Standarising drug therapy in Renaissance Europe? 
The Florence (1499) and Nuremberg pharmacopoeia (1546)*

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Summary

During the final decade of the fifteenth century and the first half of the sixteenth century, there were moves to harmonize pharmaceutical therapy in a number of areas of the Mediterranean and Central Europe. The most evident consequence was the appearance of books of compilations of simple and compound remedies specially selected from a wide range of earlier pharmacological literature. These compilations were set up as “standards” by the authorities concerned with public health in many states. In theory, apothecaries were obliged to follow these “official” instructions for preparing and dispensing drugs in order to ensure that the medicines prescribed by physicians were correctly made up and safe. The aim of this paper is to approach the question as to whether we can seriously associate these texts with the real practice of pharmacy and what was its real function, all in all, to throw some light on how great was the contribution of early modern pharmacopoeia to medical attitudes and medical care, and how much can they tell us about actual medical practice. This paper will deal with two early examples: (1499) and the (1546).

Introduction

During the final decade of the fifteenth century and the first half of the sixteenth century, there were moves to harmonize pharmaceutical therapy in

* This paper was started within the framework of a post-doctoral research project funded by the Ministerio de Educación y Cultura (Spain) and carried out at the Wellcome Institute for the History of Medicine (London, U.K.) between 1998 and 2000. I am grateful to Vivian Nutton, for reading earlier drafts. Also to Caroline Tonson-Rye and to Philip Banks for improving its English style.
a number of areas of the Mediterranean and Central Europe. The most evident consequence was the appearance of books of compilations of simple and compound remedies specially selected from a wide range of earlier pharmacological literature. These compilations were set up as “standards” by the authorities concerned with public health in many states. In theory, apothecaries were obliged to follow these “official” instructions for preparing and dispensing drugs in order to ensure that the medicines prescribed by physicians were correctly made up and safe.

This propaganda campaign, encouraged by the development of printing and carried on in a multitude of publications\(^1\), was so successful that it has been a long accepted commonplace in the History of Pharmacy that early Renaissance pharmacopoeia, apart from “opening a new era to European pharmacy”, were the texts which most closely reflected the main developments in pharmaceutical therapy\(^2\). But whether we can seriously associate these texts with the real practice of pharmacy is still open to debate. Like their modern equivalents, the texts probably represented pious hopes or calculated advertisements. In fact, such works may not have been relevant to practical use. The extent of circulation of such texts among health professionals may well be questioned, and they cannot be taken without qualification as being indicative of attitudes towards drugs, diseases and physicians’ or apothecaries’ provisions, still less of actual treatment. Nevertheless, the literature definitely existed, found a market and grew in volume, and it is important to ask what was its real function. How great was the contribution of early modern pharmacopoeia to medical attitudes and medical care, and how much can they tell us about actual medical practice?

**Pharmacopoeia and pharmaceutical historiography**

The first studies to go beyond a simple description of the text and to focus on the contents of early European pharmacopoeia with different quantitative aims should be interpreted within the framework of the birth and the publication of the journal of the history of medicine *Janus* in 1846, related to positivist historiography. This led to direct research on the sources

\(^1\)Volckringer, 1953; Ledermann, 1984.
\(^2\)As Ledermann said “pharmacological literature, books of medicines and pharmacopoeias have constituted one of the objects more studied and probably the dominant subject of the History of Pharmacy from the beginning of the 20th century” (Ledermann, 1984, p. 9).
(Quellenforschung), in which an objective approach and faithfulness to the reality of the documents were to form the basis of a new methodology that broke with the Romantic philosophy of history. Thus, and in line with the impetus of renewal of Sigerist’s generation, the new approach to medical historiography stimulated a more demanding and wider use of traditional techniques. Shifting hitherto neglected documentary sources to the foreground was a characteristic feature of this process.

Pharmacopoeia were also influenced by this new historiographical trend and, as a result of the contributions of the first scholars to examine such works, they became an invaluable source for establishing the key features in the evolution of pharmacology, or the study of drugs in all periods, a field which had till then been excluded within potential contributions of that sources. Among these figures we should emphasise the contribution of Alexander Tschirch (1856-1939), a ‘pharmacognosist’, a specialist in the study of herbal medicine and its pharmacological properties from a scientific point of view, and professor at the University of Berne. By using for the first time early pharmacopoeia to validate his works on ‘pharmacognosy’, he accomplished two fundamental aims: on the one hand, the study of the individual history of each drug (restricting his study to plant-based drugs) and, on the other, an interesting assessment of the evolution of pharmaceutical history in general. In brief, we can say that Tschirch, motivated by his historical preoccupations, established the bases of an interesting interdisciplinary approach by combining the history of pharmacy centring upon the study of pharmacopoeia as text and the nascent discipline of ‘pharmacognosy’, through the contribution of a historical revision of the therapeutic characteristics that each period has attributed to a large number of mainly plant-based drugs.

