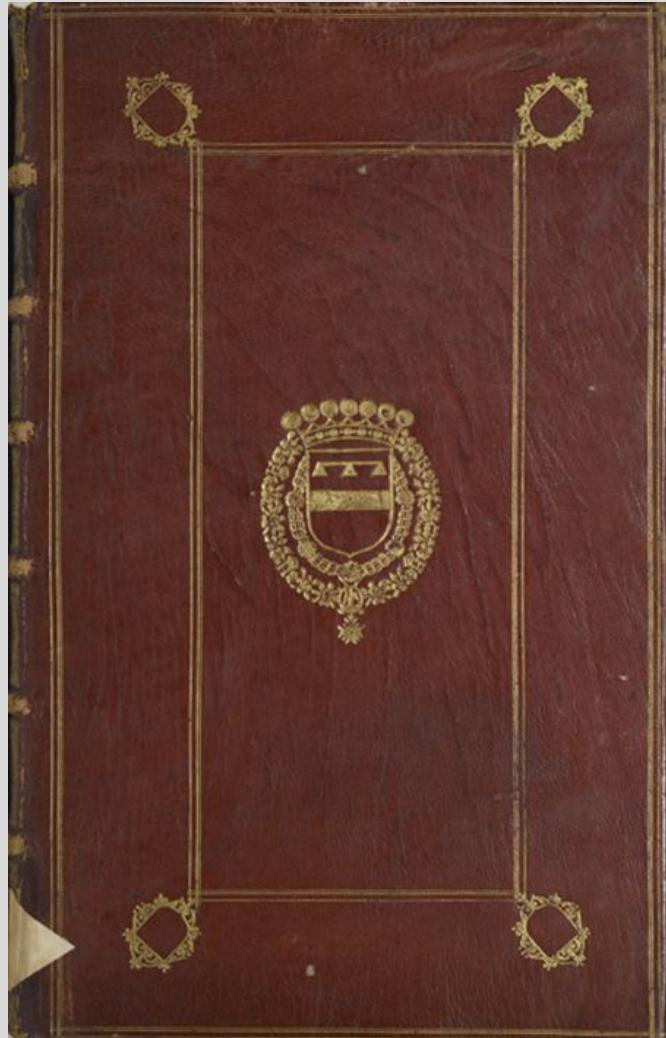
16<sup>th</sup>-century, life cast, Kunstgewerbe Museum, Berlin

