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Making and Knowing Project

**Annotation for BnF Ms. Fr. 640, fol. 131r:**

## Letters and molded paper

**BnF Ms. Fr. 640, fol. 131r**

**Transcription [tc\_p131r, 12 February 2015]**

<title id=”p131r\_a2”>Le{tt}re **papier** moule</title>

## Le{tt}re et papier moule

Escripts de quelque ancre bien gommee ou de quelque couleur

qui aye corps & qui ne se defface point estant mouillee deau

de vye Puys pose ton papier sur la plastre dardille & le

mouille deau de vye Et gecte dune part & daultre

**Write with well gummed ink or with any color which has body & which does not erase once moistened with eau-de-vie. Then, place your paper on a clay slab & moisten it with eau-de-vie and cast on one side & the other.**

**Annotation**

The entry “Letters and molded paper” on fol. 131r explains in just one sentence the process of laying thick ink onto a piece of paper and casting it into clay:

I think PLACE RECIPE HERE (WITH FRENCH IN A FOOTNOTE--OR IN TEXT), AND THEN NO QUOTING OF THE RECIPE IN THE FOOTNOTES..

.This recipe is without exact precedent in previous written sources, and it does not make clear its intended final product. While a reconstruction of this recipe sheds light on its possible outcome, it does not illuminate its purpose. The limited nature of the text suggests that the recipe was not a subject of careful experimentation. Rather, as this essay will demonstrate, this recipe likely represents a less-developed idea inspired by two broader groups of recipes in the manuscript: those related to the casting of thin things and those related to writing tricks.

The recipe begins by calling for writing that uses either well-gummed ink (*ancre bien gommée*) or a colored liquid with body (*quelque couleur qui aye corps*). Immediately evident is the priority given to the viscosity of the writing liquid rather than its appearance, which implies that the paper onto which the ink is laid is unimportant to the final result. The recipe offers no indication of how to make *ancre bien gommée*, although for a contemporary reader, this would have likely been a straightforward process.

As Jo Wheeler has noted, the majority of surviving Renaissance ink recipes are related to the making of iron gall ink, which was used since the twelfth century and involved a combination of iron salts with gall from animal or plant sources.[[1]](#footnote-1) A common source in which to locate such recipes are Renaissance books of secrets.[[2]](#footnote-2) The *De Secreti* of Alessio Piemontese (1555), for example, is filled with numerous ink recipes, each with different merits (cost-effective ink, white ink, etc.). One recipe, “To make ink to write that will allow you to make a large quantity, and very quickly, and at very little expense, and that will be perfect. And to make furthermore ink to print,” calls for the primary ingredient of fish gall, particularly that from ocean regions such as Venice.[[3]](#footnote-3) To improve an ink of simple fish gall, the *De Secreti* calls for adding dust of cuttlefish or dried fish, charcoal, glass, gall, and gum (*gomma*). The practice of varying the ingredients in ink to fit a desired purpose, writing surface or color was therefore common in this period. Recipes in numerous books of secrets call for some form of gum—typically gum arabic—to be added to ink to adjust its viscosity.[[4]](#footnote-4) To render ink “*bien gommée*” would thus likely have involved an increase in the amount of gum in the ink.[[5]](#footnote-5)

The manuscript itself contains two recipes for making ink within a larger recipe on fols. 51r-v for making prints using copper plates.[[6]](#footnote-6) The two recipes call for using linseed and walnut oil, respectively, and combining the oil with crushed garlic cloves and bread crusts. Because such ink was made expressly for the purpose of printing, in the reconstruction we decided to use a different ink. The primary properties of ink with which the author was concerned were its viscosity and its permanence when moistened. The recipe explicitly states that the ink must not run when moistened with brandy, and in a marginal note for a later recipe the author again discusses the need to use waterproof ink when molding paper.[[7]](#footnote-8) In the reconstruction, two inks were used: a modern waterproof ink and an iron gall ink made to historical specifications by the Phoenix-based company “Old World Inks” **[**[**Figs. 1**](https://drive.google.com/open?id=0BwJi-u8sfkVDQTd5VTJQOUNsajg)**,** [**fig. 2**](https://drive.google.com/open?id=0BwJi-u8sfkVDOE42NjZVWWlScWs)**: Waterproof Ink, Iron gall Ink]**. Selecting gum proved a greater challenge. Gum arabic seemed a natural choice, given the prevalence of gum arabic in this period, its use an ingredient for ink in many books of secrets, and its mention in numerous points of the manuscript.[[8]](#footnote-9) In our reconstruction, however, a gum arabic solution was found to have a diluting effect when mixed with ink **[**[**Fig. 3: Gum arabic solution**](https://drive.google.com/open?id=0BwJi-u8sfkVDOERncmFvQ25UcTg)**]**. Rather than raise the letters, the surface of the ink remained flat, even when multiple layers of ink mixed with gum arabic were applied [[**Fig. 4: Gum Arabic Text**](https://drive.google.com/open?id=0BwJi-u8sfkVDMUdpdmlodC1NN1k)**]**. It became clear that a solid form of the gum arabic was needed, but it is worthy of note that the manuscript author also references the use of (arabic?) gum in order to dilute paint pigments.[[9]](#footnote-10)