When, on the occasion of the foundation of the International Society for the History of Pharmacy in 1926, George Urdang reflected on which would be the appropriate fields of study to incorporate in the History of Pharmacy, he excluded the specific area of the history of drugs, including it instead within the field of the history of botany and chemistry. Subsequently, it can be observed that he failed to follow his earlier principles strictly and, as a historian of pharmacy and surely one of the most influential in the world at that time, he was to carry out research on the history of drugs making use of pharmacopoeia. One of his many studies, which is of particular relevance

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3 Tschirch, 1905; Tschirch, 1930-1936.
4 Urdang, 1933; Urdang, 1948; Urdang, 1954.
here, is that which he undertook of the first Pharmacopoeia Londinensis of 1618, published as an introduction to the facsimile edition of this text that was produced by the Institute for the History of Pharmacy in Madison in 1944. The last great link in research focussing on this field is represented by the works that Wolfgang Schneider carried out in the late 1950s and early 1960s, which were subsequently continued by his disciples at the Seminar for the History of Pharmacy at the Braunschweig Technical School (Neuland’s research).

By linking pharmacopoeia to new techniques of statistical analysis of scientific documentation, Schneider was able to establish the “methodology of standardisation” to quantify the role played mainly by mineral and chemical elements through the contents of a series of individual pharmacopoeias, numbering about sixty. On the basis of his work, on the one hand, one can detect an interest in the specific history of each drug or what was being used, in which period and under which names, and, on the other, more generally the importance of various types of medicines in different periods and how the relationship between chemical and plant-based drugs changed over the course of time. Among the works he published, and even though it largely concentrates on chemical drugs, we should emphasise the first, in which the Dispensatorium of 1546 is analysed among other works. As has been mentioned, Schneider had largely restricted his research to chemical drugs and in 1954 he said, “A systematic adaptation of all or a selected series of representative pharmacopoeias with the idea of carrying out research into the values of the medicaments must be halted for the moment and only continued for mineral and chemical drugs”.

In 1957, Schneider referred to a series of possibilities that the standardisation method offered, which had not yet been put to full use: the development of plant and zoological standards, the widening of the study to include contacts outside Germany and the establishment of a suitable historical framework to interpret the results. In fact, it cannot be doubted that Schneider’s work is the starting point for any researcher who wants to delve deeper into the study of the evolution of drugs through

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5 Urdang, 1944.
6 Schneider, 1961.
7 Schneider, 1954; Schneider, 1957.
8 Arends, Schröder and Schneider, 1960.
9 Schneider, 1954, p. 54.
pharmacopoeia. Other studies of the Dispensatorium in the 1970s included the ones by Hans Poeckern and Otto Bessler.

As far as the First Pharmacopoeia Londinensis is concerned, the seed planted by George Urdang was to be followed up by the work of Leslie Matthews, who produced a significant analysis, even though it was limited to therapeutics, of the First Pharmacopoeia Londinensis, on the basis of the relationship between some of the medicinal plants described in it and the information gathered from later English dispensatories. In the field of Italian pharmacopoeia, the only antecedent is to be found in Vincenzo Bianchi’s proposals.

This paper will deal with two early examples: The Nuovo Receptario from Florence (1499) and the Dispensatorium of Nuremberg (1546). I intend to discuss some findings which show irregularities and inconsistencies, resulting from analytical computerized research of the contents of both texts, and to put them into a somewhat broader context. The context derives from the nature of my work, which in the last few years has concentrated on certain features of late medieval and renaissance pharmacology as it affected medical practice, primarily in the fifteenth and sixteenth centuries.

I have found it surprising that we still know very little about the actual contents of these texts. We still need to determine, among other things, the relationship between the list of simples owned by apothecaries and the ingredients of the compound medicines that appeared in the two texts, for one must assume that, in this, as in other areas of publishing, authors were well attuned to the requirements of their readers and users. Then, having considered the literature and its contents, I will examine the authors and the audience who jointly determined both of them.

The Nuovo receptario from Florence (1499)

The first references to the existence of this pharmacopoeia are those of Albert Haller and Father Audiffredi. Primum quantum reperi, dispensarium: this was how Haller expressed himself in his work on the Ricettario although he limited himself to referring to the text via Mattaire’s work and he cited the

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11 Bianchi, 1957.
12 I have worked with the reprinted edition Nuovo Receptario Composto, 1992.
13 I have worked with the reprinted edition by Winkler, 1934.
15 Haller, 1771.
title incorrectly: *Ricettario di dottori dell’arte e di medicina del Collegio Fiorentino all’instantia delli Signori Consoli della Università degli Speciali*, Firenze 1498. In fact, it was Audifreddi who provided the first exact description on the basis of an example in Devoti’s library, while at a later date Fossi took up the task of describing the *Ricettario* again. In 1959, Alfons Lutz referred to this work as fundamental for the History of Pharmacy. Although many earlier references to the text on the part of Italian historians can be found, they often contradicted each other, not as far as the format was concerned, but as regards the date of its appearance, the title, the commissioner and the author’s name.

As is well known, the city of Florence experienced its period of greatest splendour in the 15th century. As a reaction to the Medici autocracy, Savonarola was able to establish a short-lived theocratic democracy in the last decade of the century. After his death on 23rd March, 1498, Florence went through a period of serious internal and external upheaval until the Medici came to power again in 1513. At that time, the guilds that enjoyed greatest influence were represented in the government although it would not be admissible to speak of a truly guild-based regime. The apothecaries, together with the physicians and shopkeepers, belonged to the *Arte dei Medici e Speziali*.

