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In upupa o strige.
A Study in Renaissance Psychotropic Plant Ointments

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ABSTRACT – Various historical sources from the Renaissance – including transcripts of trials for witchcraft, writings on demonology and textbooks of pharmaceutical botany – describe vegetal ointments prepared by women accused of witchcraft and endowed with marked psychoactive properties. Here, we examine the botanical composition and the possible pharmacological actions of these ointments. The results of our study suggest that recipes for narcotic and mind-altering salves were known to Renaissance folk healers, and were in part distinct from homologous preparations of educated medicine. In addition, our study reveals an unexpected connection of these vegetal psychotropes with archaic chthonic beliefs, confirming the tight association between rituals and cults centered on the Underworld and the image of the Medieval witch.

*Sull'orlo dei tetti
Alcun l'ha veduta!
In upupa o strige talora si muta.*

*Some have seen her
On the rooftops!
Into a hoopoe or a screeching-howl
at times she is changed.*

Il Trovatore, Act I

Concluding his landmark study on European witchcraft, *Storia notturna* (1989), Carlo Ginzburg recognized in the image of the witches' Sabbat constructed by the Roman Inquisition an aggregate of two heterogeneous elements: on the one hand, the theme of a conspiracy contrived by a hostile sect against the bases of social order; on the other, a cluster of archaic beliefs of shamanistic origin, deeply rooted in folkloric culture, which included the witches' ability to fly and to change physical shape at their will.¹ At the beginning of the sixteenth centu-

¹ C. Ginzburg, *Storia notturna. Una decifrazione del Sabba*, Torino: Einaudi, 1989: 276-295.

ry, many inquisitors and judicial theorists, influenced by Sprenger and Krämer's treatise on witchcraft, the *Malleus Maleficarum* (1486), and by the papal bull *Summis desiderantes affectibus* (1484), began to consider these beliefs as the reflection of real events, the prerogative of a Pact with the Devil which entirely justified both the charge of heresy and the resulting persecution. Others, following common sense and Middle Ages canonical law, maintained that the events of the Sabbat, recounted by those accused of the crime of witchcraft, were an imaginative fiction exacerbated by malnutrition and by the use of hallucinogenic concoctions.² This naturalistic interpretation, revived in the last century by the evocative pages of Michelet's *La Sorcière* (1862),³ was adopted with different forms and objectives in the works of later scholars, including E. Gilbert's *Les Plantes Magiques et la Sorcellerie* (1899) and M.A. Murray's *The Witch-Cult in Western Europe* (1921).⁴ The weaknesses of this approach are apparent. Clearly, no single form of privation, hallucinogenic substance or ecstatic technique may underlie the systematic appearance of such a complex array of beliefs as those associated with Medieval witchcraft. However, if insufficient to explain the phenomenon of witchcraft in its entirety, the self-administration of psychotropic substances may still provide, as Ginzburg pointed out, an objective correlate to the folk-beliefs in magical flight and shapeshifting, contributing to a less mythical interpretation.

How may one explore this hypothesis? A sparse set of testimonies, scattered here and there in the writings of a few Renaissance scientists and in the transcripts of Inquisition trials make reference to plant ointments which 'witches' rubbed on their bodies before 'going to the Sabbat'. In some cases the ingredients of these salves have been transcribed, but the vagueness and unreliability of most of the records, as well as the difficulties in identifying the vegetal species mentioned (sometimes greater than it may appear at first), have lead most scholars to disregard them.⁵ As a result, despite the

² Recent bibliographies on Medieval witchcraft may be found in R. Muchembled, *La Sorcière au Village*, Paris: Gallimard, 1991; J.B. Russell, *Witchcraft in the Middle Ages*, Ithaca and London: Cornell University Press, 1972 and C. Ginzburg (footnote 1).

³ J. Michelet, *La Sorcière* (1862), Paris: Flammarion, 1966: 105-121.

