



Sheep-feet bone black

Reconstruction
Recipe by Mitens/Mayerne, 1629

Recipe (1629)

M^r Mitens Peintre tres excellent. 18. Septemb.
1629.
Labeur de noir.

Le meilleur de toute les noirs, qui se vend le meilleur
duquel mesme on peut glaver, est le noir d'ivoire,
ou soit de pied de mouton. lequell se mettent
par pieces dans un creuset. quil faut bien cou-
vrir d'une huile ou huile, & luster les jointures si
spaclement que rien ne respire, le tout se fait
sur un bon feu, par l'effraye d'un bon feu
lument, autrement les os pourroyent blanchir.
ainsi soit bruler la matiere a parfaite noir-
ceur.

Ce noir soit spaclement
broye sur le porphyre ou escaille avec de l'huil-
le de noix ou de lin y adjoustant pour un liure
d'un noir la quarantieme partie comme un
quart d'once de verd de gris. Ce quil faut enten-
dre si vous avez un bon grand labour a faire.
Aultrement broyer en seulement pour la neces-
se presente de la besogne que vous avez a
faire. Car tant plus ce noir est frais broye
tant meilleur il est & plus il se vend. Advi-
siez que le verd de gris soit spaclement mesle
parmy tout le noir. Appliquez le selon l'art.
Il se brisera, quoy que non pas si tost que les
autres couleurs qui sont pres de d'ivoire
de brune.

Comme d'ivoire
finissier, qu'on
vend la barre
avec une pelle
le pied d'ivoire
brune, comme
une barre ou
cote. Laquelle
si vous n'avez
avec une pelle
laquelle, il
se fait un noir
comme j'ay
trouve, comme
un j'ay trouve, &
a l'usage d'un
advertissement
autres pour
peindre. Il y a
un autre j'ay
trouve mesme



Recipe (1629)



Diplomatic transcription

Mr. Mitens peintre tresexcellent.

18. Septemb. 1629

Labeur de noir.

Le meilleur de tous les noirs, qui s'estend le mieulx, & duquel mesmes on peult glacer, est le noir d'yuoire, ou d'os de pieds de moutons, lesquels se mettent par pieces dans vn creuset, qu'il fault bien couvrir d'une tuile ou brique, & luter les jointures si exactement que rien ne respire; le tout sec soit mis dans vn bon feu, par l'espace d'une heure seulement, (aultrement les os pourroyent blanchir), & ainsi soit bruslée la matiere a parfaite noirceur. Ce noir soit exactement broyé sur le porphyre ou escaille avec de l'huile de noix ou de Lin, y adjoustant pour une liure dudict noir la quarantiesme partie (comme un quart d'once) de verd de gris. [...] Appliqués le selon l'art. Il se seichera, quoy que non pas si tost que les autres couleurs qui sont prises de diuersité de terres.

(transcription in: Berger, Ernst, 1901. *Beiträge Zur Entwicklungs-Geschichte Der Maltechnik*. Muenchen: Callwey, p. 264ff.).

Translation (English)

Mr. Mitens, Excellent painter.

18. Septemb. 1629

Work with black.

The best of all blacks, which can be spread the best and with which one can even glaze, is ivory black, or that prepared from the foot bones of sheep. These, in pieces, are put in a crucible, which is well covered with a brick and the seams tightly sealed so that no air can penetrate, and put the whole thing on a strong fire, not longer than an hour, (otherwise the bones will bleach) and thus the mass is burned to a perfect black. This black is most exactly ground on the porphyry or shale with nut oil or linseed oil and for a pound of black add a fortieth part (about a quarter of an ounce) of verdigris. [...] Use it accordingly to the rules of art. In general it does not dry as quickly as the other colours that are extracted from the various earths.

(translation in: Fels, Donald C., 2010. *Lost Secrets of Flemish Painting: Including the First Complete English Translation of the De Mayerne Manuscript, B.M. Sloane 2052*. Rev. ed. Floyd (VA): Alchemist.)

