**Pompholyx, chalybs and cancer in early modern Italy (HSC collection 01)**

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In the first centuries AD, two eminent authors imposed, for a millenium and a half, the idea that two metals, *pompholyx* or *cadmia,* were especially appropriate for curing diseases of the eye. At the Renaissance, another metallic product, *chalybs,* started to compete with the traditional drugs prescribed for ocular disorders, and its therapeutic virtues extended to other diseases, notably to one of the most dreaded of all: carcinoma or cancer. [[1]](#footnote-1) This article tries to retrace how, in Italy, during the sixteenth century, a change occurred which led from the ancient use of metallic medications to a completely different one by a series of gradual transformations. This intellectual evolution reflects at the same time the competition which opposes the flowering of the sciences in the most brilliant universities of Italy and a revolution in the general paradigm of European medicine.

1. **Dioscorides on cadmia and pompholyx**

In his treatise *On Medical Material,* the Greek physician and pharmacologist Pedanius Dioscorides (c. 40 AD-c. 90) devotes the first chapter of the section “On the metallic stone” to “Cadmia” (chapter 42). “The cadmia comes from brass made red-hot in furnaces, which adheres to the walls and to the roof with the soot”. Iron rods of a great size, called *acestides* by the metalworkers, arejoined together at the top of the arch so that the particles that are carried up from the brass may be attached and settle there. Adhering together they grow into a clump, and sometimes one kind, sometimes two or all are made. It is also made from a burned stone called *pyrites.*[[2]](#footnote-2)

Dioscorides adds: “The best cadmia is the Cyprian called *botryitis,* which is thick, moderately heavy, but rather inclining to lightness, looking like a cluster, coloured like ash, so that the Greeks say it looks like *spodium”-* which literally means “ash”. The botryitis “is useful for eye medicines” and cadmia in general is supposed to ‘repress abnormal growths of the flesh and create a new skin on malignant ulcers”. This therapeutic extension already opens a window on to the treatment of excrescences which are “unnatural”.

The following chapter of *On Medical Material* deals with “Pompholyx”(chapter 43). Dioscorides discusses at length how pompholyx is produced, especially from cadmia which is finely ground so that light particles attached to the roof of the furnace “look like bubbles standing on water” and then “like wool fleeces”. The heavier particles fall underfoot and are spread about, some into the furnace and some to the floor of the house. This material is thought to be worse than the thin particles, because it is earthy and full of filth from gathering it. “Pompholyx is astringent, cooling, filling, purging, and somewhat drying”. [[3]](#footnote-3) There is no general difference between pompholyx and spodium. ”For the *spodos* is somewhat black and for the most part heavier as it is full of lumps, hairs and earth”, while pompholyx is fat, white and altogether very light, so that it can fly into the air.

In the first century AD, Pliny, in his *Natural History,* also defined cadmia as an artificial substance formed in the furnaces where gold, silver and notably copper are smelted (XXXIV, 21). [[4]](#footnote-4) The one which is lighter, friable and red was recommended as ‘extremely useful as a remedy for infections of the eyes’. Pliny’s observation was less often referred to, in Renaissance literature, than that of Dioscorides and also than Galen’s.

1. **Galen and Largus on diseases of the eye**

At least a century after Dioscorides and Pliny, Galen devoted the book IV of his treatise *On the Composition of Medications according to Places* to ocular diseases. He also proposed to cure them with cadmia and pompholyx, which clean and dry runny or verrucous eyes, stop “watery eyes”, remove “any swelling of the flesh”, etc. [[5]](#footnote-5) They are especially good as, burned and washed, they have something astringent about them but without any harshness

On these points, Galen refers to another author of the first century AD : Scribonius Largus, who was probably not one of the emperor’s own physicians, but “had good connections” with Augustus, Tiberius, Claudius and their family. [[6]](#footnote-6) His *Drug Recipes* mentions forty-five minerals among 271 compositions. Several recipes use cadmia or pompholyx to cure “humoral flowings, troubles, tumours and pains of the eyes”, ‘scars of the eyelids which are recent”, pustules, suppurations, etc. [[7]](#footnote-7) Two aspects of the medications are suggestive, if not decisive, from the point of view of the object of the cure and of the way it is effected.

First, Largus mentions cadmia or pompholyx which are used in the “Pacchius Antiochus’s white plaster”, prescribed to cauterise the wound due to the operation required “for the breasts of women where is found some hardness” (CCXX). [[8]](#footnote-8) V. Nutton has written: “Paccius Antiochus, on his deathbed c. AD 30, described his wonderful painkilling remedy in a letter to the Emperor Tiberius, who then arranged for it to be available in public libraries for all to read”. [[9]](#footnote-9) Nicolas-François-Joseph Eloy specified, in 1778, that Pacchius, “a disciple of Philenides”, was only known by Largus. [[10]](#footnote-10) This is the first time that we meet cancer of breast.

