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FANTASTIC HERBALS AND WHERE TO FIND THEM:

CONTEXTUALIZING AND EXPANDING THE ALCHEMICAL HERBAL TRADITION

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FANTASTIC HERBALS AND WHERE TO FIND THEM:

CONTEXTUALIZING AND EXPANDING THE ALCHEMICAL HERBAL TRADITION

A THESIS APPROVED FOR THE
DEPARTMENT OF HISTORY OF SCIENCE, TECHNOLOGY, AND MEDICINE

BY THE COMMITTEE CONSISTING OF

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Table of Contents

Acknowledgements v

Abstract vi

I. Introduction 1

A. What is an alchemical herbal? 6

B. Significance 10

II. Assessing the Tradition 11

III. Contextualizing the Tradition 22

A. Adjacently Alchemical Herbals 23

B. Naturally Magiferous Herbals 27

IV. Expanding the Tradition 32

A. Proposed Tradition 32

B. Herba forus 34

C. Census of the Proposed Tradition 42

V. Conclusion 70

VI. Alchemical Herbal Manuscript Tradition 74

VIII. Bibliography 77

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"There are vines in nooks and crannies and there's moss about the pool.
And the tangled weedy thicket chokes the arbor, dark and cool.
In the silent sunken pathways springs an herbage sparse and spare,
Where the musty scent of dead things dulls the fragrance of the air."

-Excerpt from "A Garden" by H.P. Lovecraft

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Abstract

A collection of 38 herbal manuscripts have remained all but hidden to scholars in the shadow of the Italian Alps. Despite several texts analyzing specific texts (Leporace, 1952, Lupo 1982, Ragazzini 1983, Toresella 1985, Pezzella 2007 and Bruzzone 2015, 2019) and one pioneering work which synthesizes a large portion of them as united in the corpus (Segre 2000), the "alchemical herbal tradition" has so far escaped examination through methodologies employed in the history of science, medicine and magic. The 98 alchemical herbs described in the tradition demonstrate a complex and nuanced medieval approach to astrology, natural and vernacular magic, botanical medicine, religion and alchemy. However, there is far less of this final category than one might expect to find in a manuscript tradition named after the discipline. The present work adds 14 alchemical herbals to the 24 manuscripts examined by Vera Segre's foundational census of the tradition in an effort to improve the body of evidence available for analysis and comparison. In addition to using existing frameworks and methodologies from the history of medical botany, we find that these manuscripts can be better understood by applying terms such as magiferous and natural magic, placing them squarely within their cultural and intellectual contexts of the Italian Quattrocento. By analyzing individual plants across the full collection of manuscripts, changes in their medical uses, occult properties, and fantastic illustrations can be traced to provide better understanding of the lived histories of their manuscripts and owners. This is a preliminary study examining the theoretical foundations underpinning this large and varied collection of herbals, with the aim of one day understanding who the supposed alchemists were that created these enigmatic codices.

I. Introduction

Though the late Medieval period (AD 1250 to 1500) in Western Europe would see a tremendous number of herbal manuscripts created, later centuries would not again reach this height. Printed herbals quickly rose to prominence in the early modern period from their very beginning stages and were printed far quicker than a manuscript could be written.[1] Yet throughout the 15th century illustrated herbals were penned in large numbers: Toresella estimates there were 193 from that century alone.[2] Among these codices there exists a subset or manuscript tradition of herbals, that depict plants with both medical and magical use. These "alchemical herbals", as they have been labeled for reasons that will become clear below, borrowed from previous medico-botanical traditions, and at the same time introduced a number of astrological and magical elements. While 98 total herbs are identified as being "alchemical herbs", many manuscripts within the tradition contain a subset of these while others still are accompanied by other more familiar herbal works, bound in the same physical volume.[3] These alchemical herbs are not located in other herbal traditions and have distinctive illustrations, phytonyms and properties that sets the corpus of texts apart as its own tradition. The astrological and occult content found within these manuscripts may have contributed to their being left behind when printing presses arrived on the Italian peninsula, as there are no known printed examples.

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[1] For the popularity and rise of early modern printed herbals, see Neville, *Early Modern herbals and the Book Trade*, 14-17; for European manuscript and printed book production, see Buringh and Van Zanden, "Charting the 'Rise of the West'," 416-17.

[2] Toresella, "La bibliografia degli antichi erbari," 5.

[3] Vera Segre, *Il giardino magico degli alchimisti*, p. XV.

This manuscript tradition, with the additional 14 members identified in this thesis, contains 38 members within its corpus, making it one of the larger medieval herbal manuscript traditions. The Pseudo-Apuleius herbal has around 60 copies, the *Circa instans* over 200, and the *Tractatus de herbis* over a dozen, to list some of the most prominent medieval herbal traditions.[4] Despite this, there exists a visible lacuna in material examining them. Historical studies of medieval herbals have mainly focused on those long established corpuses, or on later printed examples, often easier to understand with the modern eye. While examined by several pioneering Italian language sources,[5] the wider non-Italophone world seems to have almost entirely ignored these texts as a collection of sources for understanding how medicine, magic, Christianity, and alchemy were practiced in northern Italy, just as the Renaissance was incubating in the metropolitan centers of the region. This work seeks to outline what has been previously argued about the alchemical herbal tradition, then identify several new examples and argue for the importance of understanding these technical texts as a collective that implements ideas and theories of university-trained physicians while at the same time incorporating vernacular ideas of the broader society. Other frameworks for historical understanding of natural magic and medieval botany are introduced to help locate this collection of magico-medical texts in the late-medieval Latin West.

Herbal manuscripts are one manifestation of botanical knowledge, a subject that includes some of the oldest recorded scientific and medical information.[6] They represent complex

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[4] For the Pseudo-Apuleius herbal, see Kinney, "The Origins of the Herbarium of Pseudo-Apuleius," 2022; For the *Circa instans*, see Ventura, "A Medieval Pharmaceutical Bestseller," 2017; for the Tractatus de herbis, see Badikova, "Tractatus de herbis, Botanical Guide to the Universe: A Case Study for Morgan MS M.873," 2023.
[5] Segre's *Il giardino magico degli alchimisti* is the best work to date, examining the tradition as it was known in 2000 as a whole, identifying the oldest manuscripts and creating a critical edition from six of them. Other texts which treat smaller portions of the corpus include Leporace, Lupo, Ragazzini, Toresella, Pezzella and Bruzzone.
[6] Some of the oldest mentions of medical plants come from the *Ebers Papyrus* c. 1550 BC and the bas relief carvings of *Thutmose III Procession at Karnak* c. 1450 BC. See, Toresella, "Gli erbari degli alchimisti," 1996.

empirical thinking among early human civilizations, in a trend that continues throughout the history of applied therapeutics. Typically, herbals were utilized by the medically learned of a population to record the therapeutic properties of plants, as well as often including where they were grown, which parts of the plant to use and the sources from which they derived this knowledge.[7] Many subsequent owners over the years added their own observations to past recipes and uses for plants, removing claims they disagreed with, and adding their own. While theoretical medicine has undergone substantial paradigmatic shifts, many herbal remedies found in Renaissance texts would be familiar to physicians of Antiquity and the Middle Ages. This is not to say that there are not changes in thinking and alterations made as manuscript herbals were iterated upon over the centuries. But when one takes an aspirin for a headache in the 21st century, one is joining the countless number of human beings that have taken willow bark to alleviate cranial discomfort – a practice that dates back 3500 years.[8]

Much has been written on the history of herbal manuscripts but certain crucial areas have been overlooked. While they have been the subject of a plethora of modern works, largely due to the fact that herbals are often illustrated, in the eyes of the modern historian many of these works are flawed in two ways. The first is that many that were written decades or even centuries ago contain errors that render many of them unreliable as sources in the present day and have fundamentally left them out of touch with wider conversations within the history of science. The second is that many of these works lack a synthesized view of any kind, often opting instead to focus on a singular text or a small portion of a complete tradition. One modern exception to the latter difficulty is Minta Collins' *Medieval Herbals: The Illustrated Traditions,* which seeks to

[7] Elliott, "The World of the Renaissance Herbal," 24.
[8] Desborough and Keeling, "The Aspirin Story," 674.

provide a complete overview of medieval herbals. Collins primarily utilizes art history as her primary tool of analysis. The book is useful for outlining many of the corpora of herbals that existed in the medieval world, and importantly points out that the careful analysis of not just the pictures and text, but of the arrangement, ordering and production of an herbal provide invaluable insight into the deeper information these texts can provide.[9] The book is chiefly concerned with examining the different purposes herbals had and how they were used by their owners. By examining the book closely, Collins is able to identify that the manuscript now known as *Egerton Ms. 747* was likely owned by an apothecary.[10]

Though Collins' book is one of the most successful texts in regard to a broad study of not just a tradition, but an entire era's herbal manuscripts, it is not without its shortcomings. The devil is in the details and a book of this scale trades off deep analysis of individual texts, which can lead to a litany of small errors that add up. These range from bibliographic errors and incorrect transliteration to mislabeled shelfmarks or the overlooking of individual examples altogether.[11] While these are small errors, taken together they highlight arguably the largest hazard posed to the kind of overarching study that is so desperately needed: scale. Though extant medieval manuscripts represent only a small sample of the texts that existed contemporaneously, there seem to be far too many to be synthesized into a single work by a single author in a single lifetime. Any large-scale study may inevitably lead to a collection of minor errors that can compromise the overall value of such an endeavor. Analyses of individual works or examinations of single traditions are better poised to catch and correct these problems, though frustratingly often stop short of providing synthesis of the whole. It may be that emerging

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[9] Collins, *Medieval Herbals*, 239, 301.
[10] Collins, 245.
[11] The specific issues are detailed thoroughly by Touwaide, Review of "Medieval Herbals," 695-96.

technologies will remove some of the barriers posed by the scale of such a project, but today there exists a state of affairs that has many people continuing to cite information from sources nearly a century old. Agnes Arber's *Herbals: Their Origin and Evolution*, an early attempt to synthesize botanical history, continues to appear in contemporary bibliographies despite its myriad of flaws solely because it is a concise overarching examination of the entire history of herbals. While Collins' book rightfully seeks to address the need for new works on the topic with broader scopes, there is still a great deal of ground left to cover.

Though overviews and the texts that only examine one text often provide valuable contributions, they are prone to come up short in addressing the deeper substance of alchemical herbal manuscripts. Collins devotes just a few short sentences to alchemical herbals. The nature of her book meant that she was unable to go into any depth on herbal traditions that did not already have existing synthesizing works. She noted that alchemical herbals needed to wait for the publishing of Segre's *Il giardino magico degli alchimisti* to say anything definitive on the subject.[12] An overview of the entire medieval period would likely be too broad to treat alchemical herbals to the degree necessary to understand the nuanced and complex philosophical underpinnings that make the text understandable to a reader not embedded in the time period and culture from which they originated. Conversely, the photo-facsimiles couch their understanding of the whole tradition via what they observe from their specific text. While comparisons may be made to a small number of other manuscripts, a consensus of the whole corpus is not the goal, and thus many of these commentary essays are both short and either go over much of the same ground, putting forth statements and ideas already argued by previous authors on the topic. Salvatore Pezzella wrote several works of this type examining alchemical manuscripts. His work

[12] Collins, 279.

is satisfactory when considered as studies of manuscripts, but curious in that he often does not mention literature on the tradition. In cases where he does bring up past texts on alchemical herbals, the information pulled is minute and insufficient to tie in his works to the larger historiography. He is not alone in this respect, but his works should be regarded as substantial analyses of codicology rather than intellectual history.[13]

As a result, the current situation of the field is that, aside from Segre's *Il giardino*, there is not a good in-between work that combines careful analysis of individual texts with broad explanations as to the medical and occult systems that are the foundation of these texts. Segre's monograph seeks to address this lacuna, and while it does a great many things well, its overall synthesis is hampered by both its reliance on outmoded arguments from the history of science as well as working with only 24 manuscripts and primarily focusing on the 7 texts of the direct tradition, compared to the 38 identified in this thesis. By expanding the scope of investigation to include the 14 additional manuscripts, the tradition opens itself up to holistic treatment that better grounds the intellectual and cultural world from which it emerged.

A. What is an alchemical herbal?

While herbals as a genre date back millennia, the alchemical herbals are situated at the twilight of the manuscript herbal. They appear to have been produced during the 14-16th centuries in Italy, most likely in the north of the country around the Veneto. While they depict plants like other herbals, there are several factors that set this collection of texts apart as a distinct tradition. The central identifying feature of these herbals is that they contain a selection

[13] Pezzella, *Un erbario inedito Veneto e Fitoterapia e Medicina in Umbria*.

of 98 "alchemical herbs" which are not present in other herbal traditions[14] They are illustrated bizarrely, bear unique phytonyms, and are used for various uses not seen in other herbals. Several alchemical herbals, particularly the earlier manuscripts, are bound together with non-alchemical herbals. These portions of the manuscripts are related to the *Circa instans* of Matthaeus Platearius (d.c. 1161) and the herbal of Pseudo-Apuleius.[15] All alchemical herbals descend from one or more original manuscripts which drew from the same body of knowledge used to create the initial text(s) from which all subsequent alchemical herbals were copied. This is not to say that the plants are unique, or that their names cannot be found in other plant glossaries, or that outside information was excluded from the process of transmission, perhaps even at the outset. But when taken together, the presence of information, illustration, phytonym and practices that can be traced back to a hypothetical original source of knowledge are indications that a text should be considered a member of the alchemical herbal tradition.

The alchemical herbals contain information and illustrations that set them apart from other medieval herbal medical traditions, which almost always follow a stricter line of information that traces itself back to Antiquity. For example, the plant that alchemical herbals label as *herba fava inversa* would be familiar to us today as the deadly nightshade plant or to 15th century Italians as "belladonna." The latter name is the one most often referred to in medieval and early modern texts. If we compare it to an entry for *fava inversa* on 38v from a more traditional Italian herbal, the *Tacuinum sanitatis* from the workshop of Giovanni

[14] These 98 plants are identified explicitly by Segre, but subsets are used by Toresella, "Gli erbari degli alchimisti," 1996; Ragazzini, *Un Erbario Del XV Secolo*, 1983; Lupo, *L'erbario di Trento*, 1982; and Leporace, *Un inedito erbario farmaceutico medioevale,* 1952. For a full list, see Section VI. Alchemical Herbal Manuscript Tradition below.

[15] Segre, XVII.

Cadamosto di Lodi, we see several differences in the text.[16] In the Cadamosto herbal, the entry starts off both with the name of the plant as *faba inversa* and that it is cold in the third degree and dry in the second. This relates it to the long tradition of humoral pharmacy, expanded on by several notable physicians, including Galen of Pergamon (129-216), whose influence can be seen by the inclusion of the humoral degrees. The Cadamosto herbal further bears the influence of Ibn Sina (Avicenna in the Latin West) whose work entered Europe through the translation of Gerard of Cremona in the 12th century.[17] Ibn Sina widely expanded Hippocratic-Galenic medicine and would remain perhaps the most important figure to medicine during the Middle Ages. This is evidenced by the frontispiece of the Cadamosto herbal (*ÖNB Cod. 5264*), where various physicians are arranged in a medical court, with Ibn Sina presiding over it.[18] This illustration is an example of the habit of herbals to build upon past sources and authors. It is through these direct or indirect traces that medieval herbals can be understood to often build on earlier sources rather than being entirely original productions.[19] This habit also results in works claiming to be the products of ancient authors but are instead pseudo-eponymous works, which are created and retroactively attributed to authoritative sources.[20] The alchemical herbals conversely offer no attribution to any past scholars, nor do they bear mention of the plants' humoral qualities. Both of these aspects are significant departures from medieval medicine, which are added to the list of

[16] ÖNB Cod. 5264 from the Vienna National library was chosen due to its temporal and geographic similarity to the alchemical herbals, as it is from 15th century Northern Italy, and contains many herbs found in the alchemical herbal tradition. This herbal from the tradition of Giovanni Cadamosto of Lodi is far more standard for what one expects to see of an herbal, thereby serving as a useful contrast point. For information on the Cadamosto herbals, see Toresella, Sergio. "Il Codice Di Giovanni Cadamosto." *L'Esopo* 27 (1985): 45–64.