Since knowledge of Latin was not necessary, the *Nuovo Receptario* was written in the vulgar tongue (Tuscan). According to the 1349 guild statutes, the pharmacists were already obliged to have a handwritten book of formulas. However, a new and more suitable book was to appear in printed form. On the last printed page, the so-called colophon says in translation: “Printed in the glorious city of Florence by the Compagnia del Drago on 21st January 1498. At the request of the Consuls of the Guild of Pharmacists”, whose emblem figures on this page. Below there appears the insignia of the guild and the printer’s mark with the letters A.M.A. The guild had six governors called consuls, two from each of the three different parts of the guild. They, in turn, belonged, as in German urban republics, to the urban administration. As regards the date of 21st January, 1498, a more detailed explanation is necessary. In fifteenth-century Florence, the Florentine dating style was in use (Calculus florentinus), according to which the New Year did not start until the Festival of the Annunciation of Our Lady, 25th March according to the modern system of dating. Consequently, the month of December 1498 was followed by January 1498. The date would not be of any significance were it

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16 Audifreddi, 1794, p. 368; Fossi, 1795, pp. 111, 134, Append.
not for the fact that the conclusion has been reached that Savonarola personally subjected the receptario to examination as, by the time the printing of the book was completed on 21st January, 1498 (1499), this reformer had been dead for eight months.

A further complication arises from the Londinense example, housed in the British Library. This is identical to that of Florence in all respects, except for the fact that the colophon has an extremely important annexe. It states: “Printed [...] on 10th January 1498. Published again and improved by Master Hyeronimo, (son) of Master Lodovico dal Pozzo Toscanelli physician and citizen of Florence, at the request of the consuls of the Guild of Speziali”. The colophon of the Londinense version was printed eleven days earlier, in other words on 10th January 1498 (1499). In addition, it contains the author’s name. Italian historians, among them Ciasca, were unaware of this detail, whereas Urdang did refer to two compilers. It would be interesting to have more precise information about the author Girolamo Toscanelli. Lutz was only able to prove that he came from a family of pharmacists, physicians and scholars, and that he had a shop in Via S. Martino in Florence in the 15th century. He was associated with a trading house of drugs and spices imported from the Orient belonging to Lodovico Toscanelli, who died in Pisa in 1483. Girolamo’s origins made him appropriate for the revised edition of a useful book for pharmacists, and we are unlikely to be wrong if we suppose that the publication of a unified book of remedies was due to his initiative.

The first part of the prologue is addressed to the governing board of the guild. It refers to “our” apothecaries in the city and in the “Contado”. The latter refers to all the surrounding areas under direct Florentine rule and the Florentine guild would therefore have controlled the “speziali” there, although frequently against their will. Nevertheless, Toscanelli and the publishers were not to be satisfied with a solution that resulted in a book of internal regulations; what they sought was that their list of prescriptions should be given official status. Moreover, the commissioners (who were responsible for sponsoring the undertaking) were aware, as they demonstrated when referring to the common good, that public hygiene was not only a matter for their association, whose main preoccupation was often the private advantage of its members, but also required the attention

17 Lutz, 1959; Park, 1985, p. 41.
of those responsible for public health and, consequently, had to be submitted to state legislation.

The abbreviated heading of the second part refers to the “conforto delle Signorie Vostre” and, to judge by this expression, it must have been addressed to the “Signorie”, in other words the ruling body of Florence. Reference is made, in the second person, to “your” pharmacists in the city, in the Contado and in your “distretto”. The “distretto” was the sphere of lordship which included, as opposed to the Contado, the entire state of Florence, together with larger, formerly self-governing cities, such as Arezzo, Pistoia, etc. Nevertheless because the majority of the city-states had their own guilds independent of those of Florence, it must have been envisaged that it was necessary to present the Nuovo Receptario before the greatest authority in the land.

The aim therefore was that the document should be awarded official status and thus become obligatory for every aspect of medicine in the whole country. Lutz considered that the legal validity of these documents should be examined. To judge by experience, a simple reference to its official nature on the grounds of its obligatory character, whether in the title, the dedication or the prologue, lacks credibility until it can be checked and demonstrated to be beyond challenge. According to Lutz, such proof does not exist in the case of the Nuovo Receptario. Moreover, there is likely to have been some controversy concerning the Nuovo Receptario either within the guild or government. This can be deduced from the fact that the author’s name was erased from the colophon. Neither can any reference be found to the Nuovo Receptario in the years in question in the guild’s statutes, which had to be presented annually, with any modifications, for examination by a state commission.

As far as the pharmaco-therapeutic aspects are concerned, in the first instance it can be deduced from the introduction that the compilation was drawn up on the basis of the lists of antidotes and remedies that had circulated throughout the Middle Ages, and the suitability of such compilations for the tasks of the healer on the eve of the Renaissance is clearly emphasised.

Thus, the introduction to the text may lend support to the idea that the first official European pharmacopoeia were more than straightforward literary productions and that there was a clear attempt at systematisation and standardisation in pharmacological treatment in response to practical intentions. In the course of a following section I shall examine to what
extent it might have represented a useful tool at a practical level.