⁴ E. Gilbert, *Les Plantes Magiques et la Sorcellerie*, Moulins: H. Durond, 1899; M.A. Murray, *The Witch-Cult in Western Europe. A Study in Anthropology*, Oxford: Clarendon Press, 1921. See, in particular, the Appendix by A.J. Clark on *Flying Ointments*, p. 279.

⁵ Witches' ointments are mentioned in J.B. Russell, *Witchcraft in the Middle Ages*, (footnote 2), R. Muchembled, *La Sorcière au Village* (footnote 2) and Ginzburg, *Storia notturna* (footnote 1). More may be found in G. Bonomo, *Caccia alle streghe*, Palermo: Palumbo, 1959, passim. In *Storia notturna* (284-288 pp.) Ginzburg suggests that fly-agaric (*Amanita muscaria*) or ergot (*Claviceps purpurea*) may have been utilized as hallucinogens in the context of European witchcraft. Regarding the possible relationships between *C. purpurea* and witchcraft, see also M.K. Matossian *Poisons of the Past: Molds, Epidemics and History*, Yale: University Press, 1989.

increasing interest in the role played by hallucinogenic plants in European witchcraft, a critical analysis of these sources is still lacking.

In this study, we examine the literary records from the fifteenth and sixteenth centuries that describe various types of 'witches' ointments' and, based on this analysis, propose a botanical identification of their plant ingredients. We attempt, then, to answer the question, why these specific plants, and not others, are found in connection with witchcraft. As we hope to show, the answer to this question is closely related to the very nature of witchcraft, as well as to the character of pre-modern pharmacology.

The belief that certain magical salves could produce wonders such as turning people into animals, render them invisible, or make them fly at night in the company of supernatural creatures was tenacious and widespread in Medieval Europe. One of the earliest extant testimonies, a sermon delivered in August of 1427 by the Franciscan preacher, Bernardino of Siena, illustrates it concisely.

They [the women accused of witchcraft] said that with them [ointment vessels] they anointed themselves. As soon as they were anointed, they believed they were she-cats, but this was false, because their body never changed shape, although they thought so...⁶

Saint Bernardine's skepticism was far from being isolated. In fact, the conviction that magical flight and shapeshifting were products of states of delusion and hallucination was an ancient *τοπος* which had made its way from Saint Augustine's *Civitas Dei* into the tenth century Carolingian capitulary known as *Canon Episcopi* and into later texts.⁷ It reemerges, ten years after Bernardine's sermons, in one of the earliest treatises on Demonology, the *Formicarius*, written between 1435 and 1437 by the Dominican friar, Johannes Nider.

⁶ Bernardino da Siena, *Le prediche volgari*, P. Bargellini (ed.), Milano, 1936: 785-786, cited in C. Corvino 'Credenze stregoniche e interpretazioni farmacologiche'. In: *Salute e malattia nella cultura delle classi subalterne*, Proceedings of the Meeting held in Naples, 8-10 April 1987, Napoli: Guida, s.d.

⁷ Saint Augustine (*Civitas Dei*, XVIII, 18) contested the reality of transformation of men into animals and ascribed them to delusions produced by evil arts, inspired by the devil. 'For when I was in Italy - he wrote - I used to hear of such cases from a certain region in that country. People said that landladies (*stabularias mulieres*) skilled in these evil arts used to give drugs in cheese to whatever wayfarers they wished, or could, and by this means they were turned at once into pack-animals ... Such things are either false or so extraordinary that we may well refuse to believe them.' (Transl. E.M. Sanford and W.M. Green, Cambridge: Harvard University Press, 1965). About the *Canon Episcopi* (ca. 906 AD) see J.B. Russell (footnote 2), pp. 75-80 (with bibliography).