In the reconstruction we decided to find a different gum to increase the ink’s viscosity, and we therefore used powdered tragacanth gum mixed with water [[**Fig. 5: tragacanth gum**](https://drive.google.com/open?id=0BwJi-u8sfkVDa2UycWpEdmhILTQ)**]**. A resin derived from the sap of an eastern Mediterranean plant, tragacanth gum was available in Europe in the sixteenth century and was widely used. It is explicitly mentioned in Renaissance artistic treatises, often as a binding agent known for becoming hard with time.[[10]](#footnote-11) In the reconstruction, the tragacanth gum was mixed separately with both types of ink, forming a thick, gelatinous paste **[**[**Figs. 6**](https://drive.google.com/open?id=0BwJi-u8sfkVDNm9mWThnMnVwd3c)**,** [**fig. 7**](https://drive.google.com/open?id=0BwJi-u8sfkVDakNFRjFYd2w4a1U)**: Tragacanth gum mixed, Tragacanth gum and ink mixed]**. Initially, we applied this mixture with a calligraphy pen, but the gum proved so viscous that it was necessary to paint it onto paper with a brush. We inscribed a sheet using modern ink with the word “CRAFT” [[**Figs. 8**](https://drive.google.com/open?id=0BwJi-u8sfkVDMWs2cDhxVGYyZ00)**,** [**fig. 9**](https://drive.google.com/open?id=0BwJi-u8sfkVDX0JhSEhXOWFyeUE)**: CRAFT, frontal and side views],** and a sheet using iron gall ink with “ART” [[**Fig. 10**](https://drive.google.com/open?id=0BwJi-u8sfkVDT05jcGlwZTVvQXM)**,** [**fig. 11**](https://drive.google.com/open?id=0BwJi-u8sfkVDalJlWmszZFl6X0k)**: ART, frontal and side views**].

After the ink dried over a period of several days, numerous changes took place. The ink shrank but remained thick and clearly raised above the surface of the paper. Although we applied the ink mixture to gelatin-sized sheets[[11]](#footnote-12) made of hemp and cotton fiber that approximated the qualities of sixteenth-century paper, the sheets curled up after the ink mixture hardened over several days **[**[**Fig. 12: Curled-up Paper**](https://drive.google.com/open?id=0BwJi-u8sfkVDUFJzYlgtRjNfVGc)].[[12]](#footnote-13) The curling of the paper may partly explain why the recipe calls for dampening the sheet with brandy, a step which allowed the paper to relax in shape, albeit causing small cracks in the ink as it spread out. Brandy with a high alcohol content (92 proof) was used out of concern that the tragacanth gum was partly water soluble. An important question was when to apply the brandy. As the sheet with writing was meant to be imprinted into a clay slab [*plastre d’ardille*],[[13]](#footnote-14) one might expect to apply the brandy to both sides of the paper before impressing it, as it would allow the paper to release from the clay more easily. The recipe however seems to call for the opposite order of operations: “Puys pose ton papier sur la plastre dardille & le mouille deau de vye” While the curved paper relaxed in shape after the brandy was brushed on, our action of applying the brandy to the reverse of the paper after placing the paper on the clay may have created problems **[**[**Fig. 13: Laying Paper onto Clay**](https://drive.google.com/open?id=0BwJi-u8sfkVDWFdmcV9fd3IyMlE)**]**. We pressed both sheets hard against the clay by rolling them with a small marble cylinder [[**Fig. 14: Rolling cylinder**](https://drive.google.com/open?id=0BwJi-u8sfkVDNEtZX19jUE4zUWc)], and when we lifted the sheet using iron gall ink, the ink became stuck into the clay on two occasions and had to be forcibly pulled out with the tip of a knife [[**Fig. 15: Removing Ink with Knife**](https://drive.google.com/open?id=0BwJi-u8sfkVDdE5zUC0xdE9FNWM)]. It may be that the author’s ordering of steps was not meant to be followed verbatim, although this difficulty suggested that the recipe may not have been subject to careful experimentation by the author. Nonetheless, the ink created a clearly visible impression in the clay [[**Figs. 16**](https://drive.google.com/open?id=0BwJi-u8sfkVDS3Z2LWZzdWxMQXM)**,** [**fig. 17**](https://drive.google.com/open?id=0BwJi-u8sfkVDTlNMb3BhRVd6czA)**,** [**fig.18**](https://drive.google.com/open?id=0BwJi-u8sfkVDbTN6VWFTRkhhLUU)**,** [**fig. 19**](https://drive.google.com/open?id=0BwJi-u8sfkVDbzUxZFJwb2Z1ems)**: Impressions of CRAFT and ART**].