The way the metal is used by Largus also announces the *modus operandi* of the future “chalybean treatment”, one millenium before the latter will become commonplace in Europe. Recipe XXIV deals with “a collyrium made from ashes”, which is employed by the physician or pharmacist holding over the head of his patient, affected by an eye disease, a piece of burning cadmia or – which is best – of botrytis doused in some “wine of Falerno”. [[11]](#footnote-11) It has been noticed that this collyrium corresponds to what is called “collyrium of Zosimus” by Galen. [[12]](#footnote-12)

1. **Which other diseases are cured by metals in Galen?**

The treatise *On the Composition of Medications according to Kind* first asserts that they are suitable for use against ulcers, notably when the spleen or the liver is affected, due to varicose veins which must be extracted, and because the part around the ulcer must be scarified and the scabs taken off. [[13]](#footnote-13) The desiccating power of the metallic drugs is discussed by Galen after he has referred to Dioscorides. Thus, the cadmia and the *sphragis* of Lemnia, in Transylvania (Romania), are said to dry moderately and Galen is used to “make it dry more effectively by putting it under the sun, in summer, in vinegar or wine for several days”. [[14]](#footnote-14)

Then a decisive prescription is developed in chapter 18 of the second book entitled “A clear guide to making plasters against ulcers which are *cacoëthes,* that is to say vicious and which are difficult to heal”. [[15]](#footnote-15) J. Rouëssé has reminded us that ‘Aulus Cornelius Celsus (c. 25 BC-c. 50 AD), surnamed the Latin Hippocrates and the Cicero of medicine, used the term *kakoethos* – for ‘bad state’ or’bad nature’– to designate a tumour which was likely to be cured, but which could degenerate into an occult cancer, then into an ulcer and at least into a ‘fleshy tumour’. [[16]](#footnote-16) ”I have also prepared”, Galen wrote, “many other remedies which have the virtue of curing this type of ulcer. But let us repeat now these, or say which composed plasters may be used without harm. They are made from cadmia, pompholyx, lime, burned oysters, murex shells, the osseus part of cuttlefish”, etc. [[17]](#footnote-17)

Galen’s *The Method of Medicine* notably mentions pompholyx among the pharmaceutical preparations for curing wounds. It depends on the organs which are affected, on the degree of dryness and humidity, and on the relationship between the notch and the nerve which appears with the wound. When the arteries, the veins, the matrix and the rectum are concerned, a metallic preparations mixing pompholyx, saffron and aloe is required. [[18]](#footnote-18) For wounds which are “without humidity and recent”, the preparation with pompholyx is “less painful and less efficient”. [[19]](#footnote-19) A similar preparation is suitable when “the nerve is exposed”, “a large quantity of flesh being opened”. [[20]](#footnote-20) Clearly, the minerals are used for infections “between the inside or the outside” of the body.

The recourse to pompholyx for the inner organs is at least highlighted in the *Method for Medicine to Glaucon,* in chapter 12 of the second book, which deals with “the cancerous tumours occurring in all the parts, but especially in the breasts of women who are no longer being purged by the natural evacuation”. [[21]](#footnote-21) Galen wrote: “All such unnatural tumours have their genesis in a melancholic superfluity” and they “are generated in the liver in relation to the formation of blood, analogous to the lees in wine, and it is to be purged away through the spleen”. Thus:

I refer to the liver being adapted to the generation of such a superfluity, through a diet consisting of those foods which by nature generate blood that is thick and muddy, and a spleen that is weaker in nature and more unable to draw all that is generated in itself.

When this “bad humour” rushes down to dilated veins “and is sometimes thrust toward the skin as a whole”, the illness is called elephas. When it reaches “other parts of the body which are the weakest of all”, we may call the illness *scirrhus* or *cancer.*

The elephas requires “purifications” which are also beneficial as they include bleedings.

Neither in the case of cancerous swellings nor in these is it inappropriate to phlebotomize, if nothing prevents this, and next to purge. (…) Place the juice of sleeping nightshade on the affected part, for this is the best medication for such infections. If the person being treated doesn’t want a moist medication to be applied in this way (…), you must look to the medication made from pompholyx, which I use, as you know, in the ulcerated cancer. [[22]](#footnote-22)

1. **Ancient and Moderns on pompholyx and eye diseases**

We do not have here to trace the history of metallic drugs from Dioscorides, Largus, Pliny and Galen, until the end of the 15th and the 16th centuries. Their rediscovery by the Italian Renaissance from this time constitutes an object of research in itself, and my purpose is only to sketch it. [[23]](#footnote-23)

Among those who perpetuated this use of metallic drugs around 1500 in Italy, Antonio Benivieni (1443-1502) was probably one the most eminent and influential. After having studied in Pisa and Siena, he practised medicine with great success in Florence. [[24]](#footnote-24) He possessed a large medical library including, in 1487, around seventy manuscripts of Greek, Latin and Arab authors. He did not publish any medical work in his lifetime and his treatise *On Some Hidden and Surprizing Causes of Diseases* was only edited in Latin in 1507. From the point of view adopted here, it is already significant that he refers to a product corresponding more or less to pompholyx and cadmia: the *tutia,* or what the Arabs of the Middle Ages called *tutiyâ*, that is to say a sort of copper sulfate. [[25]](#footnote-25) Benivieni prescribed it in cases of syphilis and in potions supposed to ease pain and dissolve “thick and sticky matter”.

Around the time Benivieni published his book, a radical change occurred in the history of Italian medicine as it transmitted or rediscovered Dioscorides’ and Galen’s ideas. [[26]](#footnote-26) A. Castiglioni has written: “Against Galen’s doctrine, always widespread and dominant, a revolt developed which tended to shake from the pillars an authority considered as indisputable, until this moment, in parallel with the awakening of the conscience and the movement of Reform in other fields”. [[27]](#footnote-27) This movement emerged in the fields of anatomy and physiology. “In Italy, among the first who rebelled against Galen’s authority were Leoniceno, the famous master of Ferrara, Giovanni Manardi, Leoniceno’s student, Luigi Mondella, di Brescia, professor at the Studium of Padua, Musa Brasavola of Ferrara and Girolamo Fracastoro”.

Niccoló da Lonigo, detto Leoniceno (1428-1524), became famous for a book entitled *On Pliny and on the Errors of Several Other Physicians* (1509). [[28]](#footnote-28) Castiglioni adds :

Haller, first, and afterwards Sprengel and others attributed to Leoniceno the boast of having been the best critic of his time and the first to have discussed and refuted, not only Pliny the Elder and the naturalists, but also Serapione and Avicenna, whose original manuscripts, compared with the translations of the classics, allow him to assert that the latter did not know Greek.