I heard my teacher tell this story: a certain priest of our order entered a village where he came upon a woman so out of her senses that she believed herself to be transported through the air during the night with Dyana [sic] and other women. When he attempted to remove this heresy from her by means of wholesome discourse she stubbornly maintained her belief. The priest then asked her: 'Allow me to be present when you depart on the next occasion'. She answered: 'I agree, and you will observe my departure in the presence (if you wish) of suitable witnesses'. Therefore, when the day for the departure arrived, which the old woman had previously determined, the priest showed up with trustworthy citizens to convince this fanatic of her madness. The woman, having placed a large bowl, which was used for kneading dough, on top of a stool, stepped into the bowl and sat herself down. Then, rubbing ointment on herself to the accompaniment of magic charms she lay her head back and promptly fell asleep. With the aid of the devil she dreamed of Mistress Venus and other superstitions so vividly that, shouting and striking her hands about, she jarred the bowl in which she was sitting and, falling down from the stool, seriously injured herself on the head.⁸

Nider's story associates the sleep-inducing ointment and the elaborate ceremonial of its usage to another popular credence, that in the nocturnal journeys made by women in the company of a multifarious goddess, known at various times and places as Abundia, Diana, Holda, Perchta etc. A connection which appears again, at the beginning of the sixteenth century, in the Tübingen sermons of Martin Plantsch, priest in the local church of Saint George. Plantsch attempted to disprove what must have been a commonly held view among his parishioners, namely that certain women could travel at night to far-away places and enter freely into locked cellars, thanks to an unguent they rubbed themselves with. He thought this impossible, because:

...if it were in the powers of this salve to make things fly, the very vase that contains it should also be able to do so, which appears to be false.⁹

The association between plant ointments, magical flights and nocturnal journeys by women suggests the existence of an ancient common link between them. One last example of the intertwining of these two folk-motifs will show the amplitude of the link between them. In a passage from the Latin dialogue *Strix* (1523), written by Giovan Francesco Pico in the aftermath of a series of witchcraft trials he had

⁸ J.Nider, *Formicarius*, Coloniae: U. Zell, ca. 1475, lib. II, cap. 4.

⁹ M.Plantsch, *Opusculum de Sagis Maleficis*, Phorce: T. Anshelmi, 1508, Fol. c, II. We thank Dr. Claudio Corvino for bringing this reference to our attention. Regarding the syncretistic, Romano-Celtic figure of Diana important indications are contained in C.Ginzburg, (footnote 1), pp. 65-98 (with bibliography); J.B.Russell (footnote 2) pp. 46-62; J.C.Baroja, *Las Brujas y su Mundo*, Madrid, 1961 (English translation, *The World of the Witches*, Chicago:University Press, 1965: 64-66); M.Eliade, 'Some Observations on European Witchcraft', *History of Religion*, 14 (1975), 149-172.

participated in, the Count of Mirandola related the folk credence in a magical ointment through the words of Apistio ('the Unbeliever'), who plays in the dialogue the role of skeptical humanist – the very attitude which Pico intended to censure with his writing.

...it seems a ridiculous thing – Apistio says – and impossible, that after having made a circle and smeared their bodies in a certain way with an ointment, and after having whispered certain words, these petty women take pleasure with the infernal devils. That they ride at night on a piece of wood called 'gramita', which is used to dress wax and hemp, or on a she-goat, a he-goat or a ram. That they are carried through the air faster than the winds, and find themselves at the games of Diana and Herodiade, where they play, eat, drink and take lascivious pleasures. I want also to add one more thing, namely that, from what I hear, they contradict each other as to what they actually do. Some, in fact, claim to be carried very high in the air, while others affirm to be carried close to the ground. Some confess to go there only with their imagination, and not with their bodies....¹⁰

They go to the diabolic rendez-vous with their imagination, and not with their bodies, Apistio affirms, and asks the inquisitor Dicasto, present at the scene, for his professional opinion:

Apistio: You believe then that the witches are always brought to the game [of Diana] in the flesh?