Once the paper was pressed into the clay and removed, the reverse was also molded according to the recipe’s order: “ gecte dune part & daultre.” While the flat side of the paper created a slightly visible texture in the clay **[**[**Fig. 20: Reverse Molded**](https://drive.google.com/open?id=0BwJi-u8sfkVDVFExbjRsQURFaVk)**]**, the objective of the recipe and especially the instructions to cast both sides remained unclear. The pieces of clay were left on a flat marble slab to dry for a period of several days, which caused them to warp slightly **[**[**Fig. 21: Warped Clay**](https://drive.google.com/open?id=0BwJi-u8sfkVDTnVFY2ZvYm9pYTA)**]**. What was to be done next? Were the dry slabs of clay with an imprinted word the desired product? Their thinness made them brittle and impractical, causing one to break when handled [[**Fig. 22: Broken Mold**](https://drive.google.com/open?id=0BwJi-u8sfkVDbzhnQ2t1LXhIcXc)]. It seems likely that such clay slabs would have been used as molds for a different substance such as plaster, which could simply have been poured onto the clay. The instruction to cast both sides of the paper may indicate that the author intended for the mold to be cast in two dimensions with the clay sheets pressed together. It may be that the clay was meant to have been inserted into a box mold or some other form. Such unknowns suggest that this recipe was not subject to rigorous experimentation.

It is noteworthy that the manuscript folio on which the recipe is found is very cleanly transcribed, with no strikethroughs in the main body of the text which occur frequently on many other pages. Furthermore, the recipe should be considered in relation to the recipe immediately above it, which is entitled “Herbs difficult to burn in the mold” and offers one sentence of instructions to mold such objects “in two to three castings.” The word “*essayer*” in the margin adjacent to the herb-molding recipe likely indicates that the author-practitioner meant to try the herb recipe, suggesting that he copied these recipes from another source or without having actually tried them himself. This hypothesis is supportedby the brevity of the recipes on this folio. Alternatively, the author may have meant to encourage another reader to try the experiment on his own.

One might surmise that the recipe for molding ink on fol. 131r was simply a “thought experiment,” an idea jotted down without empirical testing. The sources for such an idea are likely not textual, as no exact precedent for this recipe in printed books could be found. Rather, this recipe seems closely related first to a number of recipes related to writing found much earlier in the manuscript. On fol. 19v a recipe titled “For writing as well from the left as from the right” states: “Write as best you can with well-gummed ink on as many little cards as you want to write words. & once each letter is well saturated with ink, put it down on your paper & rub with a tooth the back of the card.” This recipe provides a nearly identical process to that described in the first half of the recipe on fol. 131r, using the properties of raised ink to create an imprint on another surface. It is significant that on fol. 19v the recipe explicitly focuses on using this technique to reverse the direction of the writing, as this same process obviously occurred when reconstructing the recipe on fol. 131r. In the case of the recipe on fol. 131r, however, if something were cast into the clay, it would emerge with the writing again facing in the normal direction. This may indicate why the reversal of text was not explicitly discussed on fol. 131r.