As is common, Leoniceno got some part of his fame by being very aggressive concerning Pliny whose “crass ignorance” (*crassis erroribus*) in medicine was denounced throughout pages notably dealing with anatomy; “dangerous errors” made by Avicenna were also stigmatized. [[29]](#footnote-29)

Some of Leoniceno’s followers mentioned by Castiglioni appeared in a collective volume of *Medical Letters* in 1556, which could be seen as the consecration of the ideas propagated by “the Moderns”. It was not published in Italy but at Lyon, as Leoniceno’s book on Galen had been published in Basel. The *chalybs* was mentioned several times in this volume: this represents an early display, at least as a collective manifestation. Let us recall that the Latin chalybs “steel” took its name from that of a river in Celtiberia whose water was supposed to be good for cooling it. One of the ways of making a medicinal remedy from chalybs was commonly described as follows. A piece of red hot steel was plunged several times in water or wine and the steel-water was given to the patient. This product could also be obtained by putting small bag of steel filings in some liquid and by warming the latter in a “glazed earthen jug”. Then, this material had to be boiled “at low heat” and digested for several hours until a potion was ready to be administrated. Another way of making the “chalybean remed” simply consisted in grinding and crushing a sheet of metal on the anvil so that you get a finely-pulverised powder or filings. The operator took on a knife small leaf-tips which were incorporated into preparations. Of course, the recipes were different according to countries, traditions, apothecaries, etc.

**5.** **Manardi’s prospects: from pompholyx to chalybs and from eye to internal diseases**

Giovanni Manardi or Manardo (1462-1536), mentioned above, who was already a lecturer in medicine at Ferrara in 1482-1483, succeeded Leoniceno in 1524.[[30]](#footnote-30) From 1513 to 1518, he had been attached to the court of Vladislaus II and Louis II at Buda – a fact which will turn out to be important from a medical point of view. Another point which could throw light on his scientific position lies in his appointment as a personal physician of Alfonso d’Este, duke of Ferrara, who reigned over the duchy of Modena and Reggio.

This professional load is due to his flattering international reputation. He published in 1521 *Medical Letters* which were much appreciated by Rabelais and their republication impressed Erasmus. He had learned from Leoniceno how to attract “media” interest. His book is entitled: *Medical Letters where Many Recent Errors and Antique Statements are Revealed.* But at this stage, his use of metallic drugs was still rather old-fashioned. A prescription written in Buda on the fifth of August 1514, dealing with the preservation of eyes and teeth, mixes pompholyx with fennel and balsam wood in acidic white wine which is boiled. [[31]](#footnote-31) Manardi specifies that the proportions may be different according to the ‘German way’: this informs us that he knew about the Hungaro-Germanic pharmacopoeia.

His 1521 *Letters* were reedited in 1528*.* A larger collection of letters was published in 1535, among which a prescription dated April 6 1504 recommends, in the case of “cold eyes” that a patient rubs “a moderately thin ball of yarn” covered with a composition mixing in equal parts “roses, pompholyx that is to say tutia, and lemons or *myrobalanum*”*.* [[32]](#footnote-32)This last word designated several dried fruits. Again, we notice a relevant mention of the Arab *tutia.* However, the 1535 volume offers a new element as another letter discusses the nature and virtues of the *spodium.* Dioscorides and Galen count it among the minerals while Avicenna says that “it is a root of cane inflamed by the strength of wind”, and “others try to sell this thing that they say is much sought after because it is composed of the throat of an elephant”. [[33]](#footnote-33) The noticeable statement lies in the fact that this letter, written in June 1524, deals with a case of pleurisy and precisely concerns the section of a vein: the cure of eyes and teeth is outdated.

We have seen that Manardi was one of the authors who participated to the 1556 collective volume where chalybs was mentioned as a typically modern medication. What happened, in his research into metallic drugs, between the time his 1505-1524 letter were written and the 1556 contribution? Unfortunately, the latter is not dated. It proposes “Advice for a noble lady suffering from spitting blood, fever, ulcer of the soft palate and a cough”. [[34]](#footnote-34) The disease was attributed to a supposed excess of the pituita and bile, “burned and salted”, with mention of Avicenna. But the first interesting element of the treatment lies in the reference to “the vein of the liver” which was involved in a bleeding carried out “once by the right elbow, once by the left one”. A second element was the use of “chalybted water” in the diet, as it was given to the patient in a *julep,* that is to say “a clear, aromatic and sweet potion”. [[35]](#footnote-35)

Of course, no explicit relationship was established between the liver and the “chalybean drug”. But the general idea of the treatment was to “cool” the disease, at least by means of the foods consumed, and such a relationship appears now in the medical landscape.

**6.** **Mondella’s double specification: from pompholyx to chalybs, from eye to intestine and liver.**

Luigi Mondella or Mundella was professor of medicine and botanics in Padua, where he directed the Garden of the university. He is supposed to have enjoyed a great reputation in Italy around 1538-1540.[[36]](#footnote-36) He died in 1553. The letter which mentions the chalybs in the 1556 collection by the ‘Moderns’ reproduces a consultation first published in his *Medical Letters* of 1538, which was several times reedited in Basel, Zurich, Venice and Leiden before 1560. More accurately, this consultation is part of his *Annotations on the Examination of Simple Drugs by Antonio Brasavolae,* published in a volume entitled *Medical Letters containing the Explanation of Various Difficult Questions and Places in Galen.*