[17] Siraisi, *Avicenna in Renaissance Italy*, 13.

[18] *ONB Cod. 5264*, iv.

[19] Riddle, *Dioscorides on Pharmacy and Medicine*, xviii, xx; Stannard, *Medieval Herbals and their Development*, 24.

[20] For examples of pseudo-eponymous herbals see Riddle, "Pseudo-Dioscorides' *Ex herbis femininis* and Early Medieval Medical Botany," 43; Kinney, 2-3.

oddities the corpus presents, such as their illustrations which often include faces or the use of phytonyms that are not used in other texts outside of the tradition.

Of the 38 manuscripts identified here that bear the influence of the tradition, there is significant variation in the connection to the original source material. Within the yellowed covers is a collection of fantastically, if rudimentarily, illustrated plants accompanied by captions and corresponding sections of text which outline information of the plant. The information in these sections is not standardized in layout as we may expect to find in later printed herbals, but rather inconsistently includes information ranging from the collection of the plants, rituals to be enacted to activate the magical properties of the plant, how the plant is to be used, and where the plant can most often be found. There are seven Latin language manuscripts within the corpus written on vellum which have been dated to the 14th century.[21] These seven herbals have a high textual fidelity between one another indicating that they are likely all copied from original sources as has been hypothesized by Vera Segre, who in 2000 published *Il giardino magico degli alchimisti*, arguably the most important work on the tradition to date.[22] From these oldest extant manuscripts, or the direct sub-tradition, a critical edition has been reconstructed by Segre, providing a possible insight into what the original text may have been. Fro0m this original corpus rose the 17 other manuscripts identified by Segre as making up the indirect sub-tradition. These bear clear departures from the original canon, both in their textual and illustrative elements, and are dated to be later than the direct sub-tradition.

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[21] These are classified as the "direct" sub-tradition by Segre. These are: Fermo, *Ms. 18*; Firenze, *Ms. 106*; Oxford, *Ms. Canon. Misc. 408*; Paris, *Ms. Lat. 17844*; Paris, *Ms. Lat. 17848*; Pavia, *Ms. Aldini 211*; Vicenza, *Ms. 362*.

[22] Though there exist later secondary sources examining alchemical herbals, none share the ambition which Segre displayed to examine a collection of the texts, making her book both unique in this regard and an important foundational work for this and all other works on this topic. See below for Segre's *stemma codicum* and see *Il giardino magico degli alchimisti*, LXXXIX-XCI for a discussion of the lost original manuscripts.

Despite contemporary herbals having been primarily produced through the time period that saw the introduction and rising popularity of the printing press (which first arrived in Italy in the 1460s), the only copies of these herbals that have been identified have been in manuscript form. This is intriguing as medieval herbals are quick to be published via the early presses. The first printed herbal was Macer Floridus' *De viribus herbarum* which was written centuries before it was printed in Naples in 1477.[23] While there are certainly medieval herbal traditions that do not get printed, the fact that the alchemical herbals do not join the many botanical texts that are printed from manuscript raises an interesting question as to why?[24] It joins dozens of other unanswered questions that circle around this tradition, making it a particularly intriguing corner of the history of medieval botany for academic historians as well as herbal history enthusiasts.[25]

B. Significance

The history of botany is a storied one which has attracted the attention of both academic scholars as well as the enthusiastic public, particularly in the case of herbals. This is for several reasons but perhaps the most notable is that these texts are often wonderfully illustrated. Their images, particularly once the early modern period begins, become fantastic works of art, occasionally brilliantly colored and shaded to a degree that several resemble still lifes or other works of art. Because of this, many books have been found broken, meaning that specific pages

[23] Klebs, Arnold Carl. *Incunabula scientifica et medica.* (Bruges: Saint Catherine Press, 1938), 210.

[24] Printing presses first arrived in Italy in the 1460s, the same period that much of the indirect tradition was produced in Northern Italy. For Italian presses, see: Borsa, Gedeon. "Druckorte in Italien vor 1601." *Gutenberg-Jahrbuch* vol. 51(1976): 311–314. For other early printed botanical works, see Neville, 19.

[25] While academic sources are rather scarce in recent years, the public has been quite busy on blogs and forums dedicated to the history of herbals. Many of these can be found on websites that discuss the enigmatic Voynich manuscript (Yale, Beinecke Library, *Ms. 408*) such as Voynich Ninja or Nick Pelling's Cipher Mysteries. Marco Ponzi's blog ViridisGreen has recently put forward an excellent English language translation of the direct tradition of the alchemical herbals as recently as December of 2023.

or folios have been removed from the book and sold, their aesthetic value outweighing that of their information. This valuation has also made them the subject of art historians who trace their bibliographic genealogies primarily through the changes in illustration.[26] Art historians have grouped herbals into several traditions or collections of manuscripts that are copied from one another. This allows researchers to trace these texts back to their earliest roots, providing insight into what past peoples thought about plants and the natural world at large, opening a window to a past that is still not well understood: medieval medical botany.

II. Assessing the Tradition

The present work joins a larger trend in 21st century scholarship of herbal manuscripts by seeking not just to understand the individual text, but also to connect it to broader cultural and intellectual trends from which these texts arose. Over the last two decades, this ambitious goal has been attempted by a few synthesizing scholars, though perhaps not to the extent necessary as we have seen with the reception of Collins.[27] This latter method is important for several different reasons, chiefly as it allows for a deeper reading than just a close reading of a specific text permits. By extending the analysis beyond the bounds of one text to several, the hope is that trends and patterns emerge which would not be observable through a single work. Comparing several manuscripts can shed light on all manner of different aspects of the work, including, but certainly not limited to, transmission of the text, linguistic evolution, intellectual shifts and

[26] For scholars who examined herbals through art historical approaches, see: Collins, *The Medieval Herbals*, 2000; Segre, *Il giardino magico degli alchimisti*, 2000; Blunt and Raphael, *The Illustrated Herbal*, 1979.
[27] Some excellent examples outside of the alchemical herbal tradition are Anne Van Arsdall, *Medieval Herbal Remedies*, 2010 and Sarah Kyle, *Medicine and Humanism in Late Medieval Italy*, 2016.

artistic developments.[28] By establishing the extent of the tradition as a whole, reexamining past arguments and utilizing emerging concepts from the history of science, it is hoped that the alchemical herbal tradition can join the other herbal manuscript traditions that have both extensive bibliographies of scholarly work and add to our understanding of applied and theoretical medicine in premodern Europe.

The positives of examining texts as part of an entire corpus does not then imply that careful study of individual books should be ignored. An overarching synthesis of a manuscript tradition only emerges once the individual examples of that corpus have been carefully examined. Much of the literature on the alchemical tradition would largely fall into this close analysis trend which should be a model familiar to any scholar of manuscripts. A text is selected, discussed briefly by one or several authors looking at different artistic, intellectual, or linguistic factors in one or more short essay sections before the book is transcribed or reproduced in facsimile in full. Many such books contain full photograph reproductions of the text for scholarly and commercial ends, often in color. This kind of book, though certainly a product of academic scholarship, is often just as valued by visitors to a museum's gift shop looking for a coffee table book. There is nothing inherently wrong with this motivation, as this popular desire to buy these books means that many illustrated manuscripts are given attention by the public, and perhaps more importantly, by publishers. Because the alchemical herbals are fantastically illustrated, there have been several works of the tradition which have become the subject of these near facsimiles throughout the years.[29] These reproductions, though few in number, have become the

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[28] See Kyle's introduction to *Medicine and Humanism in Late Medieval Italy* for a full discussion of the merit of this methodology as well as Touwaide, "Latin Crusaders, Byzantine Herbals," 48-50.

[29] These are Pavia, *Ms. Aldini 211* (Leporace, 1952; Segre, 2000), Firenze, *Ms. 106* (Ragazzini, 1983), Trento, *Ms. 1591* (Lupo, 1982), Udine, *Ms. 1161* (Barbon, 2007), Firenze, *Ms. Redi. 165* (Pezzella, 1980), Cassego, *Ms. 95* (Bruzzone, 2015), and Venice, *Ms. It. II.12* (Pezzella, 2007).

shoulders upon which broader works stand, including both the first true corpus spanning analysis, *Il giardino magico degli alchimisti*, as well as this thesis.

One would be forgiven in assuming that there is a significant body of secondary literature on the alchemical herbal tradition, as there is a plethora of books written by academics with all the hallmarks of scholarly writing, footnotes and all. Diving further into these sources, it quickly becomes clear that historical narratives and scholarly discussions are missing from many of these books. That is not to say that they are not without merit, for many treat individual manuscripts as subjects of intense linguistic and artistic analysis. But they invariably face the same methodological problem in that they consider each manuscript or a small group without seeking to understand the intellectual and theoretical threads that connect the tradition as a whole. Most of the writing on the tradition has not sought to do this, instead focusing on reproducing the text visually, transcribing it in its entirety and providing a short analytical essay at the beginning to introduce the reader to herbals in general and the historical-cultural setting in which the specific manuscript emerged. These introductory sections are too short to engage in ongoing discussions of historical narratives or introduce overarching arguments well. As a result, several of the sources repeat the same conclusions from their observations, often unaware of one another. Segre's work is an outlier in this regard, as it pulls from both the texts themselves as well as then-contemporary arguments ongoing in art history, linguistics and history to understand the two dozen texts she identifies as part of the tradition. Since her work, more manuscripts have been identified as part of the tradition and new arguments have arisen in academic circles, particularly in the history of magic, which can be employed to understand these texts in greater detail than the previous state of the field has allowed. At this point in time, there exists a great

need for a synthesis of all this material, along with a summary of what historical arguments have been begun as well as an overview identifying which manuscripts are part of this tradition.

While much attention has been paid to these texts as objects, focusing on their fantastic illustrations and rendering transcriptions for modern day readers, examinations of the corpus as a whole have largely been passed over by scholars in fields that could find a wealth of things to say on them. When the findings from these analyses are put to page, they are small, often ignore other volumes on other alchemical herbals, and most impactfully, they are brief when it comes to historical narratives and overarching arguments. While some may even applaud the marketing of historical investigation to the general public, the result can often be a 300-page book containing a 40-page introductory essay that does not have enough space to begin getting at the complex cultural and intellectual underpinnings of the books themselves.

While barely covered in English language sources, these texts have been the subject of a number of studies in Italian. These books and articles stretch primarily from the 1950s all the way through to the landmark book by Vera Segre who in her 2000 dissertation-turned-monograph covers some very important groundwork. She discusses several of her predecessors while examining in depth seven of the twenty-four manuscripts she identified as part of what at that time had already been labeled the alchemical herbal tradition. Before delving too far into the other highlights of her work, it is worth noting the attention she took to justify this title for the corpus.

The term "alchemical" has labeled this corpus since Ulisse Aldrovandi (1522-1605) first became interested in the subject matter of these texts and the term has since been adopted by modern scholars.[30] Aldrovandi is one of the most famous names in natural history in general and

[30] The term is used by Toresella, 1996; and Segre, 2000, though Segre does not reference Toresella and discovers Aldrovandi's use of the label independently.

botany in specific, as he sought to establish the Botanical Garden of the University of Bologna which has remained a center of medico-botanico medicine through the centuries. Within his personal library preserved at the University of Bologna are four texts which are of interest to us as they have been for other scholars of the tradition.[31] Two of these are titled "PIANTE DEGLI ALCHIMISTI" (vol. I & II respectively) which is where the association between alchemy and these texts seems to have begun.[32] These two books are collections of several different alchemical herbals, a collection of recipes, and a phytonomic glossary.[33] They are accompanied further by *Ms. Aldrovandi 152,* which appears to be an alchemical herbal penned (and presumably illustrated) in the botanist's own hand, and *Ms. Aldrovandi 153* which is a *sammelband* of two different alchemical herbals, with other bound-in materials and an illustrated alchemical section (48r-49v). The text is written in a tremendously sloppy hand, while the images depict flasks filled with colorful substances, masculine, feminine and winged figures with a single stalked plant sprouting from the top of each. The spine of this fourth text bears "DE PLAN- LUNA-" from which we can infer that it is related to the lunaria plant (see below). Whether or not the texts originally bore such a strong connection to alchemy is difficult to say. What is clear however, is that Aldrovandi believed these plants to very much be connected to the secretive work of the alchemists – as evidenced by his assembling them into several texts and his documented investigation of their purpose and origin.

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[31] Segre points out many of the links between Aldrovandi and the corpus, providing an excellent start when seeking his connection to the early historiography of the tradition. But she refrains from providing direct citation to the correspondence between Gherardo Cibo and Aldrovandi, meaning that this portion of the evidence is taken on faith rather than from a direct consultation of the primary sources at this time.

[32] The bindings appear to be original to the 16th mss: Bologna, Biblioteca Università degli Bologna, *Ms. Aldrovandi 151/1*; Bologna, Biblioteca Università degli Bologna, *Ms. Aldrovandi 151/2*.

[33] *Ms. Aldrovandi 151/2,* ff. 89r-123v.

Aldrovandi's interest in this corpus is found not only in his library, but also in references to them found in his correspondence. One instance is letters between the botanist Gherardo Cibo (1512-1600) and Aldrovandi, where the two men discuss the difficulty in identifying the names and illustrations in a manuscript held by Cibo.[34] It becomes clear that the content of these manuscripts perplexed two of the most informed botanists of the 16th century, indicating two conclusions. The first is that they were ignorant of the full context from which these texts and their subject matter emerged; and the second is that this context intrigued both botanists. This is deeply interesting given the seeming popularity of this genre of herbal in its near 40 examples, which may lead one to suppose that the genre would have been known to both men. Why two of the fathers of botany would not be able to find any information on this manuscript tradition just a couple of generations after the tradition began is a perplexing question. Hence this thesis seeks to understand the contexts from which these books sprang forth and attempts to answer a question that first interested scholars nearly half a millennium ago.

Aldrovandi did seem certain that these plants were employed by alchemists to some degree, and this is a legacy that has been examined by many previous 20th century writers on the topic, though again, none perhaps in as great detail as Segre. Throughout her monograph, she notes when specific plants have an explicit connection to alchemy. The most notable of these is *herba folio* which is combined with pig blood to temper iron.[35] She also notes the abundance of plants which have various uses in the creation of pigments and dyes, along with many other specific examples of how the text connects to other practical alchemical works.[36]

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[34] Segre identifies this to potentially be Fermo, *Ms. 18,* see XXVII.

[35] Segre, XXXV.

[36] The most notable of these being Pavia, Biblioteca Università di Pavia, *Ms. Aldini 74*.

While the alchemical pedigree of the corpus seems to hold up from Aldrovandi to Segre, there is a trend in the historiography of these texts which is not so accurate and must be addressed. This is the tendency to see hermetic influence in the alchemical herbal tradition. At present, the presence of any clear link to hermeticism explicit or otherwise appears tenuous at best. Though Segre's landmark work on the subject, *Il giardino magico degli alchimisti* seeks to tie these works to a facet of occultism through vague references to lunar astrology and parallels with truly hermetic texts, modern understandings of the relationships between theoretical hermeticism, technical hermeticism and alchemy pull apart this argument. While it would be equally inaccurate to say that it is an impossibility that the various unknown authors of these works ever encountered a hermetic text, it seems far too early to make such a claim.[37] A deeper understanding of the astrological and occult influences of the tradition is both necessary if this idea is to be placed on a solid footing, but such examinations reveal simpler explanations for the purportedly hermetic evidence. It is important to understand how this argument occurred in such an otherwise thorough and useful interrogation of the intellectual underpinnings of the tradition to avoid muddying the waters on the subject of what influences are evident in these texts.