Handout instructions

Source

Mayerne, Théodore Turquet de. 1620. '*Pictoria, Sculptoria et Quae Subalternarum Artium*' (the 'Mayerne Manuscript'), British Library, B.M. Sloane 2052, fol. 93r

Annotation: "Mr. Mitens peintre tresexcellent. 18. Septem. 1629"

Ingredients & equipment

Lamb- or sheep feet bones

Boiling water and pot, brush

Fire

Iron-cast crucible with lid

Metal mortar & pestle

Grinding slab stone, muller, water

Gum Arabic solution (not mentioned in recipe)

Sweet water shell, brush (not mentioned in recipe)

Preparation steps

- (1) Boil lamb-feet bones, remove the meat and remove residues by brushing them off
- (2) Remove the bone marrow
- (3) Light a fire
- (4) Put bones in a crucible, close the crucible
- (5) Put the crucible on the fire and let it there for about 2 hours
- (6) Crush the charred bones in a metal mortar & pestle
- (7) Grind the powder on a porphyry stone with a muller and water, add gum Arabic

Date & Place

"Burgundian Black" Summerschool ROOTS: Research on the origins of historical techniques, University of Antwerp, 1-5 July 2019 and "*Black*", hands-on workshop for master students painting conservation, Conservation & Restoration Department, University of Amsterdam, 20 February 2020.

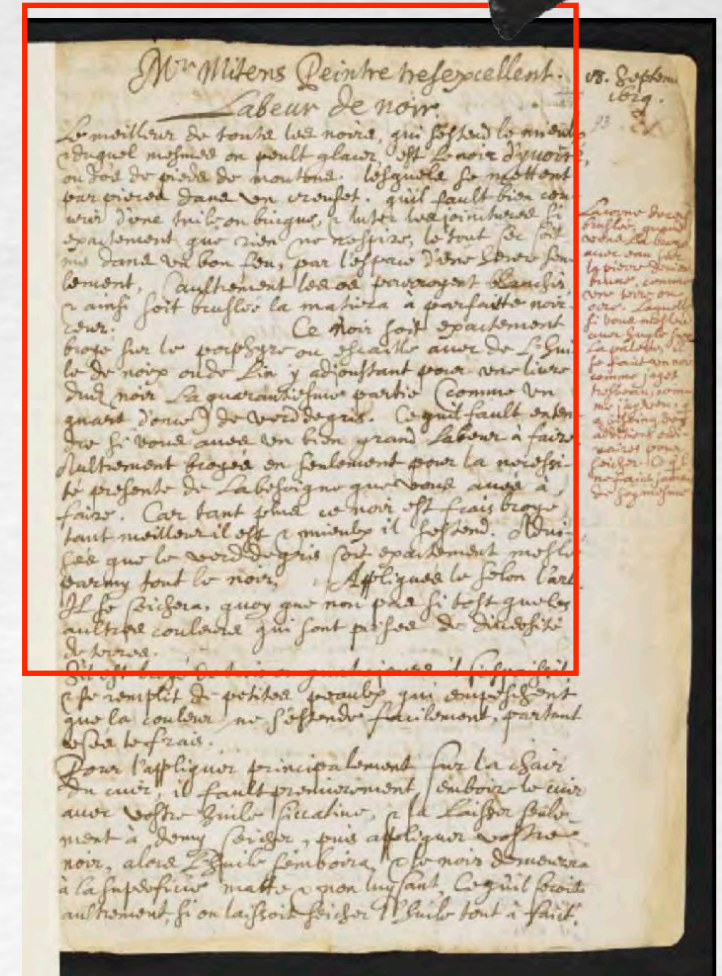


Photo report: step-by-step reconstruction



1. Clean and boil lamb-feet bones



Sheep hoove's are cooked.

The meat is removed and the bones are boiled again in water and cleaned by brushing.

The bones still contain bone marrow. The bones are crushed and the marrow is scraped away.

Photo report: step-by-step reconstruction



2. Crush and char lamb-feet bones



The bones are placed in a crucible which is closed with a lid. The crucible is placed into a fire for 4-5 hours.