We have seen that Antonio Brasavola or Brasavoli (1500-1555) was mentioned by A. Castiglioni among Leoniceno’s followers. He had studied with the latter and with Mondella at Ferrara, where he was appointed professor of medicine. Like them, he attacked the Ancients and reported the “inadequacy of their botanical knowledge”, as well as that of the Arabs, “observing that Theophrastus or Dioscorides in total knew at least a hundredth part of the plants known by the Moderns”. [[37]](#footnote-37) His vindictive tone impressed. He was engaged by Pope Paul III and he was much esteemed by Francis I at the Sorbonne, who gratified him with the nickname of “Musa” – the Muse, the Genius... His *Examination of all the Simple Drugs which are Used in Dispensaries* had been published in Rome in 1536-1537 and was reedited in various European towns at least eight times until 1556. Brasavola considered what Discorides, Pliny, Galen, Paul of Aegina (7th cent.), Avicenna and Serapion had said about pompholyx, spodium and tutia, and concluded that – if they were amateurs rather than genuine physicians in the modern sense – the metallic product must have something good for curing diseases of the eyes. [[38]](#footnote-38)

It is noticeable that Mondella uses at the same time the words *pompholyx* and *chalybs*. The first term, with cadmia, concerns the treatment of the breathing difficulty or asthma, which mostly oppresses the ill person when the latter is lying down: what Galen calls the *orthopnoea.* [[39]](#footnote-39) Mondella writes: “it is indisputable – and we confirm it – that pompholyx or tutia, which is called this way for spodium, may and must be used where necessary, for the affections which concern the outside of the body [*foris corpori*], but not for the inside”. [[40]](#footnote-40) This is similarly confirmed by Avicenna, who writes, with “almost all the physicians of his time”, that the spodium used against diseases which are inside the body is useless.

The word *chalybs* appears ten pages previously, when Mondella discusses Galen’s statements concerning what is called *stomoma* in the treatise *On the Composition of Medications according to Kind.* [[41]](#footnote-41) This means that Galen does not consider explicitly which organs could be cured by chalybs, but deals with the natures and powers of the *stonomatis squama,* literally “flakes or chips of iron or copper” which are detached from the burning mineral. The latter~~s~~, in powders, have a greater or lesser degree of “stringent” or “abstersive” capacity which must be appreciated when they are applied to nerve wounds. Those which are more astringent, caustic, aggressive, must be avoided. They contain an “earthy substance” which obliges us to make them more “subtle”, thinner, by hitting and grinding them for a long time in a mortar with vinegar. Mondella opposes these facts to the ideas of metallic remedies provided by Pliny the Elder – ideas considered as false and typical of his “ignorance of things”. [[42]](#footnote-42)

The reference to chalybs had to be extended to some specific organs. In 1551, Mondella published *Ten Medical Dialogues* which no longer makes reference to pompholyx or cadmia and privileges the chalybean treatment. The latter is first employed in a case of disease of the intestine associated with dysentery – another change in the direction of an “internal disease”. The way it is used is also different. A “burning iron” or some chalybs put over “small brazing stones” are extinguished in a liquid and given to the patient “with bread cooked in a juice of egg yolk”. [[43]](#footnote-43)

In another case, the chalybean treatment is prescribed for a more precise organ. The young Cecilio was a talented sculptor affected by a native disease which excited his bile, especially during the summer, so that the latter mixed his blood and corrupted it. Various dietary treatments were prescribed, but the young man refused to follow them and excesses in food, drink and sex increased intestinal disorders – especially those of the liver – provoking “bilious and bloody excretions”. Clysters were ordered, but with “astringent things”, so that Mondella must compensate for their acidity by giving him to eat “toasted bread in sour black wine diluted in chalybean water”. [[44]](#footnote-44)

Through successive essays on diseases of the eye, of the intestine and of the liver, from 1528 to 1551, Mondella opened the first window on the pre-use of chalybs against cancer.

1. **Pompholyx and chalybs in the treatment of cancer**

It could seem useless to tell at length how the use of substitution of chalybs for pompholyx extended during the generation which followed the middle of the 16th century, especially towards the treatment of the spleen or liver. But the change was at the same time absolutely logical, chronological and, so to say, exemplary of the quickness of scientific experimentation.

Some physicians remain attached to the old use of cadmia and pompholyx as a multipurpose remedy. It is quite understandable from Pietro Andrea Matteoli (1501-1578), who got a wide reputation by publishing an Italian translation of Dioscorides *De materia medica.* [[45]](#footnote-45)Due to the observations included by Matteoli, the book was known as the *Commentaries* and “represented the most important botanico-pharmaceutical text of the 16th century”. It is significant that Matteoli, in his 1564 *Five Books of Medical Letters,* does not refer to chalybs.[[46]](#footnote-46)

The persistence of pompholyx is less understandable in Vittore Trincavelli (1489-1563). We supposed that he deserved a long and lauded career. He joined the College of the physicians of Venice in 1523 and from 1537, for a quarter of a century, he promoted a large number of laureates in the Studium of the city, where “he was the most renowned representative of the new medicine which proposed to overcome the Arabs and to go back to the original Greek texts of Hippocrates and Galen”. [[47]](#footnote-47) Thus, in 1551, he was called and appointed by the university of Padua where he taught as professor of practical medicine until the end of his life.