Philippe de Béthune

1565-1649

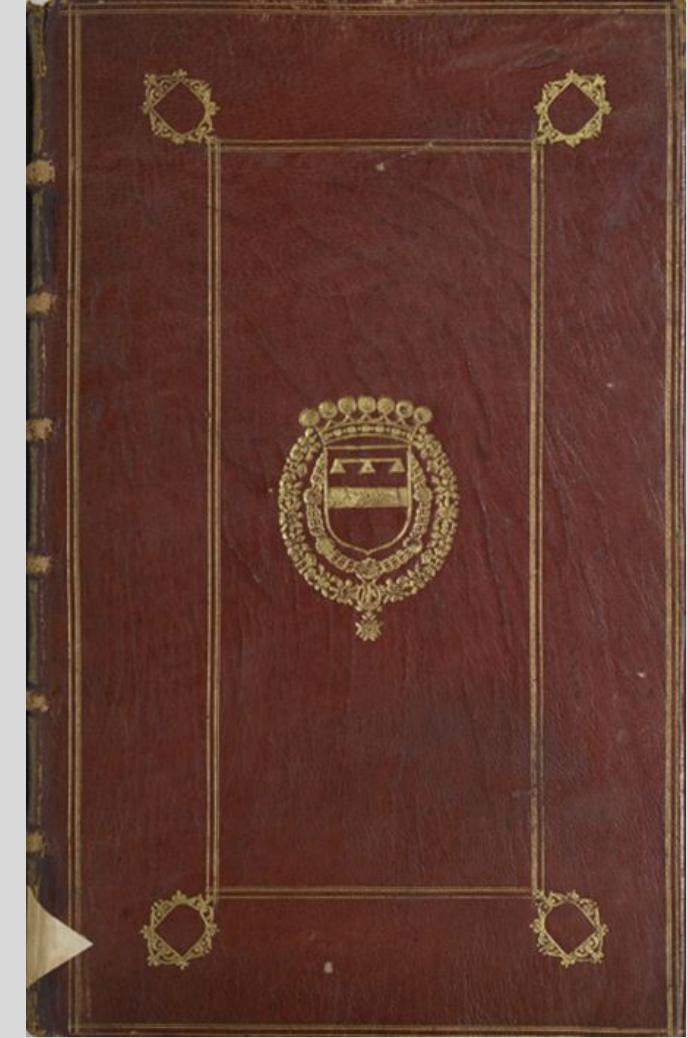
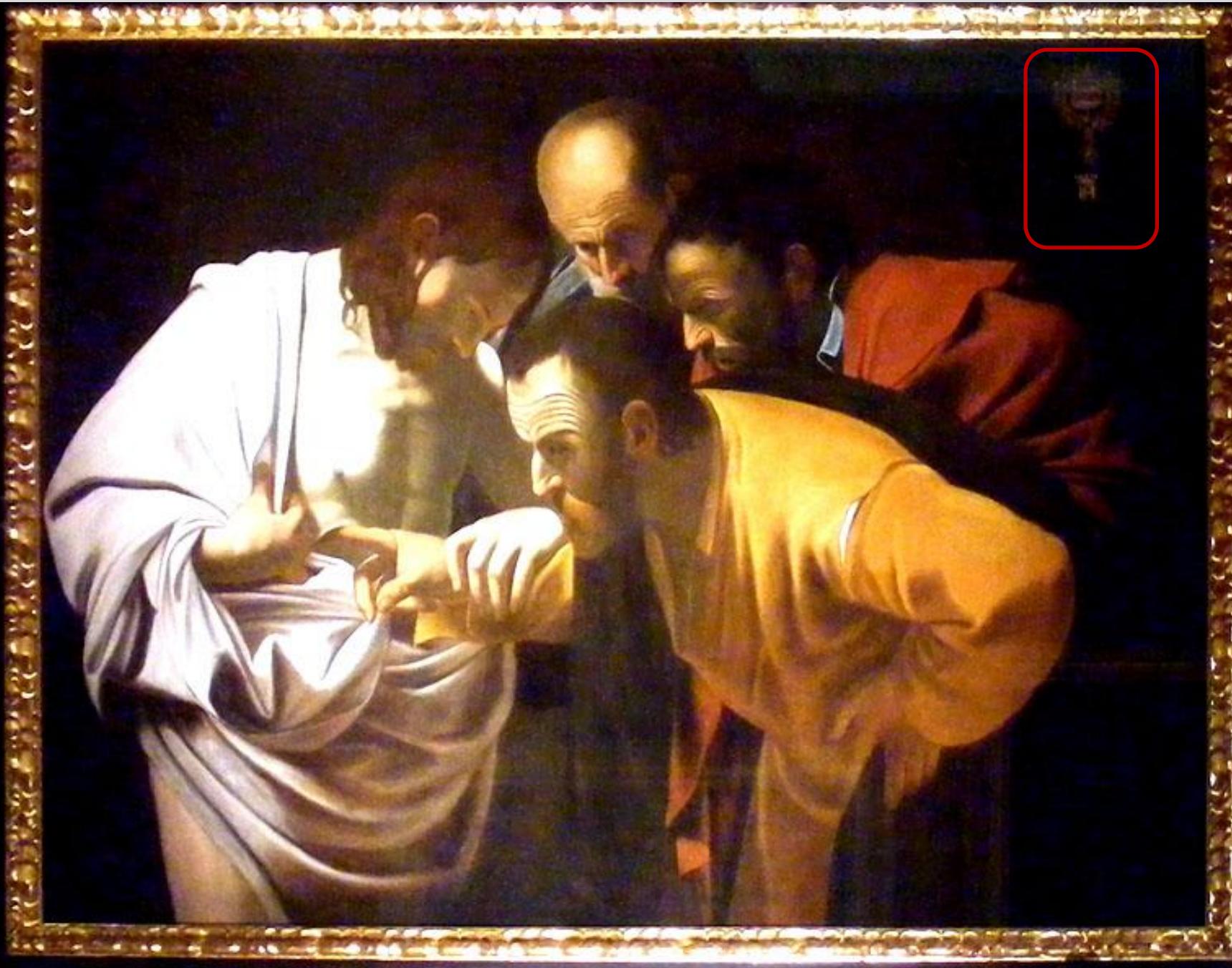
Served under Henry IV as envoy to the Papal Court (1601-5)

His mss. and books donated to the Library  
of the King in 1662, including Fr. 640.



PHILIPPE DE BETHUNE  
COMANDEVR DES ORDRES DU ROY.  
ET AMBASADEVR A ROME ET  
FREREPUSNEVR PREMIER DUC DESVILLY.  
GOUVERNEVR DE GASTON  
MONSIEVR FILS D HENRY IV.