Dicasto [the Inquisitor]: I do not deem that they are always brought bodily to this game, because at times they have been found holding to a wooden beam, in such a profound slumber that they could not feel anything, even when strongly beaten. Afterwards, they were convinced that they had been carried to the game, but in fact they never moved.¹¹

Laconic as they are as to its nature and composition, the passages reported here agree nevertheless in attributing to a salve used by women and men accused of witchcraft the power to induce a profound sleep, crowded with grotesque dreams. The state of narcosis and delirium induced by this puzzling unguent has been even depicted, and in very graphic terms, in a series of *mezzatinta* drawings dedicated to witchcraft, executed in the first half of the sixteenth century by the Freiburg painter, Hans Baldung Grien. In one of these pictures, two young women are shown in the act of anointing themselves, while a third one, who is hovering in the background, throws her arms back and rolls her eyes in ecstatic rapture.¹²

¹⁰ G.F.Pico Della Mirandola, *Libro detto Strega o delle Illusioni del demonio*, Italian translation by L. Alberti, Bologna: J. De Benedictis, 1524 (reprinted, with an Introduction by A. Biondi, Venezia: Marsilio, 1989). Original Latin edition, *Strix sive de Ludificatione Daemonum*, Bonomia: J. De Benedictis, 1523.

¹¹ G.F.Pico (footnote 10), p. 103.

¹² L.C.Hults, 'Baldung and the Witches of Freiburg: The Evidence of Images', *Journal of Interdisciplinary History*, 18 (1987), 249-270.

If we take all these various testimonies seriously, and our working hypothesis is that we should, the obvious question which they prompt is, how did these ointments work, or, in modern terms, what pharmacologically active components, if any, were responsible for their mind-altering effects? Renaissance writers were already aware of this problem: when, for instance, in the second part of Pico's dialogue an alleged witch is brought onto the scene, faced with the confession of all her ominous crimes, Apistio cannot help exclaiming, despite his professed skepticism:

What is this accursed ointment of yours composed of?

As expected, the woman's reply follows the patterns outlined by Sprenger and Krämer.

Among other things, of the blood of young children.¹³

Blood or fat of young children, seized from their mothers or even from their tombs, evoked the ancient nightmare of the blood-sucking Lamia and, in a growing atmosphere of religious *renovatio* against Renaissance neopaganism, the threat of the heresies which had tormented the early Christian Church. This said, nobody believed, not even the most relentless witch-hunters, that by spreading children's fat on their bodies the witches could really go, or even imagine to go to the infernal Sabbath. Both natural philosophers and inquisitors knew there must be something else. Thus, the philosophers asked during their investigations and the inquisitors during their cross-examinations, what other substances might be found in the infamous concoction.

In his commentary of Dioscorides' *Materia medica*, published at Antwerp in 1550, the Spanish physician Andrés Hernandez de Laguna interrupts his description of the thorn-apple (Στρυχνοῦ ὀμανικός, *Atropa belladonna* L. or *Datura metel* L.), to relate an episode that occurred to him five years earlier, when he was employed as medical officer in Metz, in the Dukedom of Lorraine, at the time of a violent upsurge of witchcraft trials.¹⁴ In his capacity as municipal

¹³ G.F.Pico (footnote 10), pp. 117-118.

¹⁴ A. de Laguna, *Pedacio Dioscorides Anazarbeo, Acerca de la Materia Medicinal*, Salamanca: M.G.Ano, 1570. Reprinted and edited by C. E. Dubler in *La 'Materia Medica' de Dioscorides. Transmission Medieval y Renacentista*, Barcelona, 1955, vol. III, 420-422 pp. (the first edition, which we have not been able to see, was printed in Antwerp, 1550). About Laguna's passage see H. Friedenwald, 'Andrés de Laguna, a Pioneer in his Views on Witchcraft', *Bulletin for the History of Medicine* 7 (1939), 1037-1048 and T.Rothman, 'De Laguna's Commentaries on Hallucinogenic Drugs and Witchcraft in Dioscorides' *Materia Medica*', *ibidem*, 46 (1972), 562-567 (who ignores Friedenwald). Regarding the identification of Στρυχνοῦ ὀμανικός as *Datura metel*, see A.Pollio, G.Aliotta and E.Giuliano, 'Etnobotanica delle