However, it is striking that his *Medical Consultations and Letters* were onlypublished in 1586 and 1587. Also amazing is the heterogeneous character of the cases which required pompholyx: eye diseases, of course, but also melancoly, vertigo, leprosy, elephantiasis. [[48]](#footnote-48) Some of these consultations involved Trincavelli’s colleagues such as the famous anatomist Gabriele Falloppio (1522-1562), Francesco Frisimelica or Frigimelica (1490-1558), a professor at Padua, and Antonio Francanzano, a colleague – and rival – of Trincavelli. [[49]](#footnote-49) In a consultation dealing with leprosy, Frisimelica uses pompholyx diluted in oil of myrtle… and oil of viper. Another uses the same remedy to cure a German nobleman suffering from elephantiasis. [[50]](#footnote-50)

A more interesting consultation made by Trincavelli deals with a “Malignant ulcer under the knee which degenerates into a carcinoma”. [[51]](#footnote-51) The real nature of the disease is here less important than the way the cure of such a “persistent” and “crue” disease is conceived. The first thing to do, the physician says, is “to avoid anything which could exacerbate and irritate this ferocius animal” (*ab omnibus abstinendum ese, quae exacerbare et irritare possunt malignam hac feram*). Trincavelli recommends drugs which “cure softly” or “which dry and cool moderately, such as lead, especially when it is burned and carefully washed, or pompholyx and cadmia, also well washed, from which ointments are made », etc. The treatment is as exactly that which will be defined and descripted as “the chalybean one”. [[52]](#footnote-52)

Everything decidedly led to the use of minerals against “cancer”. Antonio Fumanello, or Fumanella, gives up pompholyx in his *Opera multa* (1557) and only uses “filings of chalybs” in a chapter entitled “What to do against icterus, jaundice, filling and obstructions of the liver and of the spleen”. [[53]](#footnote-53) The mineral will be especially used in the “electuary for the obstructions of the liver”. The production of “chalybeated milk” still keeps a process mentioned by Mondella: Fumanello makes it with “burning stones or red-hot circles of iron”. [[54]](#footnote-54)

1. **Conclusion**

In order to concentrate on the mechanism of transition from one therapeutic stage to another, some problems, circumstances or connexions have been neglected or veiled here, in the narrative of the general changes in the use of metallic drugs. They may be mostly of a chronological and academic nature.

For example, Pietro Bairo (1468-1558) is supposed to have published in 1512 a *Handbook to Cure the Diseases of the Human Body.* [[55]](#footnote-55)No copy of this book has been found, but several editions appeared in the second half of the 16th century (1560, 1561, 1563, 1565, 1578). [[56]](#footnote-56) Publication in 1512 could have been possible, as Bairo got his degrees in medicine at Turin in 1493 and was appointed professor the following year. However, his reference to the “unguent diapompholigos” in the treatise for Glaucon tends to make him a very special forerunner of the common users of the drug as a medication against cancer, many years ahead – which is also possible. [[57]](#footnote-57)Anyway, the status of pompholyx remains, at least in his *Handbook,* rather traditional, with the importance given to diseases of the eyes, such as white spots on the cornea (*albugines*), and bloody effusion or pruritus, even if Bairo also recommends pompholyx for ulcers of the penis and of the anus or for polyps or blood flows of the nostrils. [[58]](#footnote-58) What he really wrote about metallic drugs – and when – must be the subject of a separate inquiry.

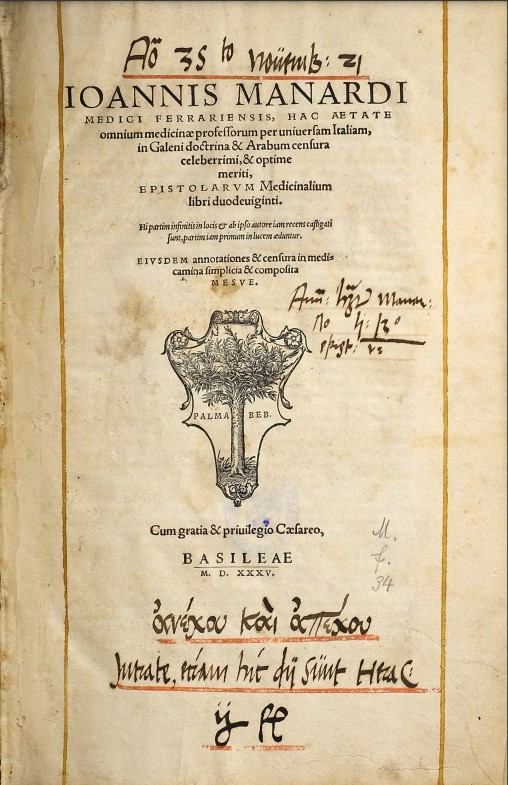
Other chronological problems are related to the period chosen for the present research. It has been noticed that the early Italian Renaissance of the 14th and 15th centuries is also to be considered in another research project. The multifacted development of the recourse to the chalybean treatment for suspected pre-cancerous or cancerous affections, in the 16th and 17th centuries, also represents an extended field of research. Even its Paduan dimension constitutes a large subject which could require that many obscure names be uncovered and that different tools and approaches be implemented; a dietetic inventory and classification have been proposed. [[59]](#footnote-59)

We may find the official acceptance of the remedy in a consultation which was signed by three among the most famous physicians of the time and which prescribed a “vinum chalybeatum” for the treatment of a “scirrhus of the spleen” which seemed to be hereditary, as “the mother and the brother of the patient had been attacked by the same disease”. [[60]](#footnote-60) The case was probably submitted by the Bernardus Paternus Salonensis (who died in 1592), who is supposed to have practised in Salona, a town in Dalmatia (Croatia) which was controlled by the Republic of Venice from the beginning of the 15th century. [[61]](#footnote-61) The other signatories were: Mercuriale, Antonio Capodivacca (15th cent.-1555 ?) and Fabrici d’Acquapendènte (1533-1619).