Understanding these texts as hermetic was an acceptable interpretation when utilizing older works on hermeticism, but with the developments in the historiography of astrology and hermeticism, the question as to whether or not these books are hermetic should be re-examined. At the time of writing, much of the secondary literature on alchemical herbals relied on works on hermeticism that put forward arguments that are no longer in vogue as they have been superseded by more recent and nuanced scholarship. The vast majority of secondary sources used to analyze whether the tradition was hermetic or not all come from 1961 and before, which

[37] Segre, XIII.

while not intrinsically a problem, the arguments that André-Jean Festugière first presented in 1944-1954 have been built upon since his death in 1982.[38] The nature of the topic means that several debates have continued, including those around the origins of hermeticism, the date and culture from which the philosophy sprung as well as new sources coming to light. In the current understanding of hermeticism, the alchemical herbals seem quite distantly divorced from the system.

Arguably the strongest case that can be made for these books having any hermetic link is similarities in their content to the *Kyranides*. This encyclopedic and hermetic work of late antiquity contains all manner of magical and medical cures that received some attention in the Middle Ages, though certainly not the limelight. Due to the text of the *Kyranides* being written nearly in vernacular language , it is likely that it would have been viewed as part of the "low" register of culture.[39] This means that it possesses double membership to the term vernacular magic, both because it is likely a combination of what might be recognized as folk and formal magic as well as being written in vernacular language. While drawing a hard line between high and low culture is likely too harsh a division, the difference can be understood to be a vernacular system, lying somewhere between folk belief and educated orthodoxy.[40] It was likely not held in high esteem by that elite cadre of academic practitioners of magic, though this does not mean it was totally absent from their libraries. A fourteenth century Byzantine physician and priest was found guilty of the crime of being in possession of several occult books (including the *Kyranides*) and sentenced to be cloistered under strict observation of the other monks.[41] While it

[38] For a treatment of Festugière contributions in specific and a recent treatment of Hermeticism and its legacy through the centuries as a whole, see Bull, *The Tradition of Hermes Trismegistus*, 2018 (for Festugière, see 7-8.
[39] Mavroudi, "Occult Science and Society in Byzantium," 84.
[40] Magliocco, "Witchcraft, healing and vernacular magic in Italy," 9.
[41] Mavroudi, 85.

is very likely that other factors led to his legal trouble, this does illustrate that the *Kyranides* was not a text held in high esteem among the powers that comprised the 14th century Byzantine ecclesiastical hierarchy. Within the herbological section, there do exist certain similarities between specific plants in both the alchemical tradition and the *Kyranides* as well, despite being unrelated.

The similarities between hermetic sources and our tradition are not as deep as one may think. Both texts do pertain to magical plants and astrology, but there are too many differences to believe any direct connection exists. Small sections from hermetic works do contain similar language about a small number of herbs that have alchemical counterparts, but there are several problems with establishing a link between the two. Perhaps the largest is that the *Kyranides* is chiefly concerned with the creation of sophisticated amulets. While some plants in the alchemical herbal tradition can be worn about one's person (such as *herba forus*), these are of an entirely different nature than those of the *Kyranides*. Segre herself even mentions that ". . . there is no complicated preparation of the talismans in the same vein as to what is found in hermetic texts like that of the Kyranides."[42]

Furthermore, there is a methodological problem that has been identified and addressed by the historiography of hermeticism. This is that in the *hermetica* (corpus of hermetic works) there existed two separate genres: a philosophical hermetica which focused on religious, philosophical and theoretical concepts, and a technical hermetica which included alchemy, medicine, and astrology. Previously, scholarship on hermeticism treated these as separate and distinct traditions, perhaps most notably for the history of science found in Francis Yates' landmark text

[42] In the original Italian: "Tuttavia, non esiste una preparazione complicata dei talismani ad esso collegati paragonabile a quanto si trova, ad esempio, nel testo di magia ermetica dei *Kyranides*." Segre, XXVI.

Giordano Bruno and the Hermetic Tradition.[43] Though once popular, this divorce of the *ars* (knowledge) and *practica* (practices) from one another has since been questioned in later scholarship which sees the two as separate but interdependent on one another.[44] How this relates to the alchemical herbals is that the hermetic technical literature bears a clear connection to the hermetic philosophical works. The alchemical herbals at no point in their text contain any explicit reference to a hermetic work, Hermes Trismegistus himself, nor to an idea or concept that can be defined as exclusively hermetic in origin. The only shared commonality lies in the medieval world's fascination with the celestial realm.

In the sections of *Il giardino* that examine the alchemical, astrological and magical aspects of the tradition, several statements are made attempting to connect certain passages to outdated understandings of the history of magic. Perhaps the most perplexing of these connections is that between the collection of herbs at night and the pantheon of ancient gods and goddesses. *Il giardino* correctly reports that medieval alchemists linking the moon and plants together has an ancient root, but seems to suggest that this is accomplished through the association of Hecate or Hermes (through his absorption with Thoth) with the moon.[45] For any familiar with the long and storied historiography of magic, this will echo Margaret Murray's arguments of a continuous and secret pseudo-pagan religion, rather than contemporaneous work on the history of magic.[46] In fact, there are a dozen explanations for why people could have collected plants at night in the fifteenth century.

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[43] For the division between the two, See the first chapter of Yates, *Giordano Bruno and the Hermetic Tradition*.
[44] Pereira, "Alchemy and Hermeticism," 116.
[45] Segre, XXV, XXXI.
[46] Murray's arguments, while once a central pillar of the history of witchcraft in Europe, have been challenged, defeated and relegated to an extremely niche position for historians of magic to rely upon. While its cultural influence remains far less unchallenged in modern neo-pagan and wiccan circles, it is no longer a scholastically tenable argument. For Murray, see Murray, *The Witch Cult in Western Europe*, 1921; for modern critiques of her work, see York, "Invented Culture/Invented Religion," 138; and Simpson, "Margaret Murray," 1994.

One, perhaps, is the fact that several of the alchemical herbs are reported to phosphoresce at night on certain days within many of the alchemical herbals. In a purely practical sense, it would be easier to locate glowing plants in the dark. This is a simpler explanation than assuming the herbalists were joining in some midnight pagan rite while in the same breath muttering prayers to the Christian God. To assert that the root cutters were carrying on the same legacy begun millennia ago is simply too big a leap. The connection is clearly influenced by those writing in Murray's legacy and obfuscates the practices and theory that motivated the creation of these manuscripts. There exists today a large enough body of work that displays the importance of astrology, which was certainly far more commonplace in the medieval world. Relying on this rather than a hermetic influence for the celestial connections in the tradition is a far simpler and better-fitting explanation that is not at all unprecedented in the history of science.

The alchemical tradition is but one of several manuscript corpora that together make up the genre of the medieval herbal which has long been a subject of historians of medicine. Many of these have been the subject of academic projects which have increased understanding of the place of herbal knowledge in not just the Middle Ages, but in preceding Antiquity as well as in the early modern period botany evolved from a facet of natural history into its own modern science that we recognize today. But the alchemical herbals have remained essentially overlooked, meaning that manuscripts remained unidentified in libraries and questions as to their origin, content, and purpose abound. A large section of the argument as to why they should be examined is simply that they have in a large part been ignored by several fields that could speak to many of the currently unanswered questions, especially that of the history of science. I argue that this discipline above all others brings to light many of the philosophical, magical, and medical aspects of these books which have either been misunderstood as we saw above, or

completely overlooked as we will see below. It is through the application of several frameworks from the history of science and medicine that I hope to gain new insights, revealing the authors of these enigmatic works and understanding them within the intellectual and cultural context of the Italian Quattrocento.

III. Contextualizing the Tradition

It is in equipping ourselves with the right tools and terms to make sense of these texts' underlying subjects of medieval thought that we can take the next necessary step. While a critical edition assembled from the progenitor manuscripts is an incredibly useful tool, the existence of dozens of descendant manuscripts raises the question as to how this body of knowledge evolves, morphs and changes over time. Segre identifies seven manuscripts which she labels the direct tradition and the 17 remaining examples as the indirect tradition. The term "sub-tradition" is employed here throughout to distinguish that the direct and indirect sub traditions are smaller collections of the whole alchemical herbal tradition. Does the tradition enhance itself with further iterations, or does both text and artwork decay with each generation written? By nearly doubling the number of examples of the indirect sub-tradition, I hope to better outline the lifespan of the alchemical herbal in northern Italy (see list p. 57). This will also ultimately open up new avenues of inquiry as new patterns emerge and are reinforced by further examples in other manuscripts. Not all of these issues will be able to be raised here, but by exploring some of the future directions this project will take, we can better focus ourselves on what must be done to facilitate those developments.

A. Adjacently Alchemical Herbals

We have seen that these manuscripts were thought of as alchemical manuscripts by 16th century botanists as well as 20th century researchers. Segre defended the employment of Aldrovandi's term by highlighting alchemical uses of several of the alchemical herbs and argued that alchemists are one plausible originator for these codices. However, the question could be raised if "alchemical" is the most accurate label. Are the herbs described in them related to alchemy? What does alchemical mean in the context of herbal manuscripts and do these texts fit into that history? Are there other ways these texts could be understood?

The first question can be readily answered through an examination of the plants and their virtues described. The seven codices of the direct sub-tradition (see list, p. 57) provide the clearest insight into the original context from which these texts emerged, and it is from the six oldest of these that Segre prepared her critical edition.[47] Of the 98 herbs contained in the tradition, two of these can be directly linked to alchemy through the alchemical herbals themselves. Of these lunaria is perhaps the most intriguing, as it is linked to counterfeiting currency, a long-held accusation against alchemists.[48] The alchemical herbals specifically state that lunaria is used to make false coins, "*ad falsificandum monetam*."[49] Lunaria continues to be linked to alchemy through numerous texts, well into the early modern period. Gerard names it "Moonwort" and reports that the plant is "used among the alchemists and witches… that it will loose locks [horseshoes], and make them fall from the feet of horses that graze where it doth grow. . .".[50] It is both interesting to see it accused of causing horses to throw their shoes as well

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[47] Segre, XCVI.
[48] Principe, *The Secrets of Alchemy*, 23.
[49] This phrase is used in several manuscripts, particularly the seven of the direct sub-tradition.
[50] Gerard, "Of One-Berry, or Herb True-Love and Moonwort." In *The Herball or Generall Historie of Plantes*, P. 2 Ch. 89.

as the fact that Gerard discusses it in the same chapter where he describes *herba paris*, another of the alchemical herbs. One need not look so far forward to see lunaria's alchemical pedigree, as it was known to the alchemists of the Middle Ages. John of Rupescissa, writing as pseudo-Raymond Lull, describes in his *Liber de consideratione quintae essentiae* that lunaria has 15 leaves, gaining and losing one for each lunar phase of the moon in a 30-day cycle.[51] The accompanying text speaks to the plant gaining strength in a medical sense on the 15th day, before decreasing again in efficacy. The plant is concretely tied to an astrological pharmacy while at the same time being located in the middle of a chiefly alchemical work, leaving the plant's occult pedigree up to little doubt.

Likewise, *herba folio* can be employed to temper iron to a degree that it is stronger than other iron tools, "*Si quis vellet temp[er]are ferrum quod incideret alios ferros.*" This herb is also interesting to us, as it so very often appears illustrated in the alchemical herbals alongside metal implements, mainly one or two bladed tools or weapons. Its illustration is highly schematized to impart information to the reader through sight that the plant is related to the forging of tempered iron. The use of botanical matter in the process of tempering swords is well known in the later medieval period, as several passages from a 14-15th century German manuscript attest.[52] The specific phrase from this text instructing one to mix the plant in a combination including stag's blood is directly mirrored in texts from the alchemical herbals. The inclusion of plant and animal ingredients in an effort to strengthen the iron, is parallel to what we see in the alchemical herbal tradition. Despite this clear link, is the presence of two alchemical plants out of 98 enough to

[51] Corpus Christi College, *MS 395*, ff. 49v-50v *Liber de consideratione quintae essentiae, etc*.

[52] Germanisches Nationalmuseum, *Ms. GNM 3227a*, ff. 11r-12r.

consider these texts alchemical? To begin to offer an answer to this, it is necessary to understand what is meant by the term "alchemical."

The beginnings of alchemy are suitably difficult to describe, fitting the secretive nature of the field. Whether one accepts the connection with the Ancient Egyptian word *kmt*, or ascribes a later Greek origin of the term, Hellenistic Egypt serves as the cradle of alchemy.[53] It is here that the first alchemical texts were written, though they were a far cry from the laboratory notebooks of early modern alchemists who sought the *magnum opus*. The first alchemical texts from the third century AD relate to dyes as well as precious metals and stones and are technical works which spend a great deal of time discussing counterfeiting (an accusation from which alchemists will never truly escape).[54]

When alchemy entered into medieval Europe, the tradition continued being concerned with the technical. While theoretical works did appear and there are several texts we know to have been produced from the result of university dialogue, alchemy has always been an applied art.[55] This means that a great number of texts from alchemy are focused on providing lists of recipes or what may be considered the predecessors to chemical formulas. These notebooks differ rather dramatically from university-based texts which spend a great deal of time theorizing about the fundamental makeup of substances. Instead, these notebooks or *fachliteratur* (technical literature) are all we often have from the libraries of practicing alchemists.[56] The focus that produced these works is important to us. While very few alchemical notebooks deal with plants, they may have more in common with herbals than is at first apparent.

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[53] For Egyptian etymology, see Principe, *The Secrets of Alchemy*, 23; for the Greek origin see 9-24.
[54] Ibid, 10-11.
[55] Pereira, "Alchemy and the Use of Vernacular Languages in the Late Middle Ages," 336.
[56] Principe, 159-163; Pereira, 337.

Fachliteratur is a product of practical alchemy along with metallic alloys and vibrant dyes. Medieval herbals lend themselves well to being understood in a similar vein. Botanical pharmacology and its history have for a century been understood to be *rezeptliteratur* or recipe literature. This is the classifying of texts as primarily being focused on formulas or as the name would suggest, recipes.[57] While recipes are not necessary for a text to be considered an herbal, many entries in an herbal are likely to have recipes here and there, even if many do not list specific measurements the way one might expect to see today. The reason strict recipes are not always present in herbals is that many medical plants were taken on their own or as "simples" rather than complex medicines that required a formula to be passed along in the text.[58] The alchemical herbals primarily concern themselves with simples rather than what scholars have termed "drugs" or compound preparations made by combining simples, other ingredients and more complex processes.[59] These more sophisticated preparations are usually written as recipes that look similar to alchemical recipes which had long been understood to be *fachliteratur*. This led the botanical historian Jerry Stannard to argue that the recipe literature should be considered as part of the technical literature, and this would include certain herbals in the same classification as alchemical laboratory notebooks.[60] Regardless of whether or not one considers his argument successful, what can be said is that between herbal manuscripts and alchemical treatises there existed similarities between the two bodies of literature. Despite the relation between some other herbal and alchemical literature, the alchemical herbal tradition does not contain the kind of complex drug preparations that have led to connections between alchemy and botany.

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[57] This term does not seem to be used widely in the history of botany, but it is used by two well-known names in the field: Sigerist, *Studien und Texte zur frühmittelalterlichen Rezept-literatur*; Stannard, "Botanical Data and Late Medieval 'Rezeptliteratur."

[58] Reeds, *Botany in Medieval and Renaissance Universities*, 41-46.

[59] Shaw and Welch, *Making and Marketing Medicine in Renaissance Florence*, 11.

[60] Stannard, "Rezeptliteratur as Fachliteratur."

Despite the abundant differences in format, scope and content, it is possible to see a world in which these texts could have emerged from the quills and brushes of people familiar with alchemy. Medieval commentators, particularly those from the Church, often offer their opinions on magical practices as well as whether or not they can be practiced by a moral Christian. When describing various different types of magic, they often include alchemists alongside conjurers and necromancers.[61] The different types of magic, as well as which types were accepted or not, shifted and changed throughout time and place, depending on who was speaking on the topic. Due to the somewhat ambiguous nature of medieval magic, it is not entirely unlikely that when Aldrovandi labeled these herbals the plants of the alchemists, he may have been speaking more broadly than the alchemy we consider the precursors of modern chemistry; the term may well have applied to all manner of magical conjurers. Many of the plant descriptions list magical properties alongside medical virtues, and a majority of them involve astrology in some sense. Perhaps it is not literal alchemists who wrote these texts but authors from the wider group of occult practitioners who wrote the alchemical herbals. This hypothesis explains the tenuous connection the tradition has to alchemy, while at the same time addressing the overall magical quality of these texts and the plants they describe.