The work is divided into three books. The first: *Della bottega dello Speziale e dei libri che esso debe tenere* (Dottrine prima e seconda). Here aspects such as the prerequisites for setting up the apothecary’s shop and the most essential books for the work of the professionals associated with it are considered. Among these texts Simon of Genoa’s *Clavis sanationis*, Matteo Silvatico’s *Liber pandectarum*, and Abu al-Qasim’s (Abulcasis’) *Liber Serapionis* stand out. Simon of Genoa’s *Clavis sanationis* was printed several times in the course of the 15th century and was a sort of botanical dictionary compiled on the basis of Greek and Arabic writers. Although it is not mentioned in the text, some scholars have pointed out the considerable similarity between this text and Saladin of Ascoli’s *Compendium aromatariorum*.

The “dottrine terza e quarta” refer to the most suitable times to gather the various types of simples month by month, starting with the Florentine month, as well as the best way of preserving them. The “dottrina quinta” is dedicated to the preservation of soluble simples such as the cherry plum, rhubarb, etc. The “dottrina sesta e settima” are devoted to the preparation of compound elements such as juices, ointments, sweet or bitter electuaries, etc. The “dottrina nona” is dedicated to the falsification of simples and the “doctrina decima” considers the simples that the apothecary ought to have in his shop, divided according to a classification that will be seen reflected in the index of simples. In the last two chapters the electuaries then “in use” according to Mesue, Avicenna and other authorities are listed, together with their replacement period and their duration.

The second book constitutes the antidotary proper: “*I de lactovari dolci, II de Lactovari amari, III de lactovari opiati, IV delle medicine lentive e solutive, de conditi, VI de locchi, VII dell’ sciroppi et giulebbi, VIII de robubbi, IX de trocis X de suffuff et polvere, XI delle pilole, XII de sieffii, XIII de collyrii, XIV de unguenti, XV dell’ empiastri, XVI dell’ olli, XVII di spetie di pictima, XVIII di confectioni cordiali*”.

Special mention should be made of the fact that therapeutic applications are only rarely given: “*E però in questo nostro presente riceptario non si è posta cosa alcuna, si sia appropriata perché speriamo che chi l’ha adoperare lo sappia, et si non lo sa lo impari, et poi lo adopei canonicamente*” (Prohemio p. 2). The book finishes with the chapter dedicated to “Pesi et varii nomi dei quelli”. About fifty years later, the city-state of Nüremberg also
undertook the project of setting-up a book of official standards whose circumstances I shall examine in the next section, specially as related to its author, Valerius Cordus.

The Dispensatorium of Valerius Cordus (1546)

Valerius Cordus’ Dispensatory was the first text of official standards for prescriptions to be legitimised by an authority, the Senate of Nuremberg, which went beyond what the guild of Florence could have done. Lutz was of the opinion that the Dispensatorium was not only the first official book of drugs in the Germanic cultural area, but also the first pharmacopoeia in the modern sense of the word. As regards Cordus’ biography, the first studies, by Irmisch, appeared in 1862, and were later continued and expanded by Peters and Fülckiger. However, research on Valerius Cordus, although reflected in occasional brief works, did not reach its peak until the publication of a facsimile edition of the Dispensatorium, together with an important introductory commentary by Ludwig Winkler, in 1934. From then onwards, a series of publications on Cordus appeared, above all in Italy, Germany and Czechoslovakia. The majority of these contributed new results derived from research, although they also sometimes repeated incorrect information. On the basis of these contributions, which have recently been complemented by those of Schmitz and Dann, the following brief account of his life can be provided.

In bibliographies dating between the 16th and the 19th centuries concerning the humanist, poet, physician and botanist Euricius Cordus, who died in 1535, there are also references to his son Valerius Cordus, with a greater or lesser degree of detail. Valerius Cordus was born in Erfurt (Germany) on 18th February, 1515 and died in Rome on 25th September, 1544. Although his main claim to fame is due to his having composed the third official European pharmacopoeia, his significance for science is also to be seen in botany and pharmacology, which he undoubtedly enriched, not only through the description of plants, but also by means of new contributions based on his own experience and observations.

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18 Lutz, 1949.
19 Irmisch, 1862; Irmisch, 1864; Peters, 1886.
According to Schmidt²¹, there are still many obscure points in the life of Valerius Cordus. After spending his childhood and youth in Kassel, Erfurt and Brunswick, he entered the University of Marburg in 1527, from which he graduated in 1531. The influence of his father, who instructed him in the fields of preparing medicaments and botany, was always considerable. Thus, Euricius Cordus, in his famous work *Botanologicon* (Cologne 1534, Paris 1551)²², mentions his son’s knowledge, which is indicative of how the younger Cordus had stood out for his knowledge of drugs at an early age. Cordus completed his training in his uncle Johannes Ralla’s pharmacy in Leipzig, the city to which he moved in 1533, entering its University. He probably stayed there until 1539, since his presence at the University of Wittenberg can be proven historically until that year. During his period at that university, he is known to have attended Melanchthon’s lectures on Nicander of Colophon’s *Alexipharmaca* and to have studied Dioscorides’ medical works in the winter semesters of 1539/40-1542/43 and 1543. The importance of this stage lies in the fact that he did not limit himself to mere philological interpretation and commentary; he also demonstrated the habits of observation that he had developed during his excursions with his students.