PHILIPPE DE BETHUNE



# Philippe de Béthune, *Conseiller d'Estat*, 1633

La prudence, pour estre telle qu'il la faut à un Prince, doit estre accompagnée d'une cognoissance universelle de toutes sortes de science, non pas par le menu, comme pour en faire mestier & profession ; mais il en doit sçavoir autant qu'il luy est nécessaire, pour discerner le vray & le faux, & entendre ceux qui en discourent selon les occurrences. Son mestier n'est pas d'estre Ingenieur, de bastir des maisons, dresser un pont, d'estre bon canonnier : mais de cognoistre ceux qui sont les plus propres, & de se servir judicieusement de gens de toutes sortes de profession.

Prudence, as befits a Prince, must be accompanied by a universal knowledge of all sorts of sciences, not in detail, as if to make them his trade and profession; but he must know as much as is necessary to discern truth from falsehood and understand those who converse upon it as it may happen. His trade is not to be an Engineer, to build houses, to erect a bridge, to be a good cannon founder, but to recognize those who are best suited, and to make sensible use of people from all sorts of professions.

# LIST OF ENTRIES - PROFESSIONS



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Filter the List of Entries by selecting one or more "category" and/or "tag" buttons.

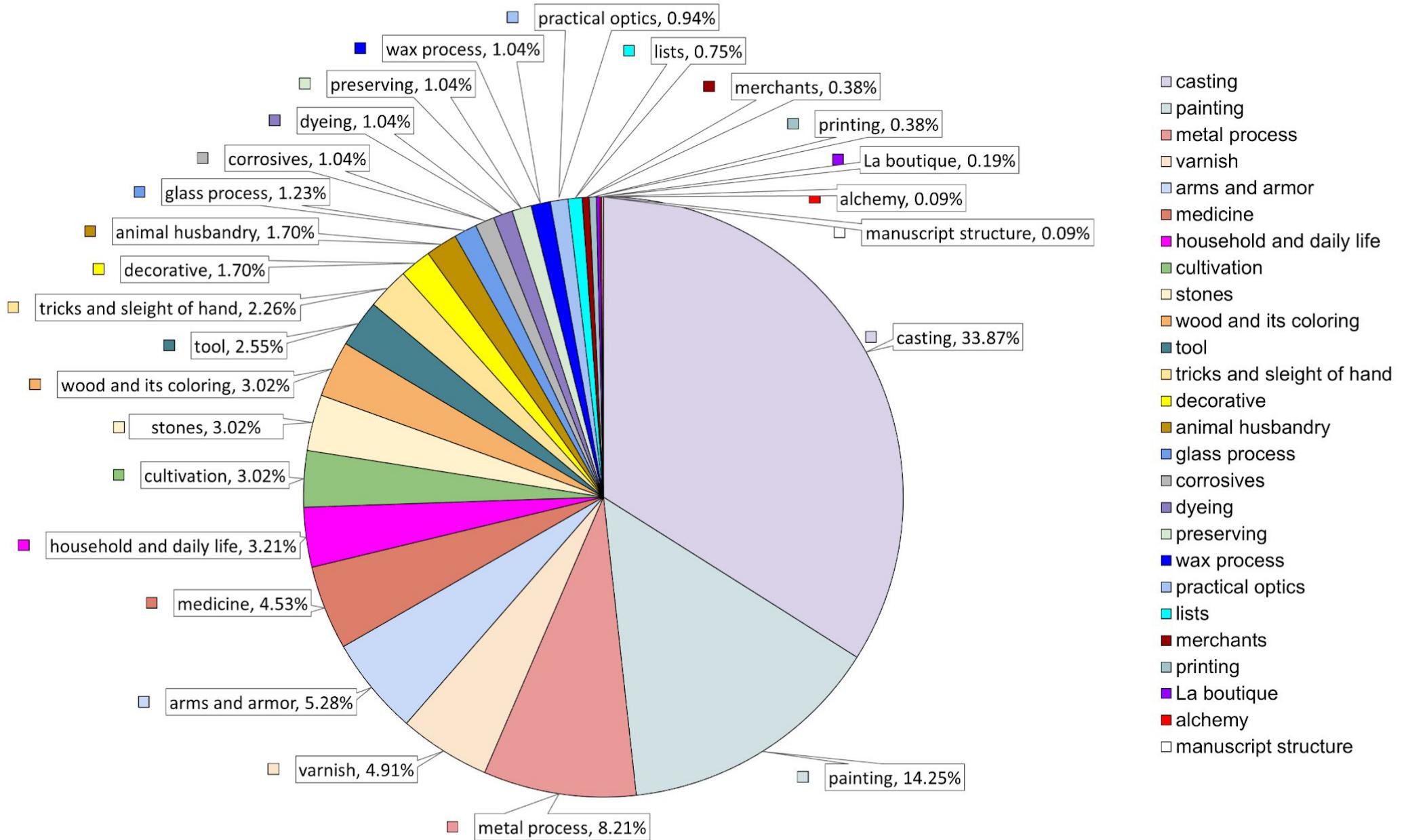
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### [List of names] / [Liste de noms] - 1r