B. Naturally Magiferous Herbals

The history of magic continues to expose the extent that magic was inexorably linked to the medieval worldview while further complicating our understanding of the complex relationships between the different types of magic, to say nothing of its relationship to Church

[61] Thorndyke offers several medieval opinions on alchemists and magicians, including Michael Scot, Albert Magnus and Roger Bacon in "Some Medieval Conceptions of Magic."

doctrine. Magic occupied a precarious position in medieval society and different types of magic varied in acceptability depending on the century and location. We have also seen that the plants within the alchemical herbals are on the whole, not alchemical. Rather they can better be described as having magical properties as well as astrological connections. While magic plants should not surprise any scholar of pre-modern botany, the specific framework in which alchemical herbals operate is more nuanced than may first appear. Many plants appear in herbals alongside their seemingly non-magical counterparts. How is it that these authors understood the magical and naturalistic systems as consanguineous?

The magical mechanisms that allow these plants to act can all be grouped under the term and concept of "natural" magic. Natural magic is magic that exists within the natural (though occult) properties of things and can be accessed and understood without the assistance of demons or angels.[62] It hinges on the principle of correspondence, a belief that the celestial world has an influence on the terrestrial one. This was the fundamental concept of astrology as well as other sympathetic practices which at a root level can be understood as the idea that unrelated objects can affect one another.

Natural magic is evident within our texts through the instances of astrology as well as the herbs being described as magiferous, roughly meaning that the plants are mundane but have hidden magical properties. Starting with the former, the presence of astrology in our tradition points to the role of celestial influence in medicine that began with Ancient Greece and remained common practice through the Renaissance.[63] The magical and medical properties of the plants are believed to be instilled via these celestial influences, which is why harvesting the plant at a

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[62] Van Der Lugt, "'Abominable mixtures'," 237. Cf. Walker, *Natural and Demonic Magic from Ficino to Campanella.*

[63] Azzolini, *The Duke and the Stars*, 10-17, 135.

specific time is important to ensure that it is effective. This affiliation between the natural and celestial worlds is not at all limited to the alchemical herbal tradition, but pervasive throughout medieval natural history. This distinguishes the magic described in our herbals from more illicit forms of theurgy or necromancy, though this does not mean that they are without controversy. Thomas Aquinas discusses the influence of celestial bodies on all manners of natural theology in his *Summa contra gentiles* including plants. He makes it clear that the plants themselves have an innate magic, instilled by God through the instrument of astrology via the celestial influence of the stars and planets.[64]

Natural magic has often been understood as a Renaissance concept which is not surprising as it was written on at length in the early modern period. Heinrichus Cornelius Agrippa (1486-1535) states in his first volume on occult philosophies that "There is, therefore, a wonderful virtue and operation in every Herb and Stone."[65] He goes on to explain that any occult power in stones, herbs and stars come from the divine above, and so pursuit of these hidden virtues is entirely moral for one to pursue. Giambattista della Porta's 16th century text *Magia naturalis* is perhaps the best text to explain the concept of natural magic overall and though written much later than the alchemical herbals, its words harken back to the cultural world from which our texts emerge. In the text, della Porta clearly distinguishes malevolent magic or "sorcery" from natural magic, "which all excellent wise men do admit and embrace and worship with great applause."[66] While it is clear that natural magic enjoyed acceptance and praise during the Renaissance, it evolved from an earlier understanding of nature in the medieval period.

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[64] For translations of Aquinas' position, see Rutkin, *Sapientia Astrologica,* 218; for Albertus Magnus, see Rutkin 98.
[65] Heinrichus Cornelius Agrippa, *Three Books of Occult Philosophy or Magic, Vol. I Natural Magic*, Book I, Ch. 13.
[66] Giambattista della Porta, *Magia naturalis*, Book I, Ch. 2.

During the Middle Ages, natural magic was considered an acceptable aspect of natural philosophy to be pursued and understood. Four centuries before Agrippa and della Porta, Albertus Magnus wrote a tremendous amount on natural philosophy, including magic. While making clear his condemnation of sorcery as manipulation of demons, he nevertheless defines natural forces as part of natural science and something practiced by wise men.[67] He would later be remembered as an alchemist and necromancer, but this was largely due to the fact that later commentators did not distinguish natural magic from ritual magic.[68] Another medieval commentator is Roger Bacon, who wrote vociferously against the employment of what he termed magic while at the same time lauding the secret and occult properties of natural objects.[69] This is not a contradiction in any sense, but rather demonstrates that for the learned scholars who studied the natural world there existed two types of magic, one natural and one diabolical. It is in this first category where the alchemical herbals can best be understood.

Beyond alchemy and even natural magic there exists a term that more aptly describes the tradition in question: the term "magiferous", coined by Jerry Stannard in 1977.[70] It can be used to understand the unique position of the alchemical herbals situated in both the magical and medical traditions. Stannard, working on German herbals, Italian herbals, and even a few alchemical herbals, noticed that there was more in the texts he studied than just magical and mundane plants, and he derived magiferous as the name for these. The term itself applies to one of three types of plants that appear in medieval herbals. The first type of plants are the medically useful but mundane plants that make up the vast majority of plants in medieval phyto-therapeutic medicine.

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[67] Thorndyke, "Some Medieval Conceptions of Magic," 117.
[68] Collins, "Albertus, Magnus or Magus?" 4.
[69] Thorndyke, "The True Roger Bacon," 475; Bartlett, *The Natural and the Supernatural*, 142-145.
[70] Stannard, "Magiferous Plants and Magic."

The second type are purely fictitious plants outlined in herbals that exist in myth and legend but not in reality. The third type, are magiferous plants which are real world plants that possess innate occult properties that can be tapped into through means or rituals, often done at the time the plant is harvested.[71] These are the magiferous plants. Their innate magical properties were bestowed by God through celestial influence but were hidden, lying dormant in the natural world. A possessor of secret knowledge was needed to activate the innate powers within the herb through all manner of different processes at the time that the plant was harvested.

Harvesting rituals ranged dramatically but included collecting the plant at an astrologically significant time, reciting a prayer or spell, stripping naked before collecting it, receiving confession, remaining chaste, or even undergoing exorcism to drive away malign influences of the herb.[72] Collection rituals were to be conducted at specific times indicated by astrological language, whose meaning is beyond our easy understanding. Some plants were to be collected on specific days,[73] or during a specific month.[74] Other herbs were to be harvested when the moon was in a specific position in the night sky, though the specific astrological system employed is not known.[75] While many of these rituals seem unique to the alchemical herbals, this is not entirely the case. One familiar example is that of the mandrake, which has a ritual that is mirrored in many other herbal traditions, dating back to Flavius Josephus (c. 37-100), Dioscorides (c. 40-90) and Theophrastus (c. 371-287 BC). The text and image often align with an orthodox collection ritual, of tying a dog's collar to the herb, moving a safe distance away,

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[71] Stannard, 33-34.

[72] Ibid, 40; for examples from the alchemical herbals, see Segre, XXIV.

[73] These include *herba instanutia*, *herba angalles*, *herba amorsu serpentis*, *herba tedorixe*, *herba foleas*, *herba luza mandragora*, *herba illiloris*, *herba tilles*, *herba corporelis*, *herba palma Christi*, *herbe belletolis*, and *herba capalarices*.

[74] April is mentioned once, May ten times, June four times and August once.

[75] These include *herba foleas*, *herba paroiscas*, *herba istatoris*, *herba caspetres* and *herba forus*.

and covering one's ears before calling the dog to you. This process picks the mandrake which offers a sickening or deadly screech which kills the dog while protecting the gatherer.[76] These complex rituals occur in a large number of entries, suggesting that the process of collecting these plants was an integral part of the philosophical system that allowed these plants to impart their magic properties.

IV. Expanding the Tradition

A. Proposed Tradition

Segre recognized a total of 24 manuscripts in the alchemical herbal tradition, as detailed in *Il giardino*.[77] While her book does provide a census of all the texts she identified, its main focus is the seven she identifies as being in the sub-direct tradition. The seven manuscripts are all demonstrated to be direct copies of one another in her *stemma codicum* (see Table 2, below, p. 39). They take up the majority of her discussion throughout the book while at the same time being the sources from which she constructs her critical edition. The seven manuscripts of the direct sub-tradition texts are dated to be older, written on parchment or vellum, and are primarily written in Latin.

The above factors indicate that the other 17 manuscripts, or the indirect sub-tradition that Segre discusses, all descend from this original branch. Despite the critical nature of the work to

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[76] For a discussion of the collection ritual as well as a broader study of the mandrake, see Thompson, C. J. S. *The Mystic Mandrake*, London: Rider & Co., 1934.

[77] While later texts do often discuss a manuscript having a relationship to the alchemical herbal tradition, these do not offer overviews of the corpus, instead only mentioning that a larger body of literature exists to contextualize their analysis.

comprehend the relationships between the texts, there is still room for improvement when it comes to some of the arguments by Segre. The biggest issue with the book at present is how she understands the text in the alchemical herbals. Segre emphasizes Hermeticism, which is a potentially acceptable way to analyze the theoretical frameworks within which these texts operated. But as already indicated, advancements in the understanding of magic, medicine and astrology better illuminate the many facets of these books specifically and medieval herbal manuscripts in general.

By expanding the number of known works within the corpus, a new survey of the texts is possible to better prepare future investigations. It is hoped that these analyses will be steppingstones to a comprehensive monograph synthesizing the entire tradition, using close readings and studies of the books as objects to explain their authorship, use, and other questions related to their place in 15th century Italy and beyond.

By applying the term magiferous to the alchemical herbals, a methodology is gained along with the concept itself. Martha Weil used the concept of magiferous plants to examine 13 magiferous plants across the same number of English language herbals from the mid to late medieval period.[78] Her dissertation was successful in demonstrating that Stannard's concept helped to distinguish magical from medical in the ambiguous world of medieval medical botany. This technique of examining the virtues of certain plants across manuscripts is not unique to Weil, Stannard, or any of the dozens of scholars who have done so over the long history of botany and helped to contextualize the often ambiguous occult influences on medieval medicine. Following from this, I next offer a study of *herba forus* (or *verbena* in other medieval herbals) in

[78] Weil, "Magiferous Plants in Medieval English Herbalism," ii.

the augmented list of alchemical herbals to assess both if the plants within can be understood as magiferous as well as if such a study is useful in understanding the tradition as a whole.[79]

B. Herba forus

Currently there are 21 instances of *herba forus* that appear across the alchemical herbal tradition available to me. They are identifiable with one another through three different methods, these being similarities between their illustrations, phytonyms and the virtues attributed to them in the text. The illustrations are all pen and wash depictions of a central, green stem, several different morphologies of branching leaves, white or yellow flowers (save Oxford, *Ms. Canon. Misc 500*) and a cluster of roots depicted as piscine or serpentine creatures. The collections of different names are cognate with one another and tie into extra-traditional names and contemporary knowledge of the various plant species that shared the name "verbena" throughout history.[80] When present, the descriptions of the plants' virtues also bear striking textual similarities, though they sometimes diverge from one another in interesting ways. Through utilizing these three separate approaches of art history, linguistics, and late medieval medical botany, we can gain an understanding into how these books were used as medical and magical resources by their owners.

However, one connection that this case study calls into question is just how accurate the term alchemical is to describe the operations of these plants. Looking into the secondary

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[79] Much of this section was presented as "L'erbario botanico e fantastico" at the Works in Progress in the History of Science workshop hosted at Ca' Foscari University of Venice, June 22-23, 2023 and the feedback I received aided in structuring it into its current form, for which I am most grateful.

[80] The varied and complex orthography of plant names in medieval herbals is addressed generally in nearly any text discussing a herbal manuscript, but more specifically in Cristofolini, Giovanni, and Umberto Mossetti. "Interpretation of Plant Names in a Late Medieval Medical Treatise."

literature about these texts there is repeated reference to the "alchemical" herbal tradition. Though *herba forus* clearly falls in line with what Jerry Stannard and others like him would call "magiferous" or plants with a potential connection to magic properties, the use of the name first introduced by Aldrovandi centuries ago continues to cause problems in framing the purpose of these texts.[81]

All of the entries in the current list/sample tell us more or less the same virtues or operations of the *forus* herb. Namely that it is used as an amulet which will give the wearer good fortune and make them well liked by all the people of the world. The plant grows in cold and rocky mountains, and it must be picked when the moon is in the zodiac house of Gemini and/or Taurus. While gathering the plant at this time, believers must recite a prayer, commanding the plant to become theirs while invoking the Holy Spirit as well as sometimes God the Father and Jesus the Son. While there is some variation between the different entries (though some are closer than others), on the whole they do not deviate wildly from one another. For a list of occurrences of *herba forus* in the alchemical herbal tradition, see Table 1 below.

[81] Toresella, "Gli erbari degli alchimisti," 44-47.

Ms.	Name	Pg./Fol.	Ms.	Name	Pg./Fol.	Ms.	Name	Pg./Fol.
Ms. 18	herba Forus	37v	Ms. 106	herba Forus	38v	Canon Misc. 408	herba Forus	33v*
Ms. Lat. 17848	herba Forus	34v	Ms. Aldini 211	herba forus	34v	Ms. 362	herba Forus	52v
Ms. Aldro. 151/2	Ferus erba	78v	Ms. B.V.24	herba ferus	72v	Ms. Ashb. 456	Erba ferus	106r*
Ms. 337	erba aeris	42r	Ms. It.II.12	herba ferus	182r	Ms. It.III.11	herba ferus	82v
Ms. Ricc. 2174	herba ferus	20r*	Mss. Her.[82]	Fortis	p. 91	Mss. Her.	Ferns	p. 259
Ms. 196	herba ferus	93r	Ms. 326	herba fercus	26v*	Ms. LJS 46	Forus	27v*
Ms. LJS 419	feras	64r	Ms. 95	Fius	41r*	Ms. Palat. 1078	herba ferus	8r

Table 1: Occurrence of herba forus in the alchemical herbal tradition. *Denotes image and caption only.

The presence of astrology in the herbals we are examining is also not wholly original, as many texts make note of when a plant should be harvested to ensure it will be properly imbued with the magical properties. Both *The Kyranides*[83] and Pseudo-Albertus[84] mention that the plant should be collected when the sun is in the sign of Aries. Another author also claiming to be Albertus Magnus states that the herb, "…should only be collected from the twenty-third day of the Moon to the thirtieth, beginning with Mercury…"[85] While the significance of these specific

[82] Within London, *Mss. Her.*, a particularly long codex, there are two instances of clearly alchemically stylized depictions of *herba forus*, both under different names, spread out in the text which could imply two different explanations for this. The first is that the second section of the text is a separate one, not originally related to the text, or that the scribe had some reason for including two different entries for what they believed were two different herbs, given the different names given.

[83] Delatte, *The Kyranides*, 338.

[84] Pseudo-Albertus Magnus, *Liber secretorum Alberti Magni*, 124.

[85] Ibid, *Les admirables secrets d'Albert le Grand*, Lib. II.2, pg. 62.

times is not laid out in these texts, one can both be sure that these specific times held a meaning to the people who utilized them and that there was no consensus as to when the herb should be gathered across the textual traditions. Though astrology is tied to herbal medicine during the medieval period (and beyond), its exact meaning in each case in which it was employed is poorly understood by modern scholars, opening an avenue that seems to call for an analysis of this technical collection of instructions.