The manuscript features an additional group of recipes related to writing that show the author’s broader concern with practical techniques related to this process. Fol. 46v presents a series of such recipes, “Scribe, Oil of sulfur” (used to clean a quill), “Shoemaker” (writing permanent text on shoes), “Erasing a letter” (removing previously written text), “Writing without ink,” “Making letters à jour on paper and other work,” and at the end, “On stone, black letters.” All such recipes are composed of very brief descriptions with no strikethroughs or marginal notes, and many of them involve the same material: oil of sulfur, or sulfuric acid.[[14]](#footnote-15) It is difficult to know how thoroughly these recipes were actually tested, although the recipes reflect knowledge of the properties of sulfuric acid and its potential uses. The recipe “Shoemaker” on fol. 46v employs the third-person to describe the process of writing on shoes, beginning: “If he wants to make some work on black leather shoes.” It may be that the author learned about oil of sulfur from a shoemaker and experimented with this material in developing his own writing tricks.[[15]](#footnote-16) Another possibility is that the author speaks of a hypothetical shoemaker who could use a technique the author himself discovered when using sulfuric acid , just as a writer the author mentions in an earlier recipe on this folio could have used sulfuric acid to clean quills.[[16]](#footnote-17) In either case, the recipes on this folio show a primary concern with the material, oil of sulfur , as a substance for writing. While some of these writing techniques may seem playful or even trivial, there are numerous examples of recipes in books of secrets for erasing ink, as well as for the production of invisible ink, among other such “tricks.”.[[17]](#footnote-18)

In the case of the recipe on fol. 131r, the manuscript author-practitioner’s decision to combine paper with raised ink and making an impression in clay likely relates to his broader interest in molding very thin materials, which is borne out in numerous recipes on nearby folios in the manuscript. On fol. 142r the author gives the recipe for “Molding grasshoppers and other things too thin,” which begins:

If you have a written paper to mold, which is too thin, after you have made the first cast & it has set, give a little thickness to the reverse of your paper with melted butter, which is the most appropriate means there is, & for fortifying the wings of either a butterfly or a grasshopper, or some delicate part of an animal to which you need to give thickness.

The technique of adding butter to the back of paper recalls a similar recommendation by the manuscript author for the casting of rose petals.[[18]](#footnote-19) As this and other recipes suggest, the author-practitioner has established a category of very thin objects that are (evidently) common subjects for casting, such as paper, flower petals, and insect wings. The author is developing a set of techniques for casting such delicate and fragile objects, such as spreading and stiffening them, as it is understandably difficult to make an impression when such objects are too thin and fragile.[[19]](#footnote-21) As the reconstruction showed, fine clay would likely warp too much when dried to make an effective cast of paper. It is understandable that the author would recommend a shortcut for casting thin items, as he does in a separate recipe for molding a fly, noting that if its wings are imperfect, they can be made by cutting out a small piece from flattened metal.[[20]](#footnote-22) In the case of the recipe on fol. 131r, however, such a shortcut would have been impossible, as the objective was to cast the impression of the lettering. With further experimentation, perhaps the author could have devised a more comprehensive recipe for casting raised writing on paper.