His activity as a professor in Wittenberg has been dealt with by Bessler in particular²³. During his years in Wittenberg, Cordus established links with the local apothecary Lucas Cranach, which led him to devote himself to practical pharmacy again. All this experience was to find its major expression in the *Dispensatorium*, which he completed there. During his visit to Nuremberg in 1542, he submitted it to the council and it was finally published in 1546 and made official in 1547. The last of his journeys took him to Italy (Venice, Padua, Bologna) and Rome in 1543-44, although the studies that have been published do not totally clarify the contacts he made there²⁴. Valerius Cordus died in Rome at the age of 29 as a result of fevers or an accident, although the circumstances of his death are still not totally clear.

It should be borne in mind that down to the present day, and in spite of Schmitz’s and Dann’s contributions, it is difficult to determine the exact circumstances that surrounded the introduction of the *Dispensatorium* for official pharmaceutical practice in this period. This was due to the fact that for a long

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²¹ Schmitz, 1971, p. 413.
²² Translation and study by Dilg, 1969.
²³ Bessler, 1952.
time research was largely based on a single archive containing the acts of the decisions of the Nuremberg council, the so-called “Ratsbücher”\(^25\). However, also still in existence is the large archive of the “Ratsverlasse”, or the agreements of the council, which represent the handwritten, and often difficult to read, notes of municipal council meetings made at the time. These were not classified until 1963 so it was difficult to handle them. Only a very few researchers had been able to make use of these sources, consisting of small folio volumes preserved in the National Archive of Strasbourg. The first to do so was Egon Philipp\(^26\), who shed some more light on the real circumstances that existed when the *Dispensatorium* text was first introduced.

The situation that Cordus found on his arrival in Nuremberg in 1542 as regards medical books must have been propitious for the adoption of his medical writings by the city authorities, in the same way as they had previously been accepted in other parts of Germany. When he travelled to Nuremberg, he met a number of physicians, with whom he conversed about his handbook of prescriptions extracted from old and new works; he then completed this work and added commentaries to it. In some cities of Saxony a number of physicians must have already been using it. Many of Cordus’ friends recommended him to put his handbook at the disposal of the pharmacists of Nuremberg.

In his description of Cordus’ life, Crato von Kraftheim, the Emperor Ferdinand’s personal physician, mentions that Cordus collected prescriptions for a dispensary in Leipzig at the request of his uncle, Johannes Ralla. According to him, Kaspar Pfreund, the administrator of his father-in-law Lucas Cranach’s pharmacy in Wittenberg, had written the commentaries of the *Dispensatorium* and he had subsequently put them in order. However, Cordus did not agree with these commentaries. Cordus, who preferred to introduce the book officially, offered it to the senate of Nuremberg. The Senate adopted a positive attitude towards a book of remedies, but they insisted that it should first receive the approval of the physicians who should check it.

Consequently, negotiations took place between him, the physicians of Nuremberg and the Council. Various descriptions of this event give the impression that Cordus had arrived in Nuremberg with the intention of offering the Council his dispensary. The Nuremberg physicians’ rejection

\(^{25}\) Peters, 1886, p. 132.
\(^{26}\) Philipp, 1962.
and their scientific pride are presumed to have delayed publication until 1546. However, this generally accepted opinion is contradicted by the entry in the acts of the Council for 14th June 154227, where it states that: “Dr. Cordus should be commissioned by the Council to produce a dispensatory for the pharmacists of the place”.

On 4th May, a “Ratsverlasse” states that the pharmacopoeia produced by Dr. Cordus of Wittenberg “at the request of my councillors” should be presented to the physicians and that they should be ordered to “follow it with application”. Before his tragic journey to Italy, Cordus returned to Nuremberg in the autumn of 1543. On this occasion the Council decided to talk to “the blessed physician” so that he “would hasten himself in this matter”. The Council were to take responsibility for his expenses and pay him a fee. In this way they sought to offer an incentive for him to stay, as Cordus was travelling to Rome. Bearing in mind the season of the year, he was in a hurry to arrive before winter. In fact, Cordus hurried and seven days later, on 20th October 1543, the Council was able to decide that: “He will be given 100 gold coins for the book he had drawn up for the reform of pharmacies”.

In May 1543, the Council of Nuremberg proposed a print-run of 100 copies28. Shortly afterwards, and because of the outbreak of plague in the Wörd district of Nuremberg, Cordus decided to bring forward his departure and, from that moment on, there is a gap covering the period between November 1543 and 22nd February 1546, the date on which the Council considered a matter which was pending and related to the Dispensatorium. On that day it was decided to start printing the Dispensatorium, an event which had been delayed because of certain “obstacles of honour”, as stated in the Council minutes.

Printing seems to have been completed in September 1546, as can be deduced from the two versions of a decision by the Council dated to 7th September. The official introduction of the Dispensatorium took place on 21st April 1547. Until that date, pharmacists were obliged to fulfil the 1529 regulations, which obliged them to have at their disposal Manlius de Bosco’s Luminare Majus, first printed in Venice in 1498. This excellent collection of recipes contained various prescriptions by different authors for the same remedies, with the result that pharmacists had to follow the ones that had

27 Peters, 1886, p. 130.
28 Ivi, p. 90.
been selected by the physicians of the city. The Council then declared the necessity to: “inform the pharmacists of their obligation to act in accordance with Dr. Cordus’ Dispensatory.”