The book which contained this consultation was printed in 1603 in Frankfurt. It could seem anecdoctal, but places of publication are often indicative of the changes in the geography of medical centers and, consequently, in the evolution of the medical paradigms. When the “Moderns” chose to publish outside Italy, it may be seen as a way distancing themselves from the common area of the most renowned medical tradition: a way of announcing the existence of a “more advanced scientific state”. It started with Leoniceno publishing in Basel in 1509 his catalog of *the Errors of Several Other Physicians.* The 1556 volume which brought together his followers was published in Lyon.

But the most suggestive distancing from the citadel of tradition considered as “old fashioned” lies into the challenge between Ferrara and Padua. Leoniceno was “the master of Ferrara” and his student Manardi took his responsibility for medicine. Manardi’s appointment as a personal physician of the duke of Ferrara, who reigned over the duchy of Modena and Reggio, was not without some academico-political involvement. The duke, at the beginning of the 16th century, fought with the Papacy against Venice which extended its authority over Padua and finally recovered the city after having lost it. A rivalry may be detected between the “Roman and Imperial Ferrara” and the “Venetian Padua”. Manardi also proudly published in Basel “with imperial grace and privilege”, in 1535, his *Twentty-two Medical Letters* (ill. 1). Even Mondella, who taught in Padua but was a student of Manardi, published his *Dialogi* in Zurich, where Fumanello edited his *Opera multa.*

The “modern medicine” which determined the switch from Pompholyx to Chalybs clearly developed under the influence of countries using German and of Paracelsus’ chimiotherapy. Examples of the German adhesion to the chalybean treatment have been described. [[62]](#footnote-62) The use of the drug in other countries under the direct influence of Arab medicine, and where pompholyx was challenged by tutia, also needs further investigation. [[63]](#footnote-63)