1. Jo Wheeler, *Renaissance Secrets: Recipes & Formulas* (London: V&A Publishing, 2009), 99. [↑](#footnote-ref-1)
2. On this genre, see especially William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Visual Culture* (Princeton, N.J.: Princeton University Press, 1994), and Elaine Leong and Alisha Rankin (eds.), *Secrets and Knowledge in Medicine and Science, 1500–1800* (Farnham and Burlington, VT: Ashgate, 2011). [↑](#footnote-ref-2)
3. “*A fare inchiostro da scrivere che ne farete gran quantità, et prestissimo, et con pochissima spesa, et sarà perfetto. Et per fare ancora inchiostro da stampare*.” The cheapness of the recipe derives from one’s ability to eat the fish and save the gallbladder. See Alessio Piemontese, *Secreti del Reverendo Donno Alessio Piemontese* (Venice: Sigismondo Bondogna, 1555), 188. [↑](#footnote-ref-3)
4. Wheeler, *Renaissance Secrets*, 99. [↑](#footnote-ref-4)
5. A recipe on fol. 51r refers to the use of “*eau bien gommée*” to coat a stone on which to rub paper. This was presumably water with gum arabic added. [↑](#footnote-ref-5)
6. This recipe is titled “Cutters of printing plates.” It is unclear whether this recipe refers to the use of an engraved or an etched plate, and the process could presumably be used for either type of process. [↑](#footnote-ref-6)
7. In a marginal note to the recipe on fol. 142v for casting very thin objects, the author writes: “If you write on paper or on common carton & that your letter is with gum, the humidity of the clay slab or the wet sand for noyau will moisten your letter {&}undo it. Therefore write with cinnabar wettened with oil, on oiled paper & impress.” [↑](#footnote-ref-8)
8. For example, the manuscript calls for using gum arabic in the making of yellow varnish (fol. 74v). [↑](#footnote-ref-9)
9. In a note adjacent to the recipe “Painting big figures” on fol. 65v, the author writes: “Illuminators who paint over sheets of paper, dilute their colors with gum. They mix gum with a bit of soap, this way colors run better.” [↑](#footnote-ref-10)
10. Tragacanth gum was used not only for making paints but also for art objects that required greater volume, such as stucco and sugar sculptures. Mary Merrifield, *Medieval and Renaissance Treatises on the Arts of Painting* (New York: Dover Publications, 1967), 1,362, 484, 494; Marina Belozerskaya, *Luxury Arts of the Renaissance* (Los Angeles: J. Paul Getty Museum, 2005), 246. [↑](#footnote-ref-11)
11. Gelatin was frequently used along with other starch additives to stabilize the viscosity of the paper and improve ink resistance. See http://www.naturalpigments.com/art-supply-education/sizing-paper-gelatin for further information. [↑](#footnote-ref-12)
12. Corresponding with Timothy Barrett at the University of Iowa’s Center for the Book, we decided that the best type of paper to use for this recipe would be gelatin-sized sheets made of hemp and cotton fiber. These sheets are typically used in the care and conservation of rare books from the period, thus they would have a comparable effect with regard to adherence to the ink. The sheets we received, according to Mr. Barrett’s email correspondence, were “50-50 hemp and cotton, heavy weight for a book paper, and third quality.” [↑](#footnote-ref-13)
13. In his French-English dictionary of 1611, Randle Cotgrave defines ardille as “clay, loame, tough mold.” See the entry in Cotgrave, *A Dictionarie of the French and English Tongues*. [↑](#footnote-ref-14)
14. Beyond the numerous references to oil of sulfur on fol. 46v, this substance is mentioned only briefly on two other folios in the manuscript. On fol. 46r, the author mentions that to whiten teeth “it is said that sulfur oil is excellent,” and later on fol. 117v the author says it can be used to wet asparagus when making a life cast of it, given asparagus’s distinctive hardness. [↑](#footnote-ref-15)
15. Another shoe-related recipe using sulfur oil is found near the bottom of folio 46v, explaining that this substance could heat up boots without producing flames. [↑](#footnote-ref-16)
16. The recipe titled *“Scribe, Oil of sulfur”*, the author writes: “If a writer wants quickly to clean his quill from some dried thick ink, one has only to dip it in some sulfur oil, and immediately it will be white and clean.” [↑](#footnote-ref-17)
17. On the history of invisible ink since antiquity, see Kristie Macrakis, *Prisoners, Lovers, and Spies: The Story of Invisible Ink from Herodotus to al-Qaeda* (New Haven: Yale University Press, 2014). [↑](#footnote-ref-18)
18. See fols. 154v-155r, as well as the “Annotation for BnF. Ms. Fr. 640, fols. 129r; 155r; 155v:

    ‘Molded Roses’; ‘Molding a Rose’; ‘Roses’.” [↑](#footnote-ref-19)
19. For another recipe that discusses adding thickness to insects’ wings before casting, see “Molding flies” on fol. 149r: “Large flies can be molded & cast. But you must grease them on top of their wings with wheat oil, which dries quickly and firms them up & gives them a little thickness. The same is done with butterflies, cicadas, grasshoppers & similar things.” [↑](#footnote-ref-21)
20. In the recipe on fol. 156v, “Moulding a fly,” the author writes: “If it happens that you have some defects with your fly’s wings, hammer some very fine tin, or gold or silver, if you cast it, and shape with scissors the amount you need for your wings.” [↑](#footnote-ref-22)