Turning our attention from text to art, we can see that while variation exists between the twenty-one depictions of *herba forus*, there are still aspects present in all examples, regardless of artistic license. The herb is always depicted with a single stalk from which two different morphologies of leaf extend out from, save in one exemplar.[86] The central stalk extends down, at which point the naturalistic turns to fantastic, as where one would expect to find some type of root structure, there exists instead a mass of snake-like creatures fanning out, not unlike a crude schematic of a plant's rhizomatic base. These snakes number from four to six, with five being the most constant number, appearing in seven instances. The symbolic meaning behind this can be traced to a passage in the pseudo-eponymous *Liber secretorum Alberti Magni* which is purported to have been written by Albertus Magnus, in which the author states that should the plant be buried in the ground, "worms will be born, which, if they touch any one, [they] will die immediately."[87] This is obviously an important virtue of the plant to note, and if indeed this is the origin for the depiction of *herba forus*' roots as worms, then it makes sense that the artist should wish to impart this information to the reader above all else. Sadly, the rationale is not expanded upon by pseudo-Albertus, nor by the alchemical herbals in any of their iterations found

[86] *Canon. Misc. 500* is an oddity in this regard, as its artistic style is perhaps the biggest departure from the tradition, having instead a lone stalk with a single style of leaf branching off from it. See the relevant discussion below for more on this manuscript.
[87] Pseudo-Albertus Magnus, *Liber Secretorum Alberti Magni*, 124.

so far. What it does inform us is that quite likely, the originator of the alchemical herbal tradition was familiar with other textual traditions of magic, such as the *Book of Secrets* of the pseudo-Albertus Magnus.

In some of the manuscripts *herba forus* is depicted in one section while a different instance of *Verbena sp.* is depicted in another under a different phytonym and lacking any elements of the alchemical style of illustration. In *Ms. 1591*, verbena appears where *forus* does not, while in *Mss. Her.* two different depictions of our alchemical herb appear while pg. 173 has *peristereon* (an inherited term from *Verbena* from Ancient Greece) quite plainly displayed. These more commonly named instances are illustrated in a way that clearly shows them as being accurate to their real-world counterpart, including a root structure devoid of hissing snakes. The multiple leaf structures are present as well, and the comparison to *Fortis* (a corruption of *forus*) on pg. 91 is quite compelling, save for the structure of flowers and again, the roots. The absence of text means that we have no elucidation of the plant to rely upon, but the images tell us that for some reason, there was a need to depict the same real-world plant several times.

There are a multitude of possible reasons this may be, but I would like to highlight three. The first is that *herba forus* has been improperly identified with the genus *Verbena.* This has been made more than improbable with the discovery of *Mss. Her.*, as there is little doubt that the leaf structure of *Fortis* on pg. 91 is *forus*' multi-morphological structure that is rare among herbs and even more so in herbal manuscript depictions. This point could be belabored further, but defending this identification is both unhelpful and unlikely to reveal further points, so while it is possible that *forus* is not *verbena*, further examination is unlikely to reveal much of interest.

The next point is that whoever created these herbals may have been unaware that *herba forus* and *verbena* were one and the same. This would be difficult to put forward, but doubly so

in the absence of any description in the manuscript, as we can gain very little insight into the broader botanical frameworks in which the authors were working. A more likely and more simple answer is that someone at some point had a craft knowledge regarding plants, as they knew the symbolic meanings behind the fantastic illustrative elements added to the schematics. The fact that these have a continuity with outside influences on the alchemical herbal tradition demonstrates that at one point someone could connect these idiosyncratically named plants to at the very least other systems of herbal knowledge, and quite likely by extension, the vegetable realm of the natural world. While it would be possible that later writers only knew the alchemical herbal tradition and were unable to connect it to outside systems or the natural world, the variation in text across the various manuscripts suggests that these manuscripts do not remain unchanged over their consecutive iterations.

The case study of *herba forus* has proved enlightening as a case study for the primary source analysis that research of the alchemical herbal tradition requires. Through textual analysis we have been able to ascertain how it connects with other ideas of magic and medicine, as well as gaining insights into the place these books occupied in the worlds of their creators. The comparison of forus' depictions, descriptions and captions has demonstrated that the alchemical herbals were likely copied from one another rather than created from interactions with living plants in nature or from dried specimens. These elements that indicate the manuscripts connection to one another within the tradition provide a useful framework to recognize patterns and begin understanding the relationships texts within the tradition have with one another. Ordering of the manuscripts is one of the most important steps. If they can be properly provenanced and located in relation to one another, then the tradition can move beyond just

being understood as individual manuscripts on their own. Rather they can be contextualized against the broader frameworks and understandings of the alchemical herbal tradition as a whole.

Above, particularly in the discussion of *Canon. Misc. 408*, there has been reference to the stemma made by Segre for several manuscripts.

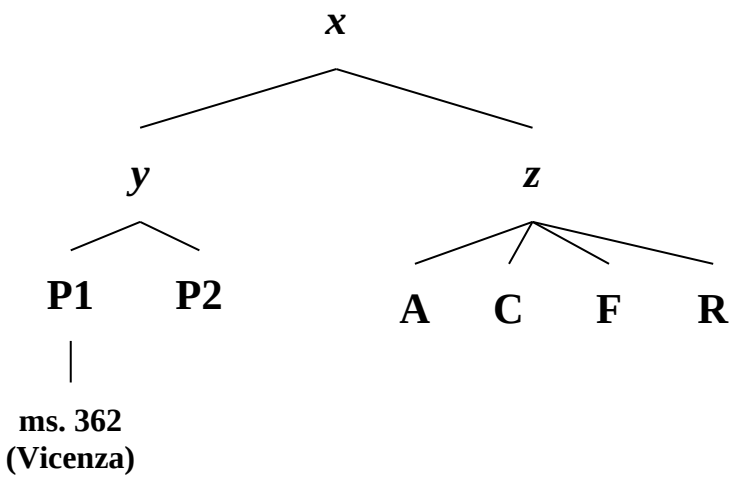


Table 2: *Stemma codicum* proposed by Vera Segre, tying together *Ms. Lat: 17848* (**P1**), *Ms. Lat: 17844* (**P2**), *Ms. Aldini 211* (**A**), *Ms. Canon. Misc. 408* (**C**), *Ms. 18* (**F**), *Ms. 106* (**R**), and *Ms. 362* (**ms. 362**) with missing manuscripts (**x**, **y**, **z**).[88]

Out of the 24 manuscripts Segre looked at, she was able to propose a connection for seven of the older, Latin language texts. The indirect sub-tradition was not assembled into an expanded stemmatological tree as clear links do not seem to have been established. While none of the 14 manuscripts of the proposed sub-tradition serve as the lost manuscripts (x, y, z) as they are all produced later, it is likely that they will help form connections within the indirect sub-tradition, possibly helping to connect back to Segre's stemma. This task both necessitates a high degree of

[88] Segre, XC.

familiarity with the texts and would be best undertaken when one could be certain there were not too many more manuscripts left to find. This study has not sought to use linguistic, illustrative or textual analysis to order the dozen manuscripts it concerns, but this study would be a template for the first step in doing so and could potentially inform such a project.

The central desire for such a project would be an answer to the question that is left unanswered in all the secondary literature on these herbals: who wrote them? The fact remains that there is still little tangible evidence as to who created these fantastic illustrations and filled the pages with descriptions so steeped in magic, hermeticism and, at times, alchemy. I suggest that whoever this group of authors were, they occupied a space that was a level removed from university learning, but not devoid of it. This was a time when universities occupied a prominent position in the medieval intellectual world, and while many students graduated into the medical field, there were more students who would have been exposed to that field but went on to different professions. As is the case in some disciplines today, doctors are minted without regard as to whether or not there are positions for them to fill. The most eminent positions were often lavish, coming with university or aristocratic resources at the disposal of physicians who created stunning works with teams of artists and students at their beck and call.[89] Conversely, one could imagine a *medicus* with far humbler trappings creating a reference guide for their own use and depicting the plants with their own, somewhat amateur, hand. This is but one of several possibilities as to who it was that created these herbals. While there is much still to be ascertained before anything definite is said, it will not at all be surprising to discover that these manuscripts were created by a class of healer somewhere between a village healer and a university professor of medicine.

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[89] The Carrara Herbal (London, British Library, *Ms. Egerton 2020*) serves as the prime example of such a work and is the subject of Sarah Kyle, *Medicine and Humanism in Late Medieval Italy*, 2016.

C. Census of the Proposed Tradition

The following is a census of those manuscripts newly identified as having a connection to the alchemical herbal tradition, but which were either unknown by previous investigators of the tradition or not linked to the corpus when they were studied in the type of narrow, focused analyses that we have spoken of above. As this project seeks to provide an overview of the whole, a deep analysis of each text has not been possible due to time constraints. The degree to which texts on this list can be argued to be included in the tradition, varies widely. A deep analysis of an individual manuscript may reveal it to have such a loose relationship to the corpus that it is best understood as external to the tradition. However, each text has been added to the census not just to raise awareness of its existence to other researchers, but because it presents textual, illustrative and elements of provenance that align closely enough that I believe that a complete *stemma codicum* of the tradition would likely see these texts happily linked back to the direct sub-tradition. It is also almost certain that this list is not complete and new texts may emerge from their corners in libraries which fill in gaps and allow for the genealogy of the corpus to be better understood. At the end of this thesis, just after the conclusion, is a proposed list of manuscripts within the tradition. Manuscripts already part of the census by Segre are not repeated here, but instead reproduced in the bibliographic section in her direct and indirect sub-traditions.

Among these proposed additions to the tradition, I have been able to examine Lucca, *Ms. 196* and Firenze, *Ms. Redi 165* in person. *Cassego, Ms. 95* has been examined solely through the photo facsimile provided in Bruzzone, *Dalla foglia al folia*. All other manuscripts, unless otherwise stated, have been primarily studied through digital copies, provided by their holding institutions.

The census is a synthesis of the style of Segre's *Il giardino* and the system used by Alain Touwaide in expanding and updating the catalogue of Hermann Alexander Diels who published his catalogue in 1905.[90] Additions are included here such as relevant links to digitized images of the manuscript and discussions of future avenues of inquiry that may be worthwhile to pursue in an effort to better understand this enigmatic corpus. As the system of city, library, collection (as necessary) and shelfmark provides a clear system of citation, it is adopted below for easy reference.

—— Burlington, The University of Vermont Libraries, Ms. 2 (Italian Herbal)

Paper, 325 x 225 mm, 128 ff./142 pp.,[91] 15th century, Italy.

The manuscript is described in the Howe Library's online catalogue as well as digitally viewable at: http://cdi.uvm.edu/book/uvmcdi-108431#page/1/mode/2up

Ms. 2 has been dated to 1475-1525 from Italy. It is comprised of 128 leaves which depict plants and accompanying text on the recto, with the majority of the versos being blank. Often, captions are written near the plant illustrations which can be more than one for each entry. These entries are what we expect to see in herbal manuscripts, an illustration, a label of the herb's name and a section of text. There are anywhere from one to several entries per page, with two or three being the most common arrangement, organized vertically on the page. Present are at least two different scripts with an original and older cursive chancery and an early modern cursive

[90] Touwaide, *Greek Medical Manuscripts, vol I,* xix.

[91] As opposed to more traditional manuscript pagination, this text is organized by page rather than by folio. This has been maintained in its discussion here to prevent confusion, as verso is not distinguished in the manuscript viewer and many versos have not been photographed as they are blank.

transcribing the older text. This newer hand appears to be the one that wrote on several of the versos.

The illustrations themselves are outlined in ink and colored simply, with little to no shading present. The shade of pigments used throughout seems to vary as opposed to other herbals which often use the same few standard pigments. Several of the alchemical plants, such as *ilio lontris* on p. 70 and *angales* on p. 71, have anthropo- or zoomorphic elements, typical of the alchemical herbal style of illustration. We can see that the depiction of the alchemical herb *illoris* stays true to form, with one central leaf, two flower stalks and two rhizomatic structures with one face on each.[92] Occasional accompanying figures such as demons, angels, humans, dragons or other animals are depicted adjacent to the plant. These figures are sometimes involved in scenes which depict walled cities or castles, though they are not identified.

The manuscript itself has come to the University of Vermont Libraries by way of Lucius Eugene Chittenden (1824 – 1900). Chittenden was a prominent lawyer, banker and politician from Vermont where he would live for much of his life.[93] He was a prominent book collector and had dealings with Henry Stevens, a rare book dealer which may have been whom Chittenden acquired Ms. 2 from, though this remains conjecture at this time.[94]

There are well over 300 entries in this herbal, of which 76 treat alchemical herbs. Some of these are duplicates such in the case of c*onflexanas vel conflesana* (p. 62) and c*onflexuarias* (p. 76). Though these three instances are similar in illustration, only one (p. 76) has a full textual description of its virtues while the two on p. 62 bear only labels. The repeated plants within the

[92] Compare to *herba illotris* on 1r of Paris, *Ms. 3369* for another example of the proposed tradition and with *herba illoloris* on 21r of *Ms. Aldini 211* for an example from the earlier direct tradition.
[93] "Lucius E. Chittenden Dead." *The New York Times*, July 23, 1900.
[94] His papers are housed at the University of Vermont Libraries Special Collections, where the scope and content note mentions a connection to Stevens; https://scfindingaids.uvm.edu/repositories/2/resources/1194.

same text may indicate that this manuscript was copied from multiple sources with different names and illustrative styles for the plants. There are also several instances of plants depicted in a clearly alchemical style of illustration, but which bear phytonyms that are not observed in other extant alchemical herbals.

This herbal has recently been the subject of a transcription by Antonello Borra of the University of Vermont which tremendously aids efforts to study the text, increasing the ease with which it can be read and understood by scholars not familiar with the cramped late-medieval hand.[95] While the original text is crucial for study, Borra's inclusion of plant identifications is both novel for this manuscript and useful when trying to recreate the monastic garden, forest glade and every spot in between where the root cutter procured medicinal plants. The transcription includes both the late medieval hand as well as a later, cursive script that is a repetition with minor linguistic changes by a more modern Italian scribe. Plants' virtues are penned beneath or otherwise adjacent to the simple pen-and-wash illustrations. This manuscript differs from others in that there often is more than one illustration per entry, showing several plants alongside the same block of text.

Accompanying the varying number of illustrations are additional depictions of people and ailments afflicting them as well as angels and demons which connect it to Firenze, *Ms. Redi 165* and Udine, *Ms. 1161*. The latter was the co-subject along with Ms. 2 in the comparison done by Micol Duca, where she noted both textual and illustrative similarities between the two, providing a clear analysis linking the two texts to one another. But she concluded that the two likely descend from a common manuscript, rather than from one another.[96] Though a lesser

[95] The transcription is accessed from the manuscript viewer by a button labeled "TEXT" in the upper right corner of the viewer: http://cdi.uvm.edu/book/uvmcdi-108431#page/6/mode/2up.
[96] Duca, "L'erbario 1161 della Biblioteca comunale di Udine, e un erbario del Vermont," 249.

connection, *Redi 165* is related in several smaller elements the two texts share. These include specific illustrative elements not seen in other texts, such as those accompanying *ditimo*,[97] *fava inversa*,[98] and *luccia maggiore*.[99] Henri Silberman also notes some similarities between all three of these herbals, while also tying them to *Ms. Hebr. 1199* via the inclusion of a demonic miniature on the page treating the mandrake.[100] Isolated ephemeral images of angels, demons or human figures are not entirely unprecedented in other texts, but *Ms. 2* along with its potential cousins certainly contain the majority of these figures in the tradition. The text was also examined in Blunt and Raphael's *The Illustrated Herbal* (1979) which provides a useful, if sporadic, overview of the art history of several herbal traditions, and briefly touches on this manuscript.

Bibliography: Duca, Micol. "L'erbario 1161 della Biblioteca comunale di Udine, e un erbario del Vermont." *Ce fastu* 73, no. 2 (1997): 237–52; Silberman, Henri C. "Superstition and Medical Knowledge in an Italian Herbal." *Pharmacy in History* 38, no. 2 (1996): 87–94; Blunt, Wilfrid, and Sandra Raphael. *The Illustrated Herbal*. New York: Thames and Hudson, 1979.

[97] 43r in *Ms. Redi 165* and p. 4/f. 5r in *Ms. 2* show snakes biting the legs of human figures.
[98] *Ms. Redi 165* 4r has a demon and human picking the berries where *Ms. 2* p. 24/f. 25r shows two demons picking the berries.
[99] *Ms. 2* p. 3/f. 4r has blue eyes drawn on the mid-points of the leaves while 18r in *Ms. Redi 165* loses the details of the eyes but reproduces the blue coloration.
[100] Silberman, "Superstition and Medical Knowledge in an Italian Herbal," p. 92.