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- [3 personal name](#)
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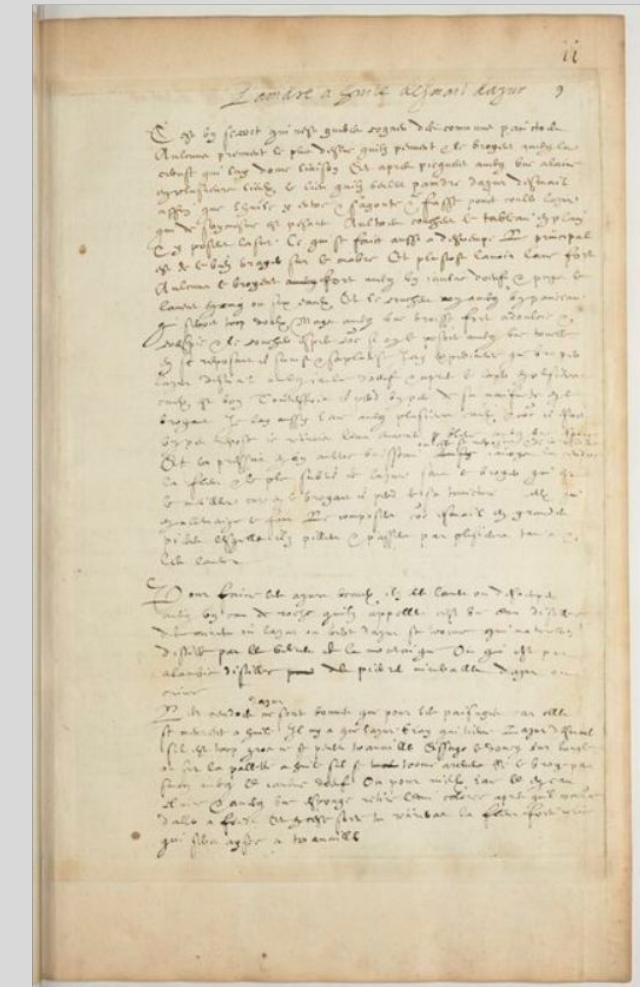
# Blues in BnF Ms. Fr. 640

## Painting esmail d'azur in oil (fol. 11r)

This is a secret that is hardly known to common painters. Some take the most delicate they can & grind it with ceruse, which binds it, and next prick with an awl in several places the area they want to paint with *azur d'esmail*, in order that the oil enters & leaks in, & does <sup>not</sup> cause the azure, which in itself is heavy, to run. Others lay the panel flat & put down the azure on it, which is also done in distemper. The main thing is to grind it well on marble, and before that, to have washed it thoroughly. Some grind it ~~with~~ thoroughly with an egg yolk & then wash it in five or six waters and lay it on not with a paintbrush, which would be too soft, but with a brush thoroughly softened & crimped, & layering it thickly as if one were putting it down with a trowel; settling down it evens out and flattens. I have experienced that grinding *azur d'esmail* with egg yolk & next washing it in several waters is good. However, it loses a little of its vividness in the grinding of it. I have also washed it in several waters &, when it had settled a little, I removed the water, still ~~q~~ blue, with a sponge and squeezed it into another vessel <sup>thus</sup> where it settled, & from the residue I had the ash, flower, and subtlest part of the azure without grinding it, which is the best, for in the grinding of it, it loses some of its tint. Those who make it in Germany compound it like enamel, in large pieces which they pestle, & pass through several sieves & wash.

To make azures beautiful, they wash or soak them in a rock water, as they call it; it is a water distilled from mines where azure or *vert d'azur* is found, which distills naturally through the veins of the mountain or is distilled through an alembic ~~par~~ from mineral stones of azure or copper.

**Azure** ashes are only good for landscapes because they die in oil. Only true azure holds on. *Azur d'esmail* cannot be worked if it is too coarse. Try it, therefore, on the fingernail or the oil palette. If it ~~is~~ happens to be sandy, do not grind it except with the egg yolk or, better yet, wash it in clear water & with a sponge remove the colored water after it starts to go to the bottom, and in this manner you will extract the very delicate flower, which will be easy to work with.

