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5 Pharmacy Price-Lists as a New Type of Documentary Source for Research into Historical Artists' Materials: The Münchner Taxenprojekt

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It is well known from historical pharmaceutical research that pharmacists in medieval and early Renaissance times supplied not only medicines and basic pharmaceuticals, but also materials for daily use, such as sweets, soap, tea and writing materials (Fig. 5.1). However, their function as traders of artists' materials has been largely overlooked until now. In his *Il libro dell'arte* (written perhaps in the 1390s), the Florentine, Cennino Cennini recommended the purchase of pigments from the pharmacy ('*da' speziali*'), because there they could be obtained in a much better quality than if one were to make them oneself.¹ German documentary sources of a similar period, such as the Strasbourg Manuscript (Germany, early 15th century)² or the *Liber illuministarum* (Germany, 1450–1512),³ often contain statements which indicate that pharmacists stocked artists' materials in Germany also.⁴ Valentin Boltz von Ruffach, for example, writing in 1549, recommended his readers to buy *Mirram* (myrrh), *Moler Lac* (red lake), *galitzen stein* (white vitriol, $ZnSO_4 \cdot 7H_2O$), *Mumnian* (mummy), and *Wysser bolus* (white bole) from the pharmacy; *victriol* (green vitriol, $FeSO_4 \cdot 7H_2O$) or *oger gäl* (yellow ochre) could have been bought from the grocery store as well.⁵

There are two reasons why the pharmacies were predestined for this task: first, many painting materials, such as lead white (basic lead carbonate, $2PbCO_3 \cdot Pb(OH)_2$) or gum arabic, were

basic pharmaceuticals and had to be stocked in every pharmacy anyway. Secondly, many pigments, such as realgar or orpiment (orange and yellow arsenic sulfides, AsS or As_4S_4 and As_2S_3 respectively), are toxic so that strict measures were taken to ensure that they were only sold by trained pharmacists. For example, the pharmacy regulation of Passau (Bavaria) expressly forbade the sale of lead white, orpiment, verdigris (copper acetates of variable composition) and other such materials by grocers (*Materialisten*).⁶ Occasionally, an exception was made and a grocer was permitted to trade in these materials; however, this was always under the strict supervision of a pharmacist. It was only from about 1800 onwards that shops specialising in artists' materials took over this function from the pharmacy, at least in the large cities.



Figure 5.1 Scene from a medieval pharmacy, from O. Brunfels, *Reformation der Apotecken*, Strasbourg 1536,⁷ Library of the University of Erlangen-Nürnberg.

One of the few surviving inventories of historical pharmacies – the inventory of the only pharmacy in Kolberg (Kołobrzeg, Poland) from 1589⁸ – lists, for example, more than 100 kg *Braunrodt* (brown ochre), 29 kg *Citrina wie es ist* (lead-based yellow in different shades), 4.8 kg *Lazuri opt.* (azurite), 225 g *Lapis Lazuli* (azurite or perhaps ultramarine), 105 g *Lacca Rubra durcheinander* (different red lakes) and several hundred pieces of gold and silver leaf, as well as *Zwist Goldt* (*Zwischgold*, the English ‘party gold’, a leaf made of gold and silver beaten together). It is remarkable that this pharmacy in a small and unimportant town like Kolberg provided absolutely everything that a contemporary painter required. Furthermore, the surprisingly large quantity of materials stocked and the prices given in various currencies also indicate just how large an investment a pharmacist had to make.

The pharmacist probably only prepared pharmaceutical products, not the artists’ materials, except for black iron-gall ink. He therefore had to buy them. If he did not live in a town located on one of the larger trading routes, he would have to travel to one of the twice-yearly trade fairs in a city such as Frankfurt, Leipzig, Antwerp or Strasbourg.⁹ The catalogue from the Frankfurt trade fair of 1582 gives a detailed description of the goods available to the pharmacist.¹⁰ Included in the abundance of raw materials (*simplicia*) and pharmaceutical preparations (*composita*) are also pigments and binding media, which were usually offered in different qualities. For example, there was a locally made lead white (*Cerussa*), a lead white from the Netherlands (*Cerussa Antueriana*) and another from Venice (*Cerussa Veneta*) (Fig. 5.2). This type of cheap product was offered by the hundredweight, which might explain the large amounts stocked by the pharmacies. On the other hand, expensive products, such as azurite (the blue mineral basic copper carbonate, $2\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$), were also sold by the pound in the wholesale trade.