—— Cassego, Museo Contadino di Cassego, Ms. 95

Paper, 70, I ff., 1598, Tuscany/Liguria, Italy.

Ms. 95 has been dated to 1598 from northwest Italy. The book was discovered in the 1980s as part of the library of the De Paoli family as the collection was being moved to the Museo Contadino di Cassego. The manuscript has been reproduced in photo facsimile in 2015 whereby the content can be examined, revealing a layout with often four different plants per recto, while versos remain blank: a habit not uncommon in herbals. The versoes occasionally have later plant depictions and writing in a more modern cursive hand, that do not relate to alchemical plants but the more conventional medical plants that long remained in use after the alchemical herbals seem to have had their heyday in the 15th century.

It's late date, relative to the alchemical herbal tradition, is evidenced by the near total lack of descriptions of the plants, with the majority of written text being made up of only phytonyms which are often far removed from the original spellings of the alchemical herbs' names. For example, the name *satirion* is given to an illustration that is clearly *ciloga* on 15r. While one could argue that perhaps this is a different name entirely, we see clearly corrupted names such as *lesiles* for *bososilles* on 56r or *fius* for *forus* on 41r. The many other examples of this likely indicate that this text is far removed from the original seven manuscripts of the direct sub-tradition.

Also indicative of their distant relation to the source material is the particular style of illustration in this text. The illustrations are rather basic, even by the standard of the tradition. This may be in part to the tendency of the volume to fit four per page, or it may just be a result of the loss of detail in the transmission over subsequent editions. Whatever the case, the images do

maintain illustrative elements of the tradition, as evidenced by anthropomorphized roots on 69r. The faces are on the plant labelled *scudaria* and a face in the central root is common for this alchemical herb. What is uncommon is Ms. 95's addition of two other large root structures, also with faces. This three-lobed root is not something observed in any other extant alchemical herbals. The 55 or so alchemical plants out of the 276 do bear enough resemblance to be identified visually as being in the style of the alchemical herbal, but a rather distant cousin.

The manuscript has been studied solely by Raffaella Bruzzone who has published a dissertation in 2013, a book in 2015, and an article in 2019 which discuss the manuscript in full. The analysis is exhaustive, fully treating the text to study of its contents, paper, pigments and other aspects of the history of the book. She also connects the manuscript to several other alchemical herbals, though Ms. 95 remains her chief concern rather than discussing the tradition in its entirety.[101] This manuscript is identified by Bruzzone as being a much later member of the tradition, and this is evidenced both in the handwriting and illustrative style throughout the text.

Bibliography: Bruzzone, Raffaella. "A Vernacular Late Renaissance Manuscript Herbal from the Eastern Ligurian Apennines." *Archives of Natural History* 46, no. 2 (October 2019): 318–31; Ibid. *Dalla foglio: un erbario figurato del XVI secolo e il suo contesto*. Genova: Sage Editori, 2015; Ibid. "L'erbario figurato De Paoli (1598 ca.): uno scavo nei saperi naturalistici locali," PhD diss., (Università degli Studi di Genova, 2013).

[101] She primarily connects Ms. 95 to *Ms. 106*; Lucca, *Ms. 196*; Paris, *Ms. 326* which she references in "A vernacular late Renaissance manuscript herbal from the eastern Ligurian Apennines", 2019 as well as in *Dalla foglia al folio*, 2015. Her work also makes allusions to other manuscripts that have not as of yet been accessed by myself, resulting in my inability to comment on whether or not they are alchemical herbals.

—— Civita Vaticanae, Biblioteca Apostolica Vaticana, Ms. Palatino Latin 1078 (Herbarium) Paper, 195 x 155 mm, I, 16, I ff., 16th century, Italy.

The manuscript can be digitally on the website of the Biblioteca Apostolica Vaticana at: https://digi.vatlib.it/view/MSS_Pal.lat.1078

Ms. Pal. Lat. 1078 has been dated to the 16th century from Italy. The manuscript has not been studied in depth in any source, likely because at only 15 ff. of the herbal, it is a fragment that so far seems to have escaped wider connection to the alchemical herbal tradition. Despite this, it contains 30 plants, all of them alchemical herbs. The herbal is detailed in a single catalogue entry by Dorothea Walz (1999) that does not discuss it at length, merely providing a short collation and the origin of the manuscript.

The layout features a full-page plant illustration with lines of text in the bottom margin. As opposed to almost all other herbals, there is not a phytonym accompanying the illustration. Instead each description of the plant begins with the herb's name. The illustrations themselves are rather stylized and far removed from the earlier depictions of the various herbs but at the same time have many of the features one would expect to see of alchemical herbs. On f. 8v we see herba *Illibotus* with its characteristic faces on the root and on the folio's recto we see *ferus* with its snake roots. Though consistent in various alchemical elements of the plants depicted, the limited collection of the 30 herbs does deviate fairly significantly from what one expects to see, with these plants being round and curved in their shapes when compared to the rest of the corpus. This coupled with the brighter yellow-green pigment used would further allow one to be forgiven for not immediately recognizing this herbal as part of the alchemical tradition. But while the illustrations are not the most faithful reproductions of the originals, the text is a different matter

altogether.

The handwriting that appears to have been scrawled after the illustrations were done is in a later script than what is found in the 15th century herbals. This further supports the manuscript's dating to the 16th century, making it likely to be several rungs down from the direct tradition. Despite this, what is written of the plants is rather faithful to the direct sub-tradition, and we can see that the manuscript notes on f. 8r that *ferus* is to be worn for good luck, and inspires congeniality in others. It also faithfully reports that it is found in cold and rocky places and should be gathered with a prayer to the Holy Spirit. Its primary divergence is that while the direct sub-tradition asserts that the plant should be gathered when the moon is in Taurus or Gemini, Ms. Pal. Lat. 1078 only mentions Gemini. Despite this one lapse, the text's fidelity to the original instructions is rather remarkable given the text's assumed late date, meaning that it may be that the date is inaccurate or that this book came from a line of alchemical herbals that carefully preserved the original text of the original herbals.

Bibliography: Walz, Dorothea. *Die historischen und philosophischen Handschriften der Codices Palatini Latini in der Vatikanischen Bibliothek (Cod. Pal. Lat. 921-1078)*. Wiesbaden: Dr. Ludwig Reichart Verlag, 1999, 259.

—— Civita Vaticanae, Biblioteca Apostolica Vaticana, Ms. Chig.F.VII.158 (Lat. Dioscorides) Paper, 283 x 198 mm, II, 108, II ff., 15th century, Italy.

The manuscript can be digitally on the website of the Biblioteca Apostolica Vaticana at: https://digi.vatlib.it/view/MSS_Chig.F.VII.158

Ms. Chig.F.VII.158 is from 15th century Italy. It is rather unique to this survey of alchemical herbals as the majority of this text is an illustrated edition of the herbal of Dioscorides. The majority of the work are 100 folios of alphabetical herbal, depicting and naming plants from Dioscorides' work, though descriptions of the plants' virtues are absent from the work, though several do have notes accompanying their labels. The illustrations seem to be the primary focus of the work and they are joined by ephemeral images in the margins in many cases. The herbal of Dioscorides is well written on in comparison to the medieval herbal traditions, and this manuscript is included in that, having been the subject of a facsimile edition with accompanying commentary volume by Miguel Ángel González Manjarrés and María Ingelmo in 2003.

Its reason for inclusion on this list is found in the last nine folios of the text, after the alphabetical herbal of Dioscorides has concluded. Here we see several dozen plants depicted at the tail end of the book that are illustrated in a simple pen and wash style that is eerily similar to the style of the alchemical herbals. Despite this, when illustrations have accompanying labels, they are names that have little to no connection whatsoever with the original names of the alchemical herbs. It would be impossible at this stage to argue that these are alchemical herbs or that Ms. Chig.F.VII.158 contains an alchemical herbal in its later section. Rather the manuscript serves as one to keep an eye on as new names become associated with alchemical herbs from newly connected works to the tradition. It may be that several of these illustrations can be clearly demonstrated to be examples of alchemical herbs but as a whole, the collection of odd herbs merely echoes the alchemical herbal tradition rather than serves as an example of it.

Bibliography: Manjarrés, Miguel Ángel González. “Un códice farmacológico del siglo XV. El manuscrito Vat. Chigi F. VII 158,” in *La Filología Latina. Mil años más*, eds., P.C. Parrado and I.V. Soriano, 1397-1412. Burgos: Instituto Castellano y Leonés de la Lengua, 2009; Manjarrés, Miguel Ángel González and Maria Cruz Herrero Ingelmo. *Un herbario ilustrado sin texto. El códice Vat. Chigi F. VII 158*, Madrid: Biblioteca Apostólica Vaticana–Testimonio Compañía Editorial, 2004.

—— Firenze, Biblioteca Riccardiana, Ms. Ricc. 2174 (Erbario)

Paper, 290 x 205 mm, IV, 226, IV ff., second half of the 15th century, Northern Italy.

The manuscript can be digitally accessed on the website of the Riccardiana at:

http://teca.riccardiana.firenze.sbn.it/index.php/it/?view=show&myId=c2322fb2-de37-4c8c-afa7-9b189c1421fc

Ms. Ricc. 2174 has been dated to the latter 15th century from Northern Italy, the period and region where the largest number of alchemical herbals were produced. This manuscript is a clear example of an alchemical herbal, possessing 67 alchemical herbs among the 421 total plants depicted. The front 159 folios are illustrations of plants with phytonyms accompanying, while the last section of the book contains a treatise, unrelated to the plants themselves. The alchemical herbs are littered throughout in small clusters in the majority of instances. As opposed to the non-alchemical plants which often are given a whole page to themselves, the alchemical herbs are often paired together with another plant. The reason for why these plants are grouped is not immediately clear, as the pairs are not ordered together in other herbals from the tradition.

The illustrations of the plants are primarily done in tempera, but there are a handful of

pen and wash illustrations towards the end of the herbal. The accompanying labels for these suggest a later date, and some of these appear to be of alchemical plants, though their relation to the earlier alchemical herbs in this volume is unclear. The three depictions of *chonsolida* and the one of *pionicha* on 154r – 155r may just be coincidental, as those particular plants are not wholly unique to the alchemical tradition, and none of the illustrations bear specific elements that pinpoint the plants as being copied from the tradition. The other alchemical herbs display their heritage clearly with the normal assortment of faces depicted on roots and other zoomorphic elements that have come to define the illustrative style of the alchemical plants.

There are some alchemical plants that lack a label altogether towards the end of the herbal such as *amorsu serpentis* which is painted on 152v. Despite the lack of the name, the geometrical symmetry of the depiction, with the unique style of its flowers and its three-lobed, anthropomorphic root suggests beyond a reasonable doubt that this illustration is inspired from the alchemical herbal tradition. Fantastic elements are not reserved solely for the alchemical herbs, as evidenced by *custos orti ponta folis* on 150 r. The depiction shows a single stalked plant sprouting from the side of a head. This is not a name, nor image that stems from the alchemical tradition, but rather may suggest influence from another source altogether.

—— Firenze, Biblioteca Medicea Laurenziana, Ms. Redi 165

Paper, 47 ff., Early 15th century, Northern Italy.

Ms. Redi 165 has been dated to the 15th century and sourced to Northern Italy. As opposed to the other manuscripts on the list, this herbal has been noted as being an alchemical herbal by Toresella in his 1996 article. It has also been examined thoroughly in the 1980 book by

Pezzella who compares and contrasts it with Firenze, *Ms. 168/C*, a manuscript Segre identifies as part of the indirect sub-tradition. Pezzella does not connect the manuscripts to the wider alchemical herbal tradition as Aldrovandi's label had not yet been revived by Toresella and Segre. Despite this, his linking of the two texts and his treatment therein is both interesting in how it links the two books as well as for its thorough examination of Ms. Redi 165.

The manuscript is arranged with large sections of text accompanying illustrations of 91 plants, 17 of these being alchemical herbs. Though the manuscript itself is not one of the longer herbals, this is likely due to it being a fragment. The images have large blocks of text at the bottom of the page, with ephemeral images often accompanying the primary illustration. These include angels, individuals suffering from afflictions and motifs found in *Ms. 2* and *Ms. 1161*. The marginalia are likewise connected to other manuscripts, as demonstrated by *dittamo bianco* on 43v having a figure being bitten by a snake. Many other manuscripts associate the herb with snakes as it is used to treat snake bites, an aspect of the herb mentioned by nearly every instance of this herb where there are descriptions of its properties. One could also observe that the presence of snake marginalia also quickly conveys that this is the treatment for venomous bites, and perhaps hints at the purpose for the majority of the ephemeral imagery in this manuscript.

Bibliography: Pezzella, Salvatore. *I segreti della medicina verde nell'epoca medicea: da due manoscritti inediti della citta di Firenze*. Assisi: Properzio, 1980; Toresella, Sergio. "Gli erbari degli alchimisti," in *Arte farmaceutica e piante medicinali: erbari, vasi, strumenti e testi dalle raccolte liguri*, ed. L. Saginati, 31-70. Pisa: Pacini editore, 1996.

—— London, Natural History Museum Library & Archive, Mss. Her. (Italian Herbal)

Paper, 280 mm, 287 pp., early 16th century, Italy.

Mss. Her. can be dated via three different sources. The first of these is that there exists the date of 1649 in the first few pages of the manuscript, describing the date a sea monster was encountered at Malta, with an illustration of the thing. The next date comes from an examination from a Mr. Collins (unidentified) who examined the manuscript in 1955, dating the manuscript to 1500-1700 AD and whose letter detailing his findings is kept with the manuscript. The final date is also from the accompanying materials and is from a note from July 1992 where a reader (possibly Dr. Segre but currently unknown) has proposed a date of the late 15th to early 16th centuries. This early date takes into account the similarity of Mss. Her.'s illustrations and plants taken from the *Tacuinum sanitatis* herbal tradition that so often accompanies bound manuscripts of the alchemical herbal tradition. Segre notes this as discussed above, and if it truly is her note, then she would be best suited to identify an herbal from this period accurately, so it is this date range that will be employed. While the date is somewhat up for debate, the manuscript's Italian origin is agreed on by all sources. It was donated to the library of the Natural History Museum in London in 1955 by Sir Hans Eric Miller, a businessman and prominent book collector.[102]

The manuscript contains full page illustrations of herbs, with cursive labels that have in many cases been obscured by water damage. Secondary pencil phytonyms have been added in some cases, but aside from a handful of exceptions, this is the only writing that pertains to the plants, with the majority having no listing of their virtues whatsoever. Of the roughly 281 plants detailed, we can see that 103 of these have elements of the alchemical herbal tradition. Several of

[102] "Obituary: Sir Eric Miller," *The Times*, July 12, 1958.

these are duplicates of alchemical herbs that are already depicted earlier in the text. Some of the plants in Mss. Her. are not often included in herbals not from the direct sub-tradition, including6 *tunegi, gerbia, attillia* and *granellaria* which all appear in every volume of the direct sub-tradition, but are only depicted in Mss. Her. and *Ms. LJS 46* out of the 14 proposed alchemical herbals.

The full-page illustrations are pen and ink depictions of alchemical herbs which are centered on the page. These images closely follow visual elements of the depictions of the direct sub-tradition. There are however differences in the illustrations, such as *folia* on pg. 65, which is Mss. Her. lacks the ephemeral drawing of a sword in the margin. Likewise, *diptamus* on pg. 52 is missing the ephemeral dragon image, which is present in the direct sub-tradition. This does not represent a trend of Mss. Her. doing away with all ephemeral imagery, as the *mandragoras* on pg. 59 has its characteristic dog and ear-covering root cutter and *rapillis* on pg. 89 has its curled dragon figure. It may be that the line of transmission from the direct sub-tradition gradually lost these accompanying images, which may assist in tracing this manuscript's genealogy.