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1. Michael Stolberg, *A History of Palliative Care, 1500-1970. Concepts, Practices, and Ethical Challenges* (Cham, 2017), 2. Many thanks to David Adams (Professor Emeritus, Department of French, Manchester University, [david.adams@manchester.ac.uk](mailto:david.adams@manchester.ac.uk) ) for having corrected the English version of this article. I am also grateful to Muriel Collart (Collaboratrice scientifique, Université Libre de Bruxelles) and to my wife Alice Piette for their constant support. [↑](#footnote-ref-1)
2. Dioscorides, *De materia medica libri V* (Cologne, 1529), 645-646; Dioscorides, *De materia medica,* ed. Tess Ann Osbaldeston and Robert P. A. Wood (Johannesburg, 2000), 781-784. [↑](#footnote-ref-2)
3. Dioscorides, *De materia,* 648-649. [↑](#footnote-ref-3)
4. Pline, *Histoire naturelle,* ed. S Schmitt (Paris, 2013), 1571-1574. [↑](#footnote-ref-4)
5. Galenus, *De compositione medicamentorum secundum locos liber IV,* in *Opera omnia,* ed. C. G. Kühn (Leipzig, 1826), XII, 717-723: « Cap. V. De ocularium medicamentorum viribus », etc. [↑](#footnote-ref-5)
6. Vivian Nutton, *Ancient Medicine* (London and New York, 2013), 5, 175-178. [↑](#footnote-ref-6)
7. Scribonius Largus, *De compositione medicamentorum liber* (Basel, 1529), XIX-XXIV, XXVII, XXXIII-XXXIV, 21-26, 28-29. [↑](#footnote-ref-7)
8. *Ibid.,* 155-157. [↑](#footnote-ref-8)
9. Nutton, *Ancient Medicine,* 174. [↑](#footnote-ref-9)
10. Nicolas François Joseph Eloy, *Dictionnaire historique de la médecine ancienne et moderne* (Mons, 1778), III, 446. [↑](#footnote-ref-10)
11. Largus, *De compositione,* 23-24. [↑](#footnote-ref-11)
12. Frédéric Jules Sichel, *Cinq cachets inédits de médecins-oculistes romains* (Paris, 1845), 9. [↑](#footnote-ref-12)
13. Galenus, *De compositione medicamentorum per genera lib. IV,* p. 657 sq. [↑](#footnote-ref-13)
14. The treatise *On the Composition of Medications according to Places* uses for example pompholyx for curing affections of the bottom (*De affectionibus sedis*): Galenus, *De compositione medicamentorum secundum locos liber IX,* in *Opera omnia,* ed. C. G. Kühn (Leipzig, 1826),XIII, 309. [↑](#footnote-ref-14)
15. Galenus, *De compositione medicamentorum per genera lib. II,* 449 sq. [↑](#footnote-ref-15)
16. Jacques Rouëssé, *Une histoire du cancer du sein en Occident* (Paris, 2011), 5. [↑](#footnote-ref-16)
17. Galenus, *De compositione medicamentorum per genera lib. II,* 450-451. [↑](#footnote-ref-17)
18. Galenus, *De methodo medendi lib. V,* in *Opera omnia,* ed. C. G. Kühn (Leipzig, 1825), X, v, chap. 7, 337; Galien, *Méthode de traitement,* transl. J. Boulogne (Paris, 2009), 295. [↑](#footnote-ref-18)
19. Galenus, *De methodo medendi lib. V,* chap. 15, 382; Galien, *Méthode de traitement,* 328*.* [↑](#footnote-ref-19)
20. Galenus, *De methodo medendi lib. VI,* chap. 3, 401-402 ; Galien, *Méthode de traitement,* 343-344. [↑](#footnote-ref-20)
21. Galenus, *Ad Glauconem de medendi methodo lib. II,* in *Opera omnia,* ed. C. G. Kühn (Leipzig, 1826), XI, ii, chap. 12, 143; Galien, *De la méthode thérapeutique, à Glaucon,* in *Œuvres anatomiques, physiologiques et médicales,* ed. C. Daremberg (Paris, 1856), II, 783 ; Galen, *A Method of Medicine to Glaucon,* ed. I. Johnston (Cambridge and London, 2016), 555-556 ; Galien, *De la méthode thérapeutique, à Glaucon,* ed. A. Pichot (Paris, 1994), which does not reproduce the chap. 12 ! To the poor edition will be preferred: Galeno, *Sobre el método terapéutico. A Glaucón,* ed. P. E. Espinosa (Madrid, 2019). [↑](#footnote-ref-21)
22. Galenus, *Ad Glauconem de medendi,* 783. [↑](#footnote-ref-22)
23. On Galen’s Byzantine and Arabic transmission, see Petros Bouras-Vallianatos, « Galen in Late Antique Medical Handbooks », in Petros Bouras-Vallianatos and Barbara Zipser ed., *Brill’s Companion to Classical Reception* (Leiden and/ Boston, 2019), 38-61 ; Manfred Ullman, *Islamic Medicine* (Edinburgh, 2008). [↑](#footnote-ref-23)
24. Ugo Stefanutti, « Benivieni, Antonio », *Dizionario Biografico degli Italiani* 8, 1966. [↑](#footnote-ref-24)
25. Antonio Benivieni, *De abditis nonnullis ac mirandis morborum et sanationum causis* (Florence, 1507), fol. avi v°-aviii r°, ciii r°-ciiiv°. On the *tutia,* see Marίa Teresa Herrera, Marίa Nieves Sánchez and Marίa Purificación Zabίa Lasala, ed., *Diccionario español de textos médicos antiguos* (Madrid, 1996), s. v° ; Mario Esteban de Antonio, “ La cicatrices corneales : su terminologίa a través de la historia, ”  *Anales de la Sociedad ergoftalmológica española,* 28 (1999), 3.1.3 ; Daniel Droixhe, “ Guy de Chauliac et la tradition française et espagnole du traitement du cancer par les métaux à la Renaissance, “ *Histoire des sciences médicales,* 4 (2022), 157-169 - <https://hdl.handle.net/2268/298950> . Cons.15-02-23. [↑](#footnote-ref-25)
26. Stefania Fortuna, “Editions and translations of Galen from 1490 to 1540, ” in *Brill’s Companion to the Reception of Galen,* 437-452. [↑](#footnote-ref-26)
27. Arturo Castiglioni, *Storia della medicina* (Verona, 1948), I, 388. [↑](#footnote-ref-27)
28. Paolo Pellegrini, « Niccoló da Lonigo », *Dizionario Biografico degli Italiani* 78, 2013. [↑](#footnote-ref-28)
29. Nicola Leoniceno, *De Plinii et aliorum medicorum erroribus liber* (Basel, 1529), 140, 301. [↑](#footnote-ref-29)
30. Margherita Palumbo, « Manardi, Giovanni », *Dizionario Biografico degli Italiani* 68, 2007. [↑](#footnote-ref-30)
31. Giovanni Manardi, *Epistolae medicinales in quibus multa re centiorum errata et antiquorum decreta reserantur* (Ferrara, 1521), V, 64 v°. [↑](#footnote-ref-31)
32. Giovanni Manardi, *Epistolarum medicinalium libri duodeviginti* (Basel, 1535), 72, line 17. [↑](#footnote-ref-32)
33. *Ibid.,* 273, line 45. [↑](#footnote-ref-33)
34. *Epistolae medicinales diversorum authorum, nempe Ioannis Manardi, Nicolai diede, Aloisii Mundellae, Io. Baptistae Theodosii, Ioan. Langii Lembergii* (Lyon, 1556), 174: « Epist. IIII. Consilium pro nobili quadam matrona, sputo sanguiis, febre, ulcere palati, tussi, laborante ». [↑](#footnote-ref-34)
35. Charles Guyotjeannin, « Julep », in Olivier Lafont, ed., *Dictionnaire d’histoire de la pharmacie. Des origines à la fin du XIXe siècle* (Paris, 2003). 234. [↑](#footnote-ref-35)
36. Nicolas Eloy, *Dictionnaire historique de la médecine* (Frankfurt, 1756), II, 202 ; Eloy, *op. cit.* (1778), III, 356; Nancy G., Siraisi, *Communities of Learned Experience. Epistolary Medicine in the Renaissance* (Baltimore, 2013), 5-6. [↑](#footnote-ref-36)
37. Giuliano Gliozzi, « Brassavola, Girolamo », *Dizionario Biografico degli Italiani* 14, 1972. [↑](#footnote-ref-37)
38. Luigi Mondella, *Epistolae medicinales, variarum quaestionum, et locorum insuper Galeni, difficilium expositionem continentes. Eiusdem annotationes in Antonii Musée Brasavolae simplicium medicamentarum examen* (Basel, 1543), 257, 543-546, 811 etc. [↑](#footnote-ref-38)
39. Galen, *De compositione medicamentorum secundum locos liber VII,* in *Opera omnia* (1826), XIII*,* chap. 6, 105 sq., here 114. Among various remedies is mentioned the *misyos* or misy. [↑](#footnote-ref-39)
40. Mondella, *Epistolae,* 257. [↑](#footnote-ref-40)
41. Galen, *De compositione medicamentorum per genera liber IV,* 761. [↑](#footnote-ref-41)
42. Pliny the Elder, *The Natural History,* XXXIV, xxv-xxvi; Pline l’Ancien, *Histoire naturelle,* xxv-xxvi, 1573-1574. [↑](#footnote-ref-42)
43. Luigi Mondella, *Dialogi medicinales decem, nunc primum in lucem editi* (Zurich, 1551), 48 r°. The same medication is used in another similar case: *ibid.,* 36 v°-37 r°. [↑](#footnote-ref-43)
44. *Ibid.,* 41 v°-42 r°. [↑](#footnote-ref-44)
45. Cesare Preti, « Matteoli, Pietro Andrea », *Dizionario Biografico degli Italiani* 72, 2008. [↑](#footnote-ref-45)
46. Pietro Andrea Matteoli, *Epistolarum medicinalium libri quinque* (Leyde, 1564), 35. [↑](#footnote-ref-46)
47. Stefania Fortuna, « Trincavelli, Vittore », *Dizionario Biografico degli Italiani,* 96, 2019. [↑](#footnote-ref-47)
48. Vittore Trincavelli, *Consiliorum medicinalium libri III. Epistolarum medicinalium libri III* (Venice, 1586), 73 v°; Vittore Trincavelli, *Consilia medica post editionem Venetum et Lugdunensem, accessione CXXVIII Consiliorum locupletata, et per locos communes digesta. Epistolae item philosophicis et medicis quaestionibus insignitae expolitaeq.* (Basel, 1587), col. 50, Cons. XVII; col. 694, Cons. CXXII, etc. [↑](#footnote-ref-48)
49. Trincavelli had a superior mastery of humanities, according to Melchior Adam, director of the Heidelberg Academy, but « Francazanus, who attracted by sweet words the young people, was more popular ». See