According to the Edict of Salerno issued by Emperor Frederick II in the early 13th century, German pharmacies were obliged to make pub-

	fl.	Sh.	Cr.
<i>Cedria, pix Cedrina, Resina Cedri, Cedernharz oder Eech.</i> li. i. j. pf.			
<i>Cedri Bacca, Cedernbaumbeer oder Frucht.</i> li. i. j. lb.			
<i>Cedri Resin, vel Lignum, Cedernhast oder Holz.</i> li. i. j. lb.			
<i>Centaurium magnum, Rheumtick, Groß Kurrin/ oder Centaurwurk.</i> Such vnd den im R. Rheumticum.			
<i>Cepa semen, Zwiebel samett.</i> Modius i. j. Seffer.			
<i>Cepa Hispanica, seu Bülli sinen, Spanisch zwiebelsamett.</i> lib. i. j. pf.			
<i>Cera, Wachs, Centumpond.</i> i. j. Centner.			
<i>Cera Virginea, Zugfrälwen Wachs.</i> Centump. i. j. Cent.			
lib. i. j. lb.			
<i>Cera alba, seu lina, Weißwachs/ Geweschen oder gebelcht</i>			
<i>Centumpond.</i> i. j. Centner.			
lib. i. j. pfundt.			
<i>Cera lutea, Gelb Sigelwachs.</i> lib. i. j. lb.			
<i>Cera rubra, Rot Sigelwachs.</i> lib. i. j. lb.			
<i>Cera rubra Hispanica, Rot Spanisch Sigelwachs.</i> li. i. j. pf.			
<i>Cera viridis, Grün Sigelwachs.</i> lib. i. j. lb.			
<i>Cera olcum, Wachsöl.</i> lib. i. j. lb.			
<i>Ceraserum nuclei decoricati, Nüssgellepste/ oder geschelte Nüsskernen.</i> lib. i. j. lb.			
<i>Ceraserum nucleorum oleum, Nüsskern öle.</i> lib. i. j. lb.			
<i>Ceraserum Gelatina, Bestandener Nüsschen safft.</i> li. i. j. pf.			
<i>Cerasa Amarena condita, Syngemacht Amarellen/ oder Weinnüsschen.</i> li. i. j. pfundt.			
<i>Cerui cornu, Hirschhorn.</i> Cent. i. j. Cent.			
<i>Cerui cornu visum, Gebrannt Hirschhorn.</i> lib. s. j. pfundt.			
<i>Cerui calcaneus, Hirschprung. Vide Calcaneus cerui.</i>			
<i>Cerefolij, seu Cherefolij, sine Cherephylli seme, Kerbelsamett.</i> li. i. j. pf.			
<i>Cerussa, phymmbriou, Bleiwess.</i> Centump. i. j. Cent.			
<i>Cerussa Veneta, Benedictisch Bleiwess.</i> Centumpond. i. j. Cent.			
<i>Cerussa Antuerpiana, Diderländisch Bleiwess.</i> Cent. i. j. Cent.			
<i>Cerussa Citrina, ochra plumbaria seu facticia/ Bleiwess.</i> Cent. i. j. Cent.			
<i>Cerussa Citrina Anglica, seu optima. Das beste Bleiwess/ Englisches Bleiwess.</i> Centump. i. j. Cent.			

Figure 5.2 Catalogue of the Frankfurt trade fair of 1582, Bayerische Staatsbibliothek, Munich.

lic the prices of all their products in the form of so-called *taxae*.¹¹ These price-lists were released by the relevant town council. Handwritten *taxae* were passed on from town to town where they served the local *medicus* or a member of the *Collegium pharmaceuticum* as an aid for formulations and as a model for their own *taxa*. From 1552 onwards they were also printed.¹² Their validity was usually limited to the town in which they were issued and, because Germany was split at that time into many small principalities, free cities and Hanseatic cities, this led to the appearance of a large number of *taxae*. To date, we have been able to confirm the existence of more than 300 German *taxae* dated between 1443, the year of issue of the first Viennese *taxa*, and 1800; the existence of a further 163 *taxae* is known.

However, the phenomenon of the *taxae* is not limited to Germany. Italian cities, such as Venice, also issued an annual *taxa*. Even in those European countries in which *taxae* were probably not

originally issued officially, we have been able to confirm their existence. The reason for this probably lies in the fact that many German pharmacists, and also German brewers, worked in foreign countries. There they established their tried and trusty lists and then instructed the town officials in their usefulness. *Taxae* from Prague, Stockholm, Copenhagen and St Petersburg are evidence of this. They are usually written in three languages: Latin, German, and the language of the country. In contrast, *taxae* do not appear to have been issued in England or France, apart from a few exceptions which are the result of private initiatives. For example, in the year 1625, the pharmacist Patrick Gordon of Aberdeen published the only *taxa* of Scotland. He stated in the preface that he wanted to introduce the *taxa* system, with which he had become acquainted in Germany and Italy, to the United Kingdom.¹³

The *taxae* are either structured alphabetically or divided systematically into various chapters (*sectiones*), such as *mineralia* or *resinae* (Fig. 5.3). Pigments are usually spread over several *sectiones*. Only occasionally, as first found in the Lignitz *taxa* from 1568,¹⁴ is there a special chapter devoted to *colores* which contains all the materials that are known from the artist's palette. The individual products are listed in Latin and in a German translation, the latter usually in the local dialect, together with the price for the item. The use of Latin, the greatly standardised pharmaceutical language which remained essentially unchanged over the centuries, often provides a useful guideline for our research and helps us to decipher many regional peculiarities of the German designations.