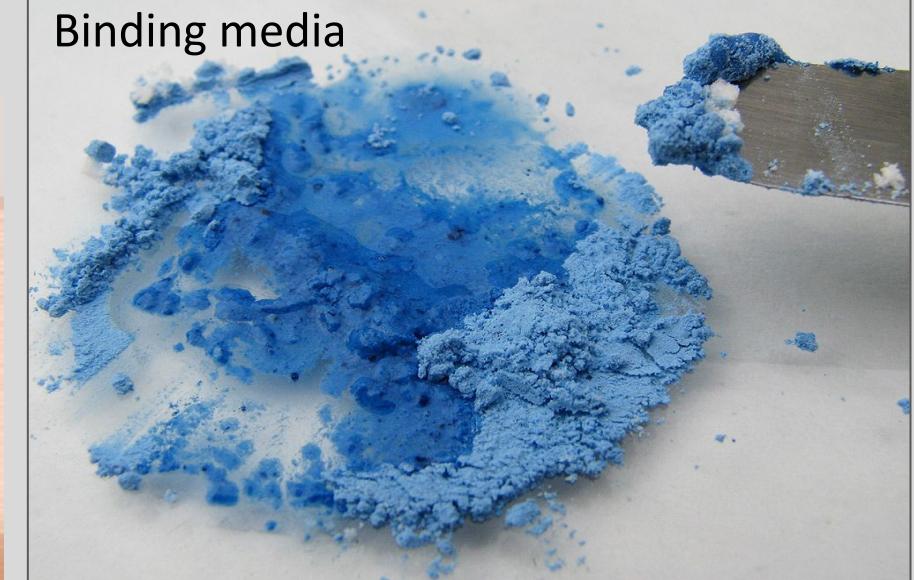


# Paint = pigment + binding media

Pigment



Binding media

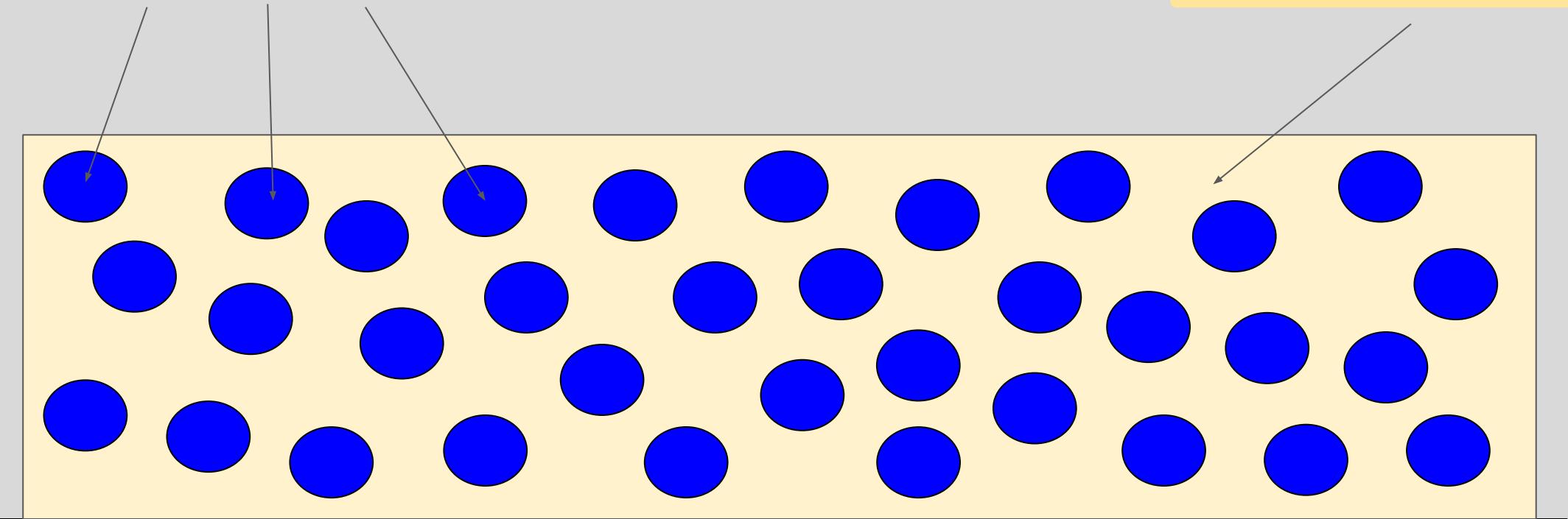


Paint



Pigment particles

Binding medium



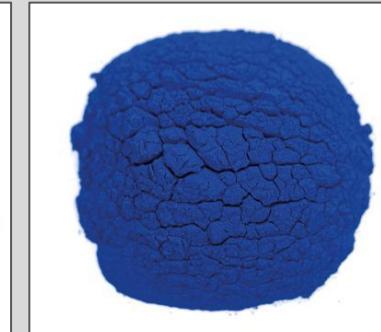
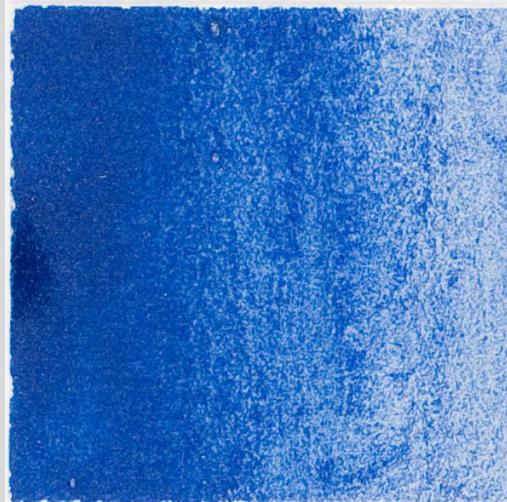
Substrate (paper, canvas, wood)

# Blue Pigments

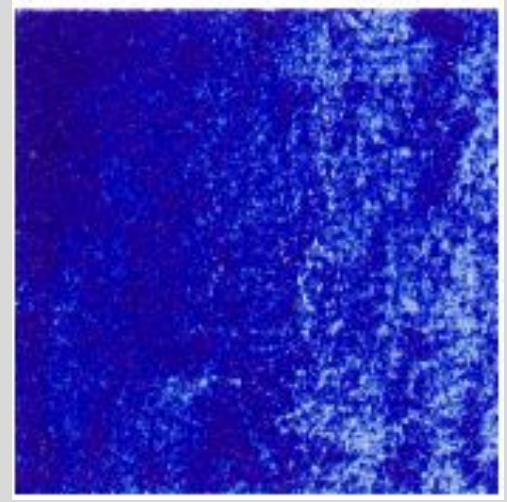
Azurite



Lapis Lazuli



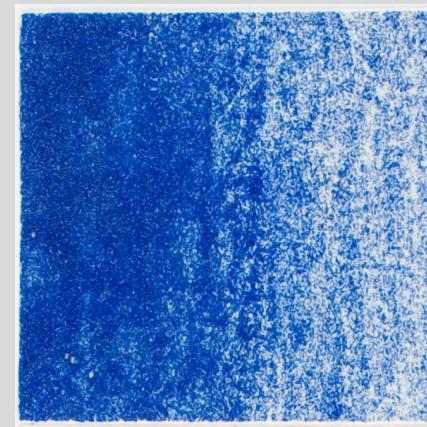
Smalt





# Azurite

- Natural basic copper carbonate,  $2\text{CuCO}_3\text{-Cu(OH)}_2$
- Coarsely ground azurite gives a deep blue color while finely ground particles give a lighter more transparent tone.
- Naturally found adjacent to the green copper carbonate mineral called **malachite**.