physician, Laguna recalls, he went to visit the Duke Francis, who was ill in the nearby city of Nancy. At that time a group of citizens had brought a charge against an elderly couple who lived in a cabin not far from the city, and who were, according to popular rumor, well-known witches. Seized and tortured, the two confessed all they were accused of, and more. Indeed, in what seems to have been an extreme attempt to escape the stake, they also declared that they had caused the Duke's present illness and, therefore, that they were able to cure it by means of a secret remedy the Devil himself had taught them. The stratagem partially worked. The Duke had the old woman burnt, but spared the man's life hoping for a cure for his disease. To gain the man's benevolence the Duke gave him gifts and food, while keeping him closely watched. Unfortunately, these efforts turned out to be to the Duke's detriment: unused to the rich diet the old man ate somewhat too heartily and died of indigestion a few days later, followed by the Duke not long afterwards.

What does this story have to do with the thorn-apple? Among the things found in the poor couple's cabin, Laguna explains, was a pot, half-full of a green ointment which looked like *populeon* (a vegetal hypnotic salve well-known to medieval physicians, as we will see below) and which gave off the heavy odor of such soporific plants as hemlock, thorn-apple, henbane and nightshade. Thinking that the couple had been using this substance to anoint themselves, Laguna convinced the *alguazil* of Nancy to give it to him. Once back in Metz, the Spanish doctor tested its efficacy by spreading it from head to foot on the wife of the city executioner who, jealous of her husband, was unable to sleep and 'had almost gone mad'. Laguna underlines that she was an excellent experimental subject because an infinite number of other remedies had been previously tried on her in vain. Soon after the woman had been anointed with the old couple's salve, she fell into a profound sleep that lasted thirty-six hours. When finally brought back to her senses by the worried physician, her first words were, 'Why on earth did you wake me up? I was in the midst of all the pleasures and delights of the world.' And, turning with a grin to her husband, she continued, 'And you, good-for-nothing, I want you to know that I made you a cuckold, and with a much younger and more handsome man than you'.

Solanaceae Allucinogene Europee' in *Acts of the International Congress for the History of Pharmacy*, 1988, Accademia Italiana di Storia della Farmacia, 205-207 pp., and F.Festi and G.Aliotta, 'Piante psicotrope spontanee o coltivate in Italia', *Annali dei Musei Civici-Rovereto*, (1989), 135-165.

Laguna concludes his tragicomic tale – probably the first single-blind experiment on the natural bases of witchcraft – by saying:

Hence we may conjecture that whatever these unfortunate witches may say or do is but a dream, caused by beverages or ointments which are by nature very cold.

Thus, according to Laguna, mastery of the medicinal properties of ‘cooling’ plants – the adjective is used in the sense of Galen – is sufficient to explain the witches’ hallucinatory deliria. Tradition had maintained that sorcerers could use natural means, among others, to achieve their evil ends. In the words of Martin Plantsch:

...indeed, in order to obtain the desired effects, they can make use of some natural things ... such as herbs, ointments, powders, stones, roots and often poisons...¹⁵

Polemically, Laguna insists that the *only* effective means they could employ were natural, and that even the Devil could not operate if not through them.

... we must realize that the Devil cannot act except through natural causes, applying *activa passivis* (active forces to passive objects)...¹⁶

To return to the composition of Laguna’s ointment. A more impartial witness than the inquisitors and an authority in pharmaceutical botany, the Spanish physician recognized in the unguent belonging to the unfortunate couple of Nancy a substance similar in composition to the narcotic *unguentum populeum*. Its smell, he wrote, was heavy and oppressive and it reminded him of ‘cooling’ herbs, that is of powerful psychotropic agents, such as hemlock (*Cicuta virosa* or *Conium maculatum*), nightshade (*Solanum nigrum* L. or *Atropa belladonna* L.) and henbane (*Hyoscyamus albus* L. or *H. niger* L.). This was not the first time that Laguna had encountered an alleged witch using henbane in the practice of her trade: two years before the incident in Nancy, he had had the opportunity to test on himself the power of henbane. Suffering from an attack of insomnia, he resorted to the skills of a German old woman, who, in his own words, resembled a witch (*la qual tenia un lindo talle de bruxa*). She cured him by making him sleep on a pillow filled with leaves of the hypnotic *Solanacea*.¹⁷

¹⁵ M.Plantsch (footnote 9), Fol. b, V.