The range of artists' materials available, and also the prices, reflect the multitudinous trade associations of the individual towns as well as important historical events. For example, the available range of pigments was much smaller during the turmoil of the Thirty Years' War (1618–48). Another, rather different, example is that the products from the New World clearly only established themselves very slowly in the pharmacies.¹⁶ Furthermore, the emergence of certain 'new' materials, such as copal resin or gamboge, can be followed in the *taxae*.

Occasionally, certain products, such as lead-based yellows, which did not have a pharmaceutical use and were only used as pigments, are not found in the *taxae*. Such *taxae* usually originate from large cities, such as Augsburg or Vienna. We assume that the *Collegium pharmaceuticum* of these cities must have ensured that only the products given in the local *Pharmacopoeae* or *Dispensatoria* were listed in the *taxae*. This did not include the *colores*, because pigments were not necessary for the survival of the town and so their prices did not need to be fixed. Therefore, some few *taxae* are only of limited use to us. On the other hand, we know that, for example, at the end of the 18th century, the pigment Naples yellow (lead antimonate, theoretical formula $Pb_2Sb_2O_7$) was sold in the pharmacies in Vienna,¹⁷ although the Viennese *taxa* did not list this material.

6	Pars I. Sect. I. Cap. V.	lb. gr. pf.
Cap. V. de	Das V. Cap. von	
Metallis, Mineralibus & Pigmentis.	Metallen/ Bergarten/ Farben.	
Aris florum viridis seu ruginis	Kupferblum, Kupferförmlein Grünspan, Kupfergrün	1
Antimonii	Spiegelas	1
Minerz	Glas, Erz	3
Argentifoliatu	Geschlagen Silber No. 1.	6
Musci	Mahler Silber	3
ad scribendum prepar.	Muschel Silber o. r. Muschel	0
vivi five Mercurii	Quecksilber	2
Arsenici albi	Weiß Pulverrauch, Rattenpul- ver, Arsenick.	2
citriini seu flavi	Gelber Arsenick.	6
rubri, s. Sandaracæ Græc.	Roth	3
Auripigmenti	Auripigment, Opment	4
Aurifoliali bicoloris	Zwischgold	3
fini	Fein geschlagen Gold	3
ad scribendum preparati	Schreib- oder Muschel Gold	6
Cadmiz fossilis metall. seu	o. r. Muschel	3
Cobalt:	Kobalt, Fliegenpulver	3
ferrei coloris	Eisenfarbe	0
Cerussa alba commun.	Weyweiß	3
citriuz opt. seu Anglicæ	Englisch Weygelb	0
vulgar.	Gemeines Weygelb	0
Venetiæ	Venedisch Weyweiß	0
Chalybis limaturæ	Geseilter Stahl	0
Chrysolizæ veræ nativ. met.	Steingrün, Schiefergrün	0
Æthiopia, vide Borrax	Boras	0
Cinnabaris nativæ	Berg Zinnober	0

Figure 5.3 *Taxa* of Leipzig from 1669: Chapter V, 'von Metallen/ Bergarten/ Farben [of metals/ ores/ pigments]' lists most of the pigments used by artists in the mid-17th century.¹⁵ Bayerische Staatsbibliothek, Munich.

The evaluation of the prices of the individual products is a problem. The buying power of the currencies is not known, nor are we currently able to interconvert the currencies of individual towns. Therefore, we have decided to evaluate the individual materials by means of a relative price, which is currently referred to that of verdigris. Nevertheless, the prices are an especially interesting aspect of the *taxae*. For example, we can explain the infrequent use of ultramarine blue or orpiment by German painters at the time of Albrecht Dürer (1471–1528) by their high prices. It seems that the price determined the range of colours on the artist's palette.¹⁸

Although the *taxae* are an extremely important documentary source for research into historical artists' materials as well as the history of pharmacy, they have hardly been examined systematically. Therefore, our current research project on *taxae*, the Münchner Taxenprojekt aims to make this documentary source available as completely as possible. Two approaches will be used: first, information discovered for the approximately 170 artists' materials (i.e. pigments, dyes, binders and glues), as well as some other basic materials, will be gathered in a database and evaluated. Secondly, all printed *taxae* will be digitally filmed, which will allow experts from different disciplines to elucidate particular questions on those materials not evaluated by us. Both parts of the Münchner Taxenprojekt will be made available via the Internet. The project will provide a picture of artists' materials traded at a certain location and at a certain time along with the Latin and German designations. Additionally, there will be a summary of the price development for the period between 1443 and 1800.

Editor's note

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