This manuscript's order of the alchemical herbs themselves closely mirrors the orders observed in the direct tradition. The beginning 16 herbs perfectly copy the order of manuscripts *Ms. 18, Ms. 106, Ms. Lat. 17848* and *Ms. Aldini 211* and with a couple of exceptions *Ms. Canon. Misc. 408, Ms. 17844* and *Ms. 362*. This is particularly interesting given the fact that many of the phytonyms deviate from spellings in the direct sub-tradition. Mss. Her includes several herbs that are part of the alchemical herbs but rarely appear outside of the direct tradition which are *attillia*, *caspetres*, *gerbia*, *granellaria*, *serpentina* and *tunegi*. Therefore, it is highly probable that Mss. Her. was copied from a manuscript with this order of herbs,[103] a descendant of these/this text or a

[103] *Ms.18, Ms. 106* or *Ms. Canon. Misc. 408*.

text from the direct sub-tradition that is no longer extant. It further serves as the most closely linked manuscript we have observed to the direct sub-tradition from the proposed sub-tradition. Given its supposed late creation, this is particularly curious as one would not expect one of the latest alchemical herbals to so closely resemble the earliest examples. If the book is accurately dated, then this implies that it was copied from either a manuscript with high fidelity to the originals or that it was copied from one of these earlier Latin texts, centuries after the tradition began.

—— Lucca, Biblioteca Statale di Lucca, Ms. 196 (Herbarium)

Paper, 284 x 212 mm, II, 210, II ff., 15th century, Italy.

Ms. 196 has been dated to the 15th century from the area around Lucca, due to specific conventions of the written language.[104] The depictions within are sophisticated penned sketches that have been colored with tempera paints, making this one of the most illustratively complex examples of the alchemical herbals. Large blocks of text that frame the depictions, somewhat fully encircling the images completely on all sides, making it also one of the most detailed when it comes to the descriptions of the plants as well.

Though there are multiple hands present, a vast majority of the text appears to have been written in an older, Cursiva script. Text does not always appear next to a plant, with some plants only bearing a label with their name. The alchemical herbs, however, all bear at least a few lines of text, the typical amount and only in rare cases do they have additional text blocks anywhere else aside from just below the illustration. This may hint that these plants were less well

[104] Landolfi, "Illustrazioni botaniche da un antico erbario lucchese," 131.

understood by the authors of Ms. 196. While there may have been only one original author of the text, with the additional hands being early modern additions, the composition of the book hints that the artist may have been an additional actor. At the very least, the current presence of text blocks that are written to accommodate illustrations that are not present hint that the text and depictions were created independently of one another. This is also a clue in various parts of certain plants such as on f. 106r which depicts *conflessarias* where we can observe that the left flower has a small note of a "bi" which likely is a note telling the painter to leave the flowers white or *bianca* in Italian. Were the entries being written, sketched and then painted in all at the same time, it is unlikely that we would see these notes for the artist.

Of the around 378 plants treated in the book, 73 of them are alchemical plants. Many of the illustrations contain various alchemical elements including the usual anthropomorphic faces on the plants. The spelling of the phytonyms is divergent from the original names, but not to extreme degrees in the majority of cases with perhaps *tregodaria* on 79v being one of the most liberal departures from the alchemical name *teodoris*. While some plants retain their more alchemical elements others do not, as we see *folio* on 81r without ephemeral swords and *schudaria* on 25r without a face centrally positioned on the root.

The book has been the subject of two articles which, while primarily focusing on the illustrations, detail the other aspects of the book quite well, if in brief. The first of these, by Gemma Landolfi, examines the long history of herbal medicine in Europe and places Ms. 196 among medieval herbals. It interprets the illustrations of combining naturalistic elements made by direct observation of the plant with the schematic nature of the images to combine different stages of life into one image. This is evidenced in this and other herbals by displaying flowers and berries produced by the plant at the same time, two separate cycles of the plant, combined to

provide a more Platonic representation of the plant. The second article by Marilena Lombardi examines how the plants were produced with geometry in mind, keeping the plants symmetrical. This article opens with a reference to Michelangelo Lupo who raised this point when examining *Ms. 1591* from Trento, an alchemical herbal identified by Segre as part of the indirect sub-tradition.[105] While the comparison is made to manuscripts now understood to be part of the alchemical herbal tradition, neither article directly links Ms. 196 to it as the tradition had not been fully defined as such by Toresella and Segre. The manuscript was also the subject of a thesis by Lombardi that I have not been able to examine yet.

Bibliography: Landolfi, Gemma. “Illustrazioni botaniche da un antico erbario lucchese: iconografia botanica tra percezione e memoria; prodromi di una nuova scienza e persistenze tradizionali.” *Miniatura*, 2 (1989): 131-136; Lombardi, Marilena. “Illustrazioni botaniche da un antico erbario lucchese: geometria delle forme nell'illustrazione botanica; il valore dell'ordine e dell'equilibrio nella medicina verde.” *Miniatura*, 2 (1989): 137-141; Ibid. “Il manoscritto 196 della Biblioteca statale di Lucca: trascrizione del testo e struttura delle immagini: l'apporto dell'iconografia alle note descrittive e terapeutiche,” PhD diss., (Università di Pisa, 1983); Gandino, Giovanni B. *Studi Italiani di filologia classica*. 12 vols. Firenze: Bernardo Seeber, 1900, vol. 8:137.

[105] Segre, LXXXVII.

—— München, Bayerische Staatsbibliothek, Ms. Cod.It. 149 (Italienische Handschriften)

Paper, 25 ff., 16th century, Italy.

The manuscript is described in the Bayerische Staatsbibliothek online catalogue[106] as well as viewable at: https://www.digitale-sammlungen.de/en/view/bsb00094611?page=,1

What remains of this manuscript indicates that it is a product of the 16th century, Italy. The manuscript is noted by the library as having several damaged leaves, which take up a fair proportion of the 25 folios as a result. Of the 55 plants depicted within, 11 can be said to be alchemical herbs. The layout of a page is rather typical, consisting of a central, usually individual plant depicted, with its virtues detailed below. Rather than having a label adjacent to the plant, each section treating the virtues of the herb begins with its name. This is similar to *Ms. Pal. Lat. 1078* and other manuscripts from the indirect sub-tradition.[107] Despite seeming to have been held by libraries in Munich since before 1803, this text appears to have escaped scholarship entirely, let alone connection to the alchemical herbal tradition.

The less-than-a-dozen alchemical herbs treated within are illustrated in the illustrative style of the alchemical herbals, though going off the black and white images hosted by the library website, assessing the coloration of these plants is not possible at this time. What can be said is that the line sketch which presumably precedes the colored wash is rather simple, and it seems the symmetrical geometry of the plants is not a priority in the same way that can be observed in the majority of other alchemical herbals. Likewise, none of the herbs have the

[106] https://www.digitale-sammlungen.de/en/details/bsb00094611.
[107] Several manuscripts follow this convention, including the first alchemical herbal bound into Bologna, *Ms. Aldrovandi 153*.

anthropomorphic elements that we would expect to see from an alchemical herbal.[108] Instead, what links these images are in the manner in which certain plants are depicted. The artist has depicted some plants (such as the *trifoglio* and *bonefatia* of 9v and 10r respectively) in a style which clearly resembles other alchemical herbals.

The textual descriptions of the plants are of a length and content that clearly links them with the tradition. These are primarily written in an older hand with what seem to be rubricated letters beginning the entry. A second, later hand has added in occasional additional notes in instances. The lack of entries in this text means that it is difficult to make any definitive claims as to the manuscript's intended adherence to the alchemical herbal tradition. The late date likely means that like so many in the proposed sub-tradition, it is on the further removed end of the spectrum of herbals.

—— Paris, Bibliothèque du Muséum national d'histoire naturelle, Ms. 326 (Recueil de dessins de plantes, d'origine italienne)

Paper, 310 x 220 mm, II, 110 ff., 1487, Italy.

The manuscript can be digitally on the website of the Muséum at:

https://bibliotheques.mnhn.fr/EXPLOITATION/infodoc/digitalCollections/viewerpopup.aspx?seid=MNHN_MS326

Ms. 326 has been dated to 1487 from Italy. This specific date is on account of a note atop the manuscripts first folio, bearing the date in a hand deemed contemporaneous to the illustrations contained therein. The 224 full page illustrations are rather large, and for the most

[108] It could be argued that the mandrakes depicted certainly have their anthropomorphic root, but as they are anthropomorphized in many herbal illustrative traditions, they can hardly be the load bearing evidence needed to link the imagery to the tradition in question.

part rather sophisticated. Some of these even show evidence of having been pressed from living or dried specimens against the page after being covered in paint. These contrast rather distinctly from the 34 alchemical herbs which are rather simple by comparison. Despite this, they bear clear influence of the illustrative style of the alchemical herbals, with plants such as *erba lucia* and *herba fercus* on ff. 25v and 26v having their typical root styles of a pike and clump of snakelike creatures.

When there is accompanying text, it is written beneath the illustrations. When this occurs under alchemical herbals, the information imparted adheres relatively closely to what the direct sub-tradition reports about the herb. What is interesting is that not every plant is given these descriptions of its virtues. One would assume given the high fidelity to the source material, both in illustration and text, that the scribe also had access to a complete herbal from which they were copying. If this is the case, why then did they not copy all of the text? Is this herbal unfinished, or perhaps maybe the scribe did not feel the other plants needed their properties copied over. At present it is not possible to say if either are correct, but the question as to the sporadic nature of the passages remains an interesting one.

The layout of the non-alchemical plants is with little exception, a single plant per page. The alchemical herbs deviate in this regard as many are paired, taking up only half of a page divided vertically. Why this is done only for the alchemical herbs is not clear, nor is the reasoning for breaking up the portion of the herbal containing the alchemical herbs. There are many manuscripts in the tradition that are broken up by later, non-alchemical depictions, but when this occurs, they are often placed on the versos of folios that were left blank in the original, alchemical herbals. Ms. 326 has several naturalistic plants scattered between the alchemical herbs, indicating that the manuscript may have been rebound, and the original order of the pages

was not preserved. It is also equally likely that there is a reason behind the specific ordering of this volume, though much like the ordering of the direct sub-tradition's 98 herbs, the reason is not at all evident.

—— Paris, Bibliothèque Sainte-Geneviève, Ms. 3369 (Flore médicinale)

Paper, 183 x 143 mm, 61 ff., 16th century, Italy.

The manuscript can be digitally accessed on the website of the library at:

https://portail.biblissima.fr/ark:/43093/mdata2dd6ccc38b17c6dfcaed56f293413d1cd0b268f7

Ms. 3369 has been dated to the 16th century from Italy. It has been studied primarily through the dissertation and article of Luisa Revelli, though gaining access to these materials has not yet been possible. It is a clear example of an alchemical herbal, though not without specific elements that distinguish it from the rest of the tradition. This manuscript is unique in its illustrative style and departs rather significantly from the depictions of the direct sub-tradition. While many of the later manuscripts are similar in this respect, Ms. 3369 is rather odd in its portrayal of fantastic elements. The faces on the roots of *herba illotris* on 1r are common in depictions of this herb, but they are obscured by the pigment. The depiction of *herba chalacichos romana* on 5r has above ground elements familiar to depictions of *chavalritas romana*, but the root, though it bears a face, is rather unrecognizable when compared to the illustrations from any of the other alchemical herbals.

While the illustrations depart from what one expects of an alchemical herbal, the writing makes clear the manuscript's connection to the tradition. The names associated with each depiction correctly correspond to the image that they should. Of the 81 entries in this herbal, 60

of them are clearly alchemical herbs. Likewise, though small changes are evident in the spelling of the herb's name, *herba bosillis* (1v) is still clearly cognate with *bososilles*, as is *herba angellis* (10r) with *angales*. The descriptions of the plant's virtues are penned beneath the illustration or on the following page of the folio. The space reserved to accomplish this may hint at the creation of the herbal, cover to cover, but it may be equally plausible that the artist allocated space to textual descriptions of the plant. In either case, this layout is rather unique, as usually the alchemical herbals pick a layout and stick to it, and this habit of Ms. 3369 to have passages overflow onto the next page is unique among the tradition.

Bibliography: Revelli, Luisa. "L'erbario del ms. 3369 della Biblioteca Sainte-Geneviève e le sue relazioni con altri erbari latini e volgari." *Pluteus*, 6-7 (1998): 201-321; Ibid. "*L'Erbario del ms. 3369 della Bibliothèque Sainte Geneviève di Parigi: studio per l'edizione critica*," PhD diss., (Università di Torino, 1989-1990).

—— Philadelphia, Kislak Center for Special Collections, Ms. LJS 46 (Herbal Etc…)

Paper, 307 x 215 mm, II, 102, II ff., Early 16th century, Italy.

The manuscript can be viewed on the University of Pennsylvania website at:

https://bibliophilly.library.upenn.edu/viewer.php?id=Oversize%20LJS%2046#page/12/mode/thumb

Ms. LJS 46 has been dated to the 16th century from Italy. It is rather unique in that of the 114 plants treated, the vast majority (89) are alchemical herbs. The herbal occupies the first 53 folios, with later, unrelated material occupying the latter half of the manuscript. The herbs are illustrated prominently in the middle of the page, occasionally being joined by a second plant.

They have captions penned above them, but no further text is present relating to the plants anywhere else in the book. Some of the unrelated material does concern botanical topics, but this is in a latter hand and primarily relates to travels in modern day Morocco and has little bearing on the herbal that interests us.

Though there is no text associated with the alchemical herbs, the illustrations still tell us a great deal. These are executed in pen and wash and maintain a close relation to the illustrations of the direct sub-tradition. They are by no means perfect copies, but taking *corborelis* on 49r we can see that the plant's three leaves start rounded at the bottom and end in angular points. When compared to the illustrations from any of the direct herbals, we see the same style of depiction. We can also assume that Ms. LJS 46 has a close relationship to the original manuscripts, as the name *corborelis* is an exact copy of the phytonym found on 23v in *Ms. 106* of *herba corborelis*. This is interesting, as this particular spelling is found only in this edition of the direct alchemical herbals, with variations existing in the other six manuscripts.[109] This is not the only depiction of this herb in Ms. LJS 46, but it is likely the only original entry for the plant in the herbal. On 19v there is a pencil outline of *corborelis*, though why it is located such a distance away from the illustration is interesting. It could just be that is where the artist decided to make the sketch, but its position on the verso of the folio, while the original illustration of the herb is on the recto of 49, raises the possibility that there was a time where the manuscript was bound with those leaves opposite one another. More information would need to be gathered before this could be argued with any certainty behind it, but it is rare to have such clear evidence of the possibility.

[109] All variations of this spelling from the direct sub-tradition are: *Ms. 18*, 16v, *herba corborellis*; *Ms. 106*, 23v, *herba corborelis*; *Ms. Canon. Misc. 408*, 19v, *herba corborellis*; *Ms. Lat. 17844*, 56v, *herba chorborelis*; *Ms. Lat. 17848*, 22v, *herba corborellis*; *Ms. Aldini 211*, 22v, *herba corporelis*; *Ms. 362*, 20r, *herba corborellis*.

Another indicator of the close relationship between Ms. LJS 46 and the direct sub-tradition is the presence of alchemical herbs that are only present in one other alchemical herbal of the 14 proposed by this thesis, this being *Mss. Her*.[110] The rare frequency of these herbs outside of the oldest seven manuscripts places Ms. LJS 46 on the earlier side of the tradition, and likely a descendant of *Ms. 106*. This makes this manuscript unique in that there is clear evidence to place it in a *stemma codicum* that would build from the one Segre created for the direct sub-tradition.

—— Philadelphia, Kislak Center for Special Collections, Ms. LJS 419 (Erbario)

Paper, 254 x 190 mm, 100 ff., 15th century, Northern Italy.

The manuscript can be viewed on the University of Pennsylvania website at:

https://bibliophilly.library.upenn.edu/viewer.php?id=Oversize%20LJS%20419#page/1/mode/thumb

Ms. LJS 419 has been dated to the 15th century from Northern Italy. Currently the focus of a research project, this manuscript, like Ms. LJS 46, has not yet been the subject of any academic publication.[111] The manuscript is arranged with alchemical herbs illustrated on many of the rectos, with later more naturalistic and sophisticated images depicted on the versos. These illustrations are on occasion accompanied by passages of text that provide uses and gathering rituals found in other alchemical herbals. Within are a total of 194 plants, of which 80 appear to be alchemical in character. Some of these text blocks appear to pass over the illustration such as *ferus* on 64r, where the first few lines cover the characteristic snake roots of the plant. There is

[110] These being *atilia*, 3r; *gerbia*, 30r; *granelaria*, 44r; *tunigi*, 5r; *capillaria*, 44v; *caspartis*, 11v; *bazea minor*, 2v; *fiornia*, 22r.