Only a few pharmaco-therapeutic topics appear in the introduction to the Dispensatorium. In the form of a prologue, the reader is informed that, on the occasion of his journey to Italy, Valerius Cordus had visited Nuremberg and had talked to the physicians of the city about his Dispensatory. After it had been checked by a guild of physicians, it was confirmed to be superior to the works produced hitherto. The Dispensatorium was thus introduced for the region of Nuremberg in accordance with Cordus’ wishes. It is explicitly stated that the author had unfortunately died before it was printed and the wish is expressed that the reader should receive this homage to Cordus, a simple, conscientious young man, with open arms, and that if he should be able to take advantage of it, he should also give thanks to the Council of Nuremberg, which made its publication possible. The importance that the Council gave to this pharmacopoeia can be deduced from these details, which complete the circumstances surrounding the process of publishing it and making it official. After the prologue there comes an alphabetical list of pharmaceutical preparations and another of the individual drugs described in the notes. A system of weights is also described.

The individual chapters are fundamentally no different from the chapters of a modern pharmacopoeia. They are summarised in paragraphs, the titles of which normally reflect a pharmaceutical composition. The first covers the confectione aromaticae, in other words a powdery mixture of drugs that could be transformed into electuaries in the case of necessity thanks to honey or syrup, thereby guaranteeing better preservation. Confectione opiatæ, some of which, curiously enough, did not contain opium, constituted a special paragraph. These were electuaries of mixtures of drugs with honey or plant juices for which fermentation or lengthy storage were often desirable. Condita were sugar-coated drugs. Conservae consisted of mixtures of finely chopped plant-based drugs with double their weight in sugar. Lenitiva et solutiva warranted a special section. They consisted of laxatives in the form of pills, electuaries and powders, but mention was also made of enemas, suppositories and balls of drugs made with honey that could be inserted into the nostrils. The pilulae are fairly complicated. To hold them together, use was made of plant mucilage, juices, honey, wine or aromatic waters. Syrups were the most common forms to be found in Arab medicine. Rob were a special type of syrup. Lohoch were also known as expectorantia. Trociscos (trocischi) were generally for public consumption while
some were kept back for the preparation of Triaca. After this, we find the Emplastra. Under the heading of Caerota the Dispensatory includes mixtures of ointments based on oil aromatised by means of maceration and rose petals. In the case of the unguenta, the Unguentum potabile, which appears here for the first time, for consumption against internal injuries, is of interest. The following chapters merit special attention because they contain some new preparations, which only can be explained by an improved knowledge of pharmaceutical techniques. These were followed by the Olea and afterwards the Preparationes quondum simplicium, where preparations such as, for example, present-day extracts which were used for transformation into other drugs.

The annexe entitled “Appendix ex scriptis D. Jacobi Sylvi Medici Parisiensis pro Instructione Pharmacopolarum” contains an extract from the work “De medicamentorum simplicium delectu, praeparationibus, mistionis modo libri tres” by Professor Jacques Dubois (1478-1555) of Paris. The first chapter of the annexe lists the norms concerning the collection, selection, preservation and expiry of drugs. This is followed by a brief account of some of the precautions that have to be taken into account when purchasing. In the chapter “Quid pro quo” there is a list of drugs that, with a physician’s approval, should be used when others cannot be acquired. The last two chapters are unnecessary, bearing in mind that Cordus explains the same points in much greater details. The end of the Dispensatory is a kind of deontological note under the title Qualem virum pharmacopolam esse conveniat (The characteristics that an apothecary should possess). In the next section I shall examine to what extend those simple and compound drugs may have been used at a practical level.

Preparing official compound remedies

The first stage in my analysis of the contents of these pharmacopoeia consisted in making an alphabetical inventory of the drugs contained in the summary of simples and then in classifying them on the basis of their origin. Subsequently, the proportion of those simples occurring in the medical compounds was calculated. In this way it has been possible to establish how representative was the materia medica present in the index of simples by studying the materia medica of the whole pharmacopoeia, which was also inventoried and classified for each of these pharmacopoeia examined. There are a number of previous historical studies through
quantitative analysis based on the design of computer-based methodologies\textsuperscript{29}. May be the most outstanding and recent is the one by Jean-Pierre Bénézet\textsuperscript{30}.

The two main chapters in both the \textit{Nuovo Receptario} and the \textit{Dispensatorium} are concerned first with a list of simplicia that should be owned by apothecaries and secondly, with a dispensatory, which mainly includes the compounds attributed to authors belonging to the Arab-scholastic school. They also contain additions of “new”, more contemporary, compounds.

The first question about the role of both pharmacopoeias in everyday medical practice is whether it is likely that the compounds listed were actually prepared by apothecaries. In an attempt to answer this, I will focus on the simple drugs which appear in the compounds and some data regarding what should have been stocked by apothecaries\textsuperscript{31}.

I constructed a data-base of the 545 compounds contained in the \textit{Nuovo Receptario} and then selected a list of simple medicines in common use in Florence at that time which constituted what might be called the required stock for apothecaries. It was extremely interesting to see that with these simples only 20% of the compounds could have been prepared exactly as they appear in the “official” text\textsuperscript{32}. In other words, the apothecaries did not have enough ingredients to prepare 80% of the compound drugs listed in the \textit{Nuovo Receptario}.