    Melchior Adam, *Vitae Germanorum medicorum* (Heidelberg, 1620), 204. [↑](#footnote-ref-49)
50. Trincavelli, *Consiliorum medicinalium,* col. 690 sq. : « Cons. CXXIIII ». [↑](#footnote-ref-50)
51. Trincavelli, *Consiliorum medicinalium,* col 667-669: “Cons. CX. Ulcus malignum sub genu in carcinoma degenerans ». [↑](#footnote-ref-51)
52. The hesitation between the old and the new medication is noticeable in Donato Antonio Altomare, who shows a sort of hybrid status. On the one hand, he maintains the recourse to pompholyx as a remedy for the eyes in his treatise *On the Cure of Human Diseases* (1558). If he uses chalybs, it is only for cases of people suffering from spitting or vomiting blood. [↑](#footnote-ref-52)
53. Antonio Fumanello, *Opera multa, et varia, cum ad tuendam sanitatem, tum ad profligandos morbos plurimum conducentia* (Zurich, 1757), 345-346: « Cap. XLIII. Quae faciunt adversus icterum, morbumve arquatum, iecinorisque, et lienis infarctus, et obstructiones ». [↑](#footnote-ref-53)
54. Fumanello, *Opera multa*, 89. [↑](#footnote-ref-54)
55. Mario Crespi, « Bairo, Pietro », *Dizionario Biografico degli Italiani* 5, 1963. [↑](#footnote-ref-55)
56. See copies in the Bayerische StaatsBibliothek. [↑](#footnote-ref-56)
57. Pietro Bairo, *De medendis humani corporis malis enchiridion* (Basel, 1560), I, chap. 7, 451-453 : « De curatione cancri ». [↑](#footnote-ref-57)
58. Bairo, *De medendis,* 89 sq., 94-95, 124-128, 380, 389. [↑](#footnote-ref-58)
59. Daniel Droixhe, *Alimentation et maladie. Consultations à Padoue à l’aube des temps modernes* (Bruxelles, 2021). [↑](#footnote-ref-59)
60. Antonio Capodivacca or Capivaccio, *Opera omnia, quinqu. section. comprehensa* (Frankfurt, 1603), 979 : « Cons.XXXVI. In scirrho lienis ». On the idea of cancerous transmission, see Daniel Droixhe, « Tracing tradition. The idea of cancerous contagiousness from Renaissance to Enlightenment », *History of European Ideas* (2020) – <https://doi.org/10.1080/01916599.2020.1742451>; Daniel Droixhe, « Transmission et tribulations. Sur l’historiographie de la contagion cancéreuse à la Renaissance », Revue de Synthèse, 143/1-2 (2022), 1-6 – <https://hdl.handle.net/2268/266024> [↑](#footnote-ref-60)
61. Paternus could be mentioned as « Bernardus » in Robert Burton’s *Anatomy of Melancholy,* which was very knowledgeable about medicine. See Daniel Droixhe, « Toutes ces chosexs bizarres que les gens prennent comme nourriture. Poison, cancer et consultations à Padoue au début des temps modernes », *Archives internationales d’histoire de sciences,* 72 (2022), 52-76. – <https://hdl.handle.net/2268/293738>. [↑](#footnote-ref-61)
62. Daniel Droixhe, Treatment using chalybs, according to Johannes Hartmann and Eberhard Gockel: A remedy against diseases of the liver and the spleen in 17th century Germany, Eprint/Working paper retrieved from https://orbi.uliege.be/2268/255436. – <https://hdl.handle.net/2268/255436>; Daniel Droixhe, “Le traitement de l'hydropisie et des maladies de la rate et du foie dans une correspondance germanique du XVIe siècle. Autour de Thomas Erastus », Histoire des Sciences Médicales, 4 (2022), 361-374. – <https://hdl.handle.net/2268/298963>. [↑](#footnote-ref-62)
63. Daniel Droixhe, « Guy de Chauliac et la tradition française et espagnole du traitement du cancer par les métaux à la Renaissance », Histoire des Sciences Médicales, 4 (2022), 157-169 –<https://hdl.handle.net/2268/298950> ; Daniel Droixhe, « Chauliac in Spain », *Medicina, Historia y Sociedad*.. [Sitio web historiadelamedicina.org](https://historiadelamedicina.wordpress.com/sitio-web-historiadelamedicina-org/) (2023). – <https://hdl.handle.net/2268/299973>. [↑](#footnote-ref-63)