  - (<http://cameo.mfa.org/wiki/Azurite>)
- *The Virgin and Child with Saint John* (~1480), Filippino Lippi
  - The National Gallery
  - Dunkerton, *The Materials of a Group of Late Fifteenth-century Florentine Panel Paintings*





Très Riches Heures du duc de Berry Folio 2, verso: February



Très Riches Heures du duc de Berry Folio 6, verso: June

Blue in Books of Hours:  
*Très Riches Heures du duc de Berry (1412–1416)*

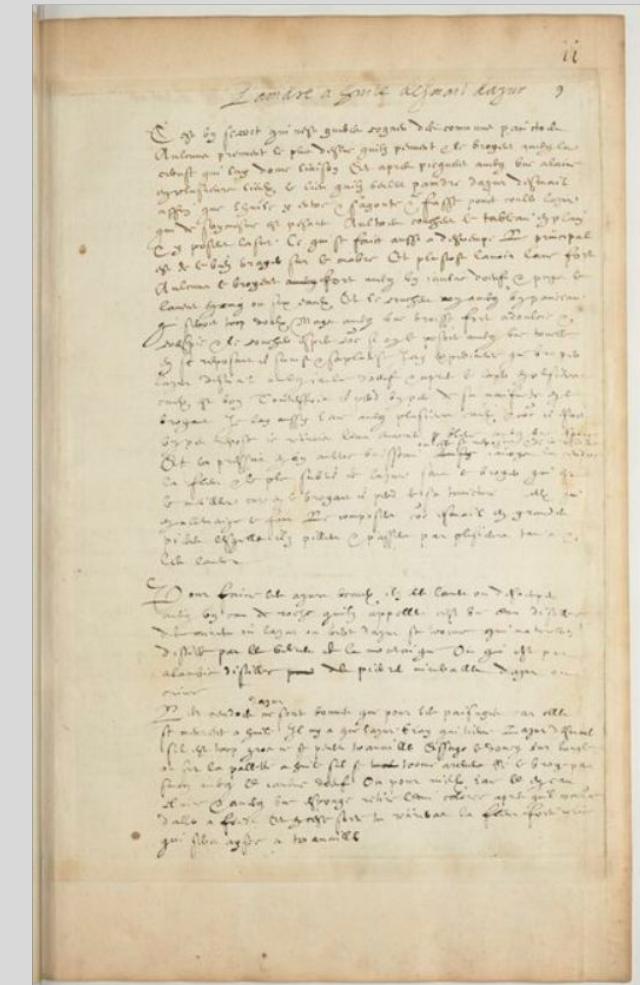
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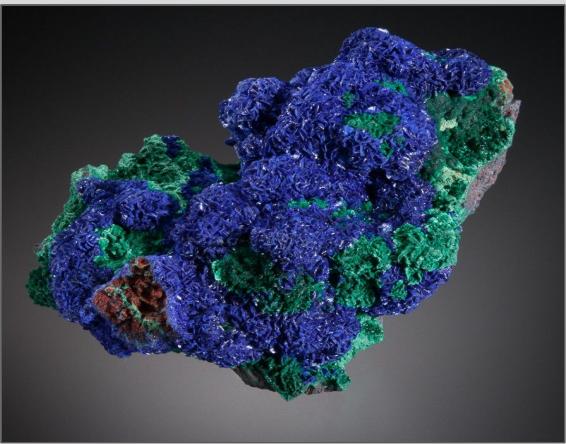
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**Read out loud together**