A similar situation is found with regard to the \textit{Dispensatorium}. By studying the prevalence of the simple medicines contained in the Frankfurt list\textsuperscript{33}, a contemporary inventory, of the 465 compounds in our data-base of the \textit{Dispensatorium}, only 8% of the compounds could have been prepared in accordance with the instructions of Valerius Cordus, the author of the official text\textsuperscript{34}. It is also worth noting that he made frequent comments on many simples in footnotes to the compounds\textsuperscript{35}. These simples selected for “additional” comment are all included in the Frankfurt

\textsuperscript{30} Bénézet, 1999.
\textsuperscript{31} Mazzi, 1915; Chiapelli and Corsini, 1921; Ciasca, 1927.
\textsuperscript{32} Huguet-Termes, 1998.
\textsuperscript{33} Tschirch, 1933, pp. 1590-1597.
\textsuperscript{34} Huguet-Termes, 1998, p. 168.
\textsuperscript{35} Poeckern, 1970; Bessler and Poeckern, 1972.
list, a point to which I will return later. Both introductions state that these pharmacopoeias would serve to increase respect for physicians and to instruct their less prestigious colleagues such as apothecaries. Bearing this in mind, I decided to explore the possible role and need for official pharmacopoeia in a broader context that would include: the real needs of physicians, the probable attitudes of apothecaries to these texts and how far they felt obliged to follow the rules.

An answer to physicians’ worries or needs?

Gundolf Keil has accurately remarked, reinforced by the prefaces of both pharmacopoeias, that the medieval and early renaissance physician was aware of the dangers for him and his patient in the dispensing of drugs and that this concern was reinforced by therapeutic failures\textsuperscript{36}. Nevertheless, we should ask ourselves: was reliance on an official book for their prescriptions really a practical necessity for a Florentine or Nuremberg physician? It seems very unlikely that Girolamo dal Pozzo Toscanelli, the physician author of the \textit{Nuovo Receptario}, whose exact identity is of little more than bibliographical importance, would have been concerned to follow a guide for his prescriptions any more than any of his contemporaries would have done.

The fact that he included only 13 compound remedies by his Florentine colleagues among the 545 compounds of the \textit{Nuovo Receptario} bears witness to a very competitive market-place which, as Park has illustrated, was largely shaped by custom and economic interest\textsuperscript{37}. Although we have evidence that there were links between physicians and apothecaries, we also have evidence that collaborative and non-proprietary attitudes failed sometimes in practice. According to Antonio Benivieni’s case records, physicians usually kept drugs at home\textsuperscript{38}. They also had their own private collections of prescriptions, whose secrets they jealously guarded even to the extent of assaulting favourite students who had happened to open their note-books of recipes, as Tommaso del Garbo did\textsuperscript{39}. This lack of collaboration with colleagues is also evident by the fact that the Statutes of the “Arte” required physicians to inform patients

\textsuperscript{37} Park, 1985.
\textsuperscript{38} Benivieni, ed. 1994.
\textsuperscript{39} Park, 1985.
correctly about the medical treatment they were administering and to leave written prescriptions at the home of the sick.\textsuperscript{40}

There were close ties between physicians and apothecaries in early Renaissance Florence. Most apothecaries employed a physician to staff a walk-in clinic on the premises for a certain number of hours a week and, in return for a yearly salary, the physician would write the prescriptions for those who came to consult him, to be made up by his employer\textsuperscript{41}. This also bears witness to the probable competition between teams of physician-apothecaries, and shows that they were unlikely to want any kind of standardization. Another piece of evidence to illustrate this fact is the relationship between compound remedies attributed to medical practitioners and the case histories or medical advice by Florentine doctors. Doctors’ case-books suggest that remedies prescribed by them were in general simpler than those in the pharmacopoeia.

Although sixteenth-century Germany was in many ways different from the Florentine context, its medical literature can be approached from a similar standpoint. The author of the \textit{Dispensatorium}, Valerius Cordus, was not a medical practitioner, although he was a passionate researcher in natural history, and he was probably much more concerned with providing information for the use of drugs than with selecting the compound remedies which were probably used. We know that the publication of the \textit{Dispensatorium} was delayed for many years after it was compiled because of the lack of agreement between doctors and apothecaries about the content.\textsuperscript{42} It is interesting to note that in Nuremberg doctors were not very interested in letting others compile an official receipt book. So fame and success were important and eagerly sought. Hence the authorship of a book that was going to be declared official was a great honour and good for business, even though it might not be practical.