Bones charred in anoxic conditions have a deep black colour. However, if air enters the crucible, the oxygen causes further combustion. As result the bones turn chalk-like white, rendering the bone mineral visible (bone white, hydroxylapatite). This is already described in the recipe:

"le tout sec soit mis dans vn bon feu, par l'espace d'une heure seulement, (aultrement les os pourroyent blanchir)" .

Photo report: step-by-step reconstruction



3. Crush and grind charred lamb-foot bones

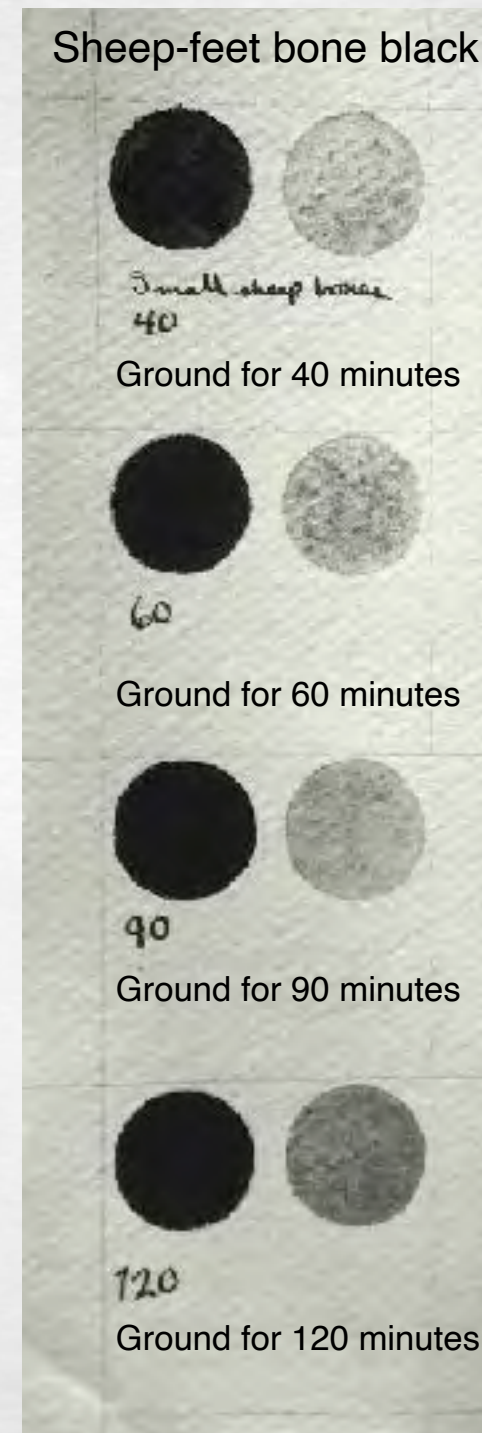


The charred bones are crushed in a metal mortar. The resulting powder is ground on a stone with a stone muller and water.

Photo report: step-by-step reconstruction



3. Transfer the bone black into a shell and apply on paper



What did we learn during the reconstruction?



Removing all organic parts as well as the marrow from the bones before charring decreases the reaction time.

One hour as stated in the recipe was sufficient to burn the sheep feet bones in the Amsterdam experiment, in Antwerpen they were burnt for more than 3 hours. Crushing the bones into smaller pieces as suggested by the author of the recipe reduces the burning time.

Where air/oxygen entered the crucible, the parts of the bones which were in direct contact with the air turned white.



What did we learn during the reconstruction?



Deviating from the recipe, gum Arabic was added as binding medium instead of oil, in order to create a water colour. This made a good paint.

Grinding larger amounts of sheep-feet bone black required an unexpected long time. The ideal grinding time turned out to be above 90 minutes. Only then, the paint showed a deeply black, opaque, equal film, and no separate particles in thinner applications.





Enjoy your own reconstructions !

Birgit Reissland

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Heritage on paper and related materials

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