# Preparing and Using Azurite



## *Painting esmail d'azur in oil (fol. 11r)*

*The main thing is to **grind it well on marble**, and before that, to **have washed it thoroughly**.*

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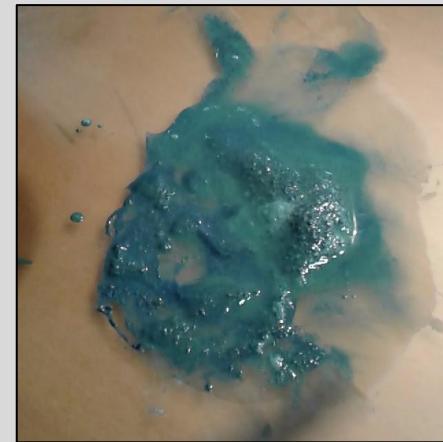
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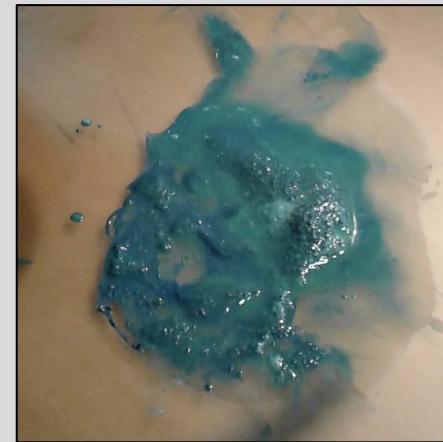
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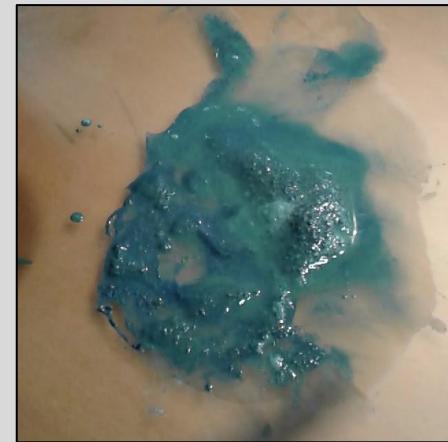
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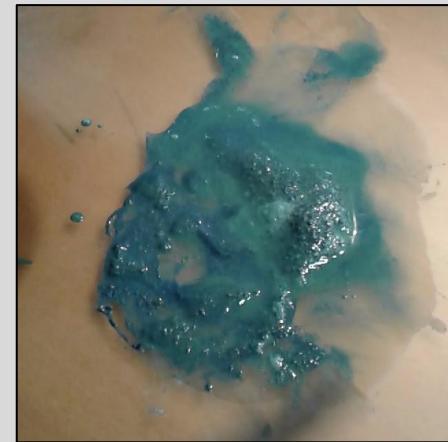
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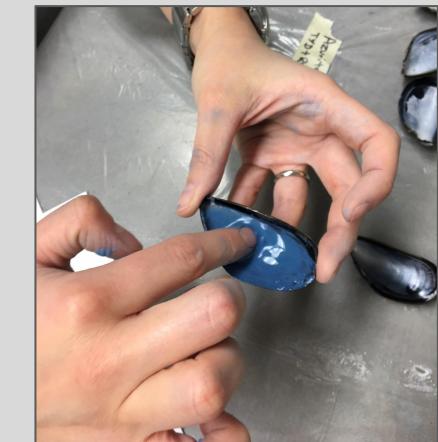
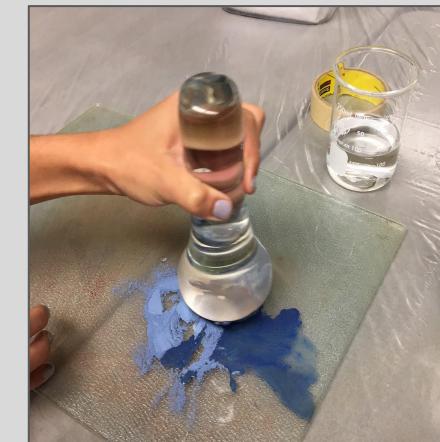
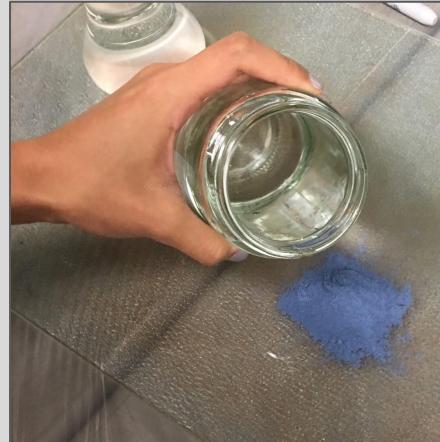
**Painting esmail d'azur in oil (fol. 11r)**  
**Wash it in clear water** & with a  
**sponge remove the colored water**  
**after it starts to go to the bottom**, and  
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# Preparing and Using Azurite