\textbf{Apothecaries taking kindly to rules?}

The official version of the \textit{Riccetario} states in its \textit{proemio} that it was compiled \textit{ad instanza dei speziali}; the Nuremberg preface also says that apothecaries were demanding a similar text. But to what extent would

\begin{footnotes}
\item[40] Ciasca, 1922.
\item[41] Park, 1985, p. 29.
\item[42] Lutz, 1907.
\end{footnotes}
apothecaries have been prepared to adhere to these new rules? Recent research has shown that apothecaries enjoyed a privileged place in the Florentine and German medical market⁴³, and it is no longer accepted that they were subject to physicians’ orders or activity. In Florence, as the statutes demonstrate, apothecaries even employed physicians and acted independently in medical matters. For instance they could open their shops on holidays in response to someone’s needs without a physician being involved⁴⁴ and there are many records of their collaboration in the market place with other figures apart from physicians⁴⁵. Statutes and inventories also demonstrate that they had their own receipt books rather than many theoretical pharmacological ones. Keil has shown that at the same time as apothecaries in Nuremberg were legally obliged to follow the *Luminare majus* by Manlius de Bosco in 1529, they also enjoyed an important role in giving advice and treatment⁴⁶. According to Peter Dilg, at the same time as the *Dispensatorium* was made official, pharmacists tended to carry out their business without due attention to authority. Otto Brunfels was aware of his braveness in ‘hitting a raw nerve’ when writing *Reformen der apotheken* (1536). He recognized that rules on prescriptive practices would be opposed by pharmacists because their trade interests would suffer⁴⁷.

It is true that Valerius Cordus’s close relationship with pharmacists⁴⁸ may well have predisposed him to write a utilitarian book. However the evidence shows that he was more concerned with setting out rules for some simples and to spread his botanical and philological knowledge than to compile a useful antidotary. This is not as odd as it might at first appear, bearing in mind that there are practically no records of his practising as a physician. There was much criticism of his book by pharmacists, but these were directed at the remarks and comments he made about specific simples rather than the compounds themselves. Does this mean they accepted the compounds? I think they just did not care. The apothecary Peter Coudemberg clearly said that although he was not very interested, he would

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⁴⁴ Ciasca, 1922, p. 281.
⁴⁵ Ciasca, 1922; Park, 1985; Diana, 1995.
⁴⁶ Keil, 1983.
⁴⁷ Dilg, 1979.
⁴⁸ Schmitz, 1971.
not mind preparing a new edition of the text in 1596, because such a publication was an excellent method of self-promotion\textsuperscript{49}.

So it would be difficult to argue that printed pharmacopoeia were as important as instruments for the instruction of apothecaries as their authors hoped. These texts probably helped apothecaries keep in touch with the vocabulary of their trade, and with the language of humours, but seem not to have materially affected their ‘treatments’.

Conclusions

The various answers to the questions raised above promote the idea of these early pharmacopoeia being a simple literary tradition in the framework of the state’s ambition to reinforce its power over the movement of drugs and as a way of promoting the interests of physicians who had links with drug trade, although more research needs to be carried out. These pharmacopoeia are also the result of the governments’ interest in encouraging public health measures to control disease.

Much more could be said about early pharmacopoeia and their real role in medical practice. The two examples which have been given are perhaps sufficient to show the sort of functions for which such pharmacological literature could serve. They were able, for instance, to incorporate treatment for new diseases such as the Great Pox and new remedies like those of the chemical physicians, without introducing radical readjustments. However, they did not enjoy the unquestioning acceptance of physicians and apothecaries suggested by earlier researchers. They contain confusions and inconsistencies that when specified led to conflicts that can be very useful for historians to examine. The problem is that such things never made the content of these texts seem untrue and it is possible they did reflect some common assumptions concerning the main value of these texts.

There has been much interest in the history of pharmacopoeia. However, I think it would be interesting to look at these texts and all other related recipe literature from other angles, taking a wider view, concentrating not just on their “literal” content, but also analysing the insights they may reveal. We should use them as a way of exploring the informal external medical context which influenced those who published medical texts and thus build up what might be

\textsuperscript{49} Lutz, 1907.
called a more intimate history of pharmaceutical therapy and pharmacists within the wider framework of medical practice. To conclude, let us take as a starting-point for adopting new perspectives in this field the words of Alexander Tschirch, a well-known historian of pharmacopoeia: “Un monde passionant s’ouvre, une fois la dernière page de ce livre refermée”\textsuperscript{50}.

\textbf{Riassunto}

Durante l’ultimo decennio del Quattrocento e la prima metà del Cinquecento, in numerose aree del Mediterraneo e dell’Europa centrale, emerse la tendenza ad uniformare la cultura farmaceutica. La conseguenza più evidente di questo orientamento fu la pubblicazione di libri che elencavano rimedi semplici e composti scelti tra un’ampia gamma di quelli proposti dai più noti testi di medicina. Questi elenchi erano considerati ‘standards’ dalle autorità che si occupavano della salute pubblica. In teoria, gli speziali erano obbligati a seguire queste istruzioni ‘ufficiali’ nella preparazione e nella distribuzione delle sostanze medicinali per garantire che le medicine prescritte dai medici fisici fossero preparate correttamente e sicure. Lo scopo del presente contributo è quello di indagare se sia possibile riscontrare in questi testi la vera pratica dell’arte farmaceutica e quale fosse la loro reale funzione, in sostanza, si tratta di mettere in luce quale contributo abbia portato la farmacopea della prima età moderna alle teorie e alle cure mediche e quanto ci può riferire sulla pratica medica dell’epoca. Questo saggio affronta l’argomento analizzando due farmacopee europee: l’una risalente al 1499, l’altra 1546.

\textit{Keywords:} History of Medicine, History of Pharmacy, pharmacopoeia, Florence, Nuremberg, apothecaries, medical practice, \textit{Nuovo Receptario} from Florence, \textit{Dispensatorium} of Nuremberg.

\textit{Running head:} Standardising drug therapy in Renaissance Europe?

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