[111] This research team is led by Dot Porter and consists of Karen Reeds, Lourdes Contreras, Julia Pelosi-Thorpe, Eva Del Soldato and myself, with the aim being a forthcoming digital humanities project.

writing that is supposed to be in some of the illustrations, as we can see just to the left of *ferus*, there is an ink sketch of *erba duo folia*. This also has a description penned around it, though the illustration has no pigment. It is very clear to see that there is a "v" on either leaf, a character midway down the stem, and a note on the root, presumably all telling an artist what color should be applied to each portion of the image. Whether the original alchemical herbal was the result of a collaboration, or these symbols are notes made by the author for their future self, is still unclear. The naturalistic images are clearly executed by an artist with greater acumen than the alchemical illustration, and the phytonyms accompanying these later depictions also differ in their handwriting.

This manuscript primarily consists of full page illustrations, with occasional accompanying passages. The tempera and line images, while clearly identifiable with their respective alchemical herbs, take various liberties and departures. Examining *angales* on 44r, we can see that the cluster of long leaves is fairly faithful to other illustrations of the plant, but the root is somewhat odd. Normally the root of this plant is not depicted with blue at all but would have several layers of colored rings with a red center. While 44r does have the red center, there is only one external ring, and in this case, it is blue. While it is still very clearly a depiction of this alchemical herb, the label further confirms this, many illustrations of alchemical herbs in this manuscript are colored with blue paint in a unique way, further distancing this text from the direct sub-tradition.

This liberal application of blue pigment to many of the plant illustrations is perhaps the most notable illustrative aspect of this manuscript. While not wholly unique as several manuscripts make use of blue paints, Ms. LJS 419 uses it more than any other herbal and by a large margin. While this does not currently tell us a great deal, it may be that the study of the

text's pigments will yield answers as to the level of financial investment required to produce it. Many of the alchemical herbals are illustrated in the pen and wash medium, with many conjecturing that the dyes that give the illustrations their color likely come from plants known to the people that created these texts. Blue is a rarer color in the botanical world available to medieval Europe, with perhaps the most notable exception being woad. The depiction of *istatoris* on 42r shows a plant's whose leaves resemble *Isatis tinctoria* and a large root, that is colored blue. Segre identifies *ystatoris* as woad, and this manuscript rather supports this claim, it would seem.[112] If the pigment were to be examined and found to be woad this would bolster the argument that these books were illustrated with botanical dyes made from the very plants they depict and describe.

—— Udine, Biblioteca Civica Vincenzo Joppi, Ms. 1161 (Erbario)

Paper, 290 x 220 mm, I, 94(88),[113] I ff., 15th century, Veneto, Italy.

Ms. 1161 is from the 15th century from Northern Italy, around Venice. Its layout is similar to *Ms. 2* and *Ms. Redi 165*, both of which have covered these similarities above. Examining what is different from these two other herbals, we see that it is unique in that the majority of this manuscript is comprised of text, with illustrations scattered throughout. The depictions of plants, which usually take center stage, are in this text relegated to a supporting role. While some of this writing can be parsed, I have not been able to read the majority the text

[112] Segre, 195.

[113] Several folios were removed from the manuscript when it was stolen (ff. 36-41), though they were photographed and are still counted in the old collation of the book. See Duca, "L'erbario 1161 della Biblioteca comunale di Udine."

as the website displays images in a lower than desirable resolution. This could be remedied by accessing the facsimile by Barbon and Benedetti in 2007 but have not yet found access to a copy.

What can be understood from the text is that this manuscript clearly expands on the properties and virtues written about the alchemical herbs in other sources. This means that a comparison of this text to the other alchemical herbals is of the utmost importance for future scholarly investigation of these manuscripts. An examination of the illustrations likewise may provide clues to which line of manuscripts would connect it back to the direct sub-tradition, as many depictions maintain the fantastic and stylistic aspects of the original herbals. Of the two depictions of *corporelis* on 35r (numbered 30 in the top right), the one on the right maintains three leaves that end in angled points. Interestingly, the other has the same zoomorphic root but its leaves are cordate in shape. This could be a creation of the author, but they also be from the same vein that led to the leaves of *corbolis* on 35r of *Ms. Ricc. 2174* or *corbule* on 29v of *Ms. 326* being a similar shape. While it is likely that the sheer volume of words per plant will yield connections far more tangible than comparing the illustrations from Ms. 1161 to the other alchemical herbals, they can still provide valuable insight into this volumes relationships with the rest of the tradition.

Bibliography: Barbon, Caterina and Roberto Benedetti. *L'erbario di Udine: Biblioteca Civica Vincenzo Joppi, ms. 1161*; (con riproduzione fotografica). Preface by Maria Amalia d'Aronco. Udine: Roberto Vattori, 2007; D'Aronco, Maria Amalia. "Le erbe della luna," in *Un tremore di foglie: scritti e studi in ricordo di Anna Panicali*. eds., A. Csillaghy, A.R. Natale, M.R. Allué, R.D. Giorgi, A.D. Ben and L. Gasparotto, 403-411. Udine: Forum, 2011.

V. Conclusion

The alchemical herbal manuscript tradition represents a collection of texts that occupy a unique corner of medieval medicine that have largely escaped the attention of historians outside of Italy. These texts are often paired with more traditional herbals, which makes their unique features all the more intriguing. The plants within all bear names from obscure sources when they can be sourced at all. The illustrations of these plants, though often not great artistic works, do depict anthropomorphic and monstrous features along with the singularly schematized morphology of the plants themselves. The descriptions of these plants are more often than not medical, often magical and only rarely ever truly alchemical in a modern scholarly understanding of the term. These descriptions depart dramatically from typical medieval herbal manuscripts, which often transmit earlier information that in some cases extends back to Antiquity. Conversely the alchemical herbals make none of the usual appeals to authority by stating which ancient authors they derive their information from. The herbs are collected at astrologically significant times, though at present this system remains unique and unconnected to any other such system in any other herbal manuscript tradition. The wide array of collection rituals that are detailed are less unprecedented, but this alone will not connect this tradition to those schools of herbal medicine from which it draws its concepts. This leaves a complex and fascinating magico-medical system for scholars to begin unraveling.

It is through the expansion of the tradition that the later stages of the corpus can begin to be contextualized within their cultural and intellectual milieus. By combining developing ideas in the history of medicine with understandings of natural magic and codicology, these texts can be understood to an unprecedented degree by examining their interactions with concepts of magic, medicine, alchemy and astrology. These manuscripts have been the subject of past

scholarly consideration, but this was often done on a text-by-text basis which did not allow for adequate discussion of the tradition as a whole. While Vera Segre provided an excellent overview of two dozen texts and begins to discuss the ways in which they could be understood, the inclusion of new volumes to the corpus lays the ground to reexamine these ideas with two decades worth of new ideas from the history of science. The further identification of new alchemical herbals and their addition to the tradition will continue to demonstrate a lack of hermeticism, allowing this interpretation to be replaced by natural magic and magiferous botany as two ways to contextualize these texts within the medieval world of magic. "Magiferous" is a rare but useful term in the history of botany to describe plants that possess dormant magical properties but can continue to function as mundane plants in the physical world. The new additions to the tradition identified in this study have allowed us to assess just how much alchemy is within these texts and to judge how accurate Aldrovandi was with his label given half a millennium ago.

These rather crude texts are clearly not presentation copies, nor do they show clear signs of having been texts produced by respectable physicians from university backgrounds. It is far more probable that, given their inclusion in the technical genre of *rezeptliteratur*, they served their creators more through a practical use than as status symbols. These creators do not seem to be of that elite cadre of university-trained doctors from the medical schools at Padua or Bologna, but on the other hand their manuscripts demonstrate many subtle connections to written traditions, thus making them not likely to be the products of cunning people or village herbalists. The manuscripts indicate an as-of-yet poorly understood class of semi-scholars who practiced healing in Northern Italy during the final days of the Middle Ages. At this point, it is impossible

to locate their creators further, let alone state whether or not these manuscripts truly are "alchemical" herbals.

The additional manuscripts described in this thesis add their illustrations and text to the corpus, which allows overarching comparison across the tradition in its entirety as it stands at present. By using individual plants as touchstones, we are able to observe stylistic and linguistic changes across the texts which will be critical to inform a full *stemma codicum* arraying the whole group in a genealogical tree. Creating a full *stemma* will allow us to begin to really locate these books within the medieval medical marketplace of Northern Italy. By analyzing past research and historical arguments, it has been possible to provide an understanding of several of the intellectual and cultural underpinnings of these manuscripts. The plants themselves and what authors have to say and depict about them provide our best source of trends in the framework of these texts and waxing and waning influences upon them. The census provided here to chart the tradition also highlights those texts which will likely reveal many more secrets of the alchemical herbals when subjected to a deeper analysis than is possible here.

These strange and complex texts may occupy a large portion of the herbal manuscripts produced in the 15th century. They in many ways depart from a long culture of trends in the history of recorded botany through their use of unprecedented illustrations and phytonyms, the origins of which one is hard-pressed to trace. We have seen that the vast majority of plants in them are not alchemical in our modern understanding of that discipline as the forefather of chemistry. But the astrological and magical nature of the herbs warrants their association with occult arts which included alchemy. By continuing to expand both the overall corpus of texts when new examples appear and introducing new frameworks to make sense of their often cryptic descriptions, the study of the alchemical herbal manuscripts will continue to expand historical

understanding of the philosophical, religious and perhaps even alchemical worlds of their authors. I hope that future research will illuminate many aspects of the cultural and intellectual history of late medieval Europe, as the texts become clearer and the lives of their many owners are grounded to their libraries via their books, labeled, for better or for worse, as the alchemical herbal tradition.

VI. Alchemical Herbal Manuscript Tradition

Direct Sub-Tradition -7-

- Fermo, Biblioteca Romolo Speziolo di Fermo, Ms. 18
- Firenze, Biblioteca di Botanica dell'Università, Ms. 106
- Oxford, Bodleian Library, Ms. Canon. Misc. 408
- Paris, Bibliothèque nationale de France, Ms. Lat. 17844
- Paris, Bibliothèque nationale de France, Ms. Lat. 17848
- Pavia, Biblioteca Università di Pavia, Ms. Aldini 211
- Vicenza, Biblioteca Civica Bertoliana, Ms. 362

Indirect Sub-Tradition -17-

- Bologna, Biblioteca Università degli Bologna, Ms. Aldro. 151/1
- Bologna, Biblioteca Università degli Bologna, Ms. Aldro. 151/2
- Bologna, Biblioteca Università degli Bologna, Ms. Aldro. 152
- Bologna, Biblioteca Università degli Bologna, Ms. Aldro. 153
- Brescia, Biblioteca Queriniana, Ms. B.V.24
- Firenze, Biblioteca Medicea Laurenziana, Firenze, Ms. Ashb. 456
- Firenze, Biblioteca Marucelliana, Ms. 168/C
- London, Wellcome Historical Medical Library, Ms. 261
- London, Wellcome Historical Medical Library, Ms. 334
- London, Wellcome Historical Medical Library, Ms. 337
- New York, Pierpont Morgan Library, Ms. PML 22222.4
- Oxford, Bodleian Library, Ms. Add. A. 23

- Padua, Biblioteca Universitària degli Padua, Ms. 604
- Paris, Bibliothèque nationale de France, Ms. Hebr. 1199
- Trento, Museo Castello del Buonconsiglio, Ms. 1591
- Venice, Biblioteca Marciana, Ms. It. II.12 (4936)
- Venice, Biblioteca Marciana, Ms. It. III.11 (5004)

Proposed Sub-Tradition -14-

- Burlington, University of Vermont Libraries, Ms. 2
- Cassego, Museo Contadino di Cassego, Ms. 95
- Civitatis Vaticanae, Biblioteca Apostolica Vaticana, Ms. Pal.lat. 1078
- Civitatis Vaticanae, Biblioteca Apostolica Vaticana, Ms. Chig.F.VII.158
- Firenze, Biblioteca Riccardiana, Ms. Ricc. 2174
- Firenze, Biblioteca Medicea Laurenziana, Ms. Redi 165
- London, Natural History Museum Library & Archive, Mss. Her.
- Lucca, Biblioteca Statale di Lucca, Ms. 196
- München, Bayerische Staatsbibliothek, Ms. Cod.It. 149
- Paris, Bibliothèque du Muséum national d’histoire naturelle, Ms. 326
- Paris, Bibliothèque Sainte-Geneviève, Ms. 3369
- Philadelphia, Kislak Center for Special Collections, Ms. LJS 46
- Philadelphia, Kislak Center for Special Collections, Ms. LJS 419
- Udine, Biblioteca Civica Vincenzo Joppi, Ms. 1161

The Alchemical Herbs[114]

1. Herba Antolla minor
2. Herba Bortines
3. Herba Torogas
4. Herba Nigras
5. Herba Stellaria
6. Herba Bonifatia
7. Herba Betonega
8. Herba Instanutia
9. Herba Canalaritas romana
10. Herba Rena
11. Herba Triacho
12. Herba Bososilles
13. Herba Angalles
14. Herba Toros
15. Herba Grantia
16. Herba Tortorellis
17. Herba Lingua cornena
18. Herba Trifolio
19. Herba Ariola
20. Herba Superna
21. Herba Faba inversa
22. Herba Paris
23. Herba Ciloga
24. Herba Antollas
25. Herba Antolla lupanas
26. Herba Cofflesanas
27. Herba Cancealis
28. Herba Toffanas
29. Herba Brancha lupina
30. Herba Salsifica
31. Herba Sabastrella
32. Herba Amorsu serpentis
33. Herba Tedorixe
34. Herba Lucea et de nouem una
35. Herba Ditimo biancho
36. Herba Requificia
37. Herba Illocharias
38. Herba Foleas
39. Herba Angalles
40. Herba Luza Mandragora
41. Herba Illioris
42. Herba Tilles
43. Herba Paroischas
44. Herba Corporelis
45. Herba Cipola marina
46. Herba Palma Christi
47. Herba Bazea minor et de nouem una
48. Herba Folio
49. Herba Rigogola
50. Herba Pane porcino
51. Herba Artetica montaria
52. Herba Mula campana
53. Herba Zinziana
54. Herba Oculus Domini
55. Herba Sancta Maria
56. Herba Lunaria greca
57. Herba Capalias
58. Herba Nascurso
59. Herba Belletollis
60. Herba Metries
61. Herba Ystatoris
62. Herba Polexinas
63. Herba Serpentina
64. Herba Pionica
65. Herba Rucha savlaticha
66. Herba Caspetres
67. Herba Brancha
68. Herba Spigonarda
69. Herba Lunaria
70. Herba Erba rigano
71. Herba Sigillo de Sancta Maria
72. Herba Rapillis
73. Herba Bustania
74. Herba Forus
75. Herba Capalarices
76. Herba Luminellas
77. Herba Ruschasia
78. Herba Scudaria
79. Herba Lunaria
80. Herba Tunegi
81. Herba Lactica
82. Herba Barbaria
83. Herba Tura
84. Herba Gerbia
85. Herba Bruza
86. Herba Lunaria tercia
87. Herba Attillia
88. Herba Victoria
89. Herba Rondella
90. Herba Genesiana aliter Genciana
91. Herba Fiorina
92. Herba Capillaria
93. Herba Giralia
94. Herba Gratilia sive Gratiana
95. Herba Granellaria
96. Herba Pionia
97. Herba Consolida mayor
98. Herba Consolida minor

[114] The 98 alchemical herbs as identified by Segre are presented here, numbered in the order in which Segre placed them into, mirroring their arrangement in the direct sub-tradition.

VIII. Bibliography

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