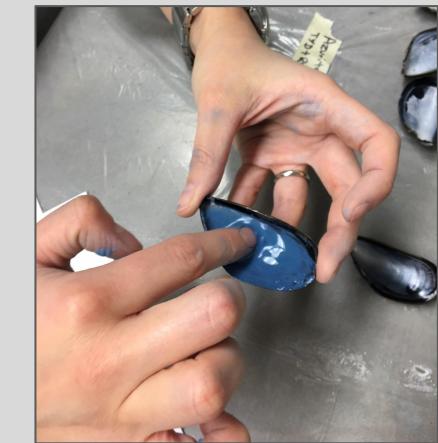
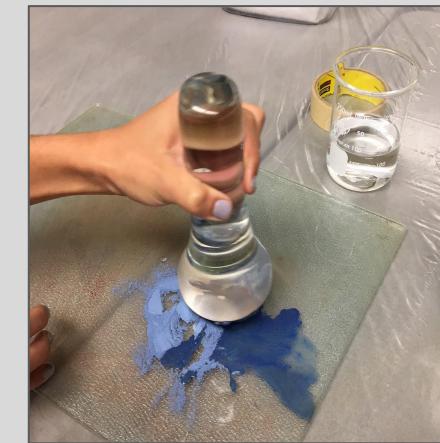
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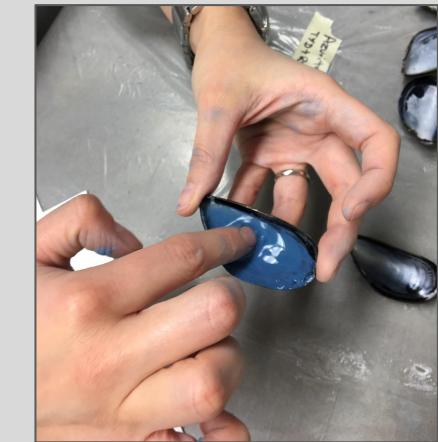
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# Preparing and Using Azurite



# Questions for consideration

- **Observation:**
  - What does the stone look and feel like?
  - Other than the blue parts of the stone, what other inclusions (different types of stone) can you see?
  - When the stone is ground, what does the powder look like?
  - How does it behave in water?
  - What do the particles look like?
- **Embodied experience:**
  - What kind of movements do you use in each step of the process (grinding, adding water, pouring, painting out)?
  - How does it feel to grind the azurite stone?
  - How does it change when you add water?
  - Can you manipulate the separation of the particles? How? (time, amount, ratio of water, speed of pouring)
  - How many different “grades” can you get?
  - When painting the different grades out, is there a difference between the paler and darker colors?
  - Is there a difference in the way each paint wants to be handled or flows off the brush?
- **Artisanal knowledge:**
  - What kind of knowledge would you need in order to prepare, apply, handle, appreciate these materials?
  - How might you acquire that knowledge today and historically?
- **Asking new questions:**
  - What new questions does this experience cause you to ask about paintings or other works of art in general?