¹⁶ A.Laguna (footnote 14), pp. 420-422.

¹⁷ A.Laguna (footnote 14), pp. 416-417.

Laguna's preoccupation with personal inspection and his interest in the direct experience of country people reflect the teachings of Paracelsus, who had affirmed:

Not all things the physician must know are taught in the academies. Now and then he must turn to old women, to Tartars who are called gypsies, to itinerant magicians, to elderly country folk and many others who are frequently held in contempt. From them he will gather his knowledge since these people have more understanding of such things than all the high colleges.¹⁸

A similar inquisitive attitude, if not the same critical spirit, may be found in the writings of the Italian physician and polymath, Girolamo Cardano. The eighteenth Book of his *De Subtilitate* (1550), appropriately entitled *On Marvels* [*De Mirabilibus*], contains a passage describing the alleged effects of certain plants on sleep and dreams. If one eats a plant called Melissa (likely our *Melissa officinalis* L., still used in phytotherapy as a tranquillizer and antispasmodic), Cardano writes, his dreams will be pleasant and agreeable, but they will certainly become gloomy, agitated, or even frightful if one eats cabbages, beans, garlick or onions. Hence, he continues:

... from such things is born the belief of the witches, who subsisting on celery, chestnuts, fava-beans, onions, cabbages and beans, believe to be transported in their sleep to various countries, and there to be affected in various ways according to the temperature of each country: it also contributes an ointment, of which we shall say more below...

...We speak now of the witches' ointment, which makes one see wonderful things, which are not real but appear to be so. It is composed, they say, of the fat of children seized from their tombs, of the juice of celery, of aconite, of cinquefoil, of nightshade and soot. But although they are thought to be asleep, they see these things: theaters, gardens, banquets, decorations, clothes, beautiful young men, kings, magistrates, and also demons, ravens, prisons, solitudes, tortures.¹⁹

Even though Cardano's and Laguna's views on witchcraft have important points in common, chronological and stylistical aspects seem to exclude of a direct borrowing of their texts.²⁰ (This is not the case, as we shall see, for most of their followers, including Giovan Battista Della Porta.) Moreover, describing the ointment composition Cardano takes care to specify that 'it is composed . . . *they say*' (*con-*

¹⁸ Quoted in A. Debus *Man and Nature in the Renaissance*, Cambridge: University Press, 1978: 10.

¹⁹ G. Cardano, *De Subtilitate*, Norimbergae: I. Petreium, 1550, XVIII, p. 354.

²⁰ Regarding Laguna's sejour in Italy and his possible contacts with Cardano, see C.E.Dubler (foot-note 14), vol. 4, pp. 97-109.

stat . . . ut dicunt), as if he meant to report words he had collected, like Laguna, from the voice of one of those poor country women, 'surviving on chestnuts and roots', whom he describes so vividly, as only an eye-witness could do, in his *De Rerum Varietate*.²¹ The omission of any reference to the existing literature on magical plants confirms that both Laguna and Cardano had intentionally confined their interest to folk-beliefs. For instance, even though they describe a vegetal ointment which, as Cardano puts it, makes one see wonderful things (*quod mirabilia facit videre*), they disregard the long list of magical herbs given in the twenty-fourth Book of Pliny's *Naturalis Historia*. One of them, the mysterious *Ophiusa* native of the Ethiopian city of Elephantine, gives to those who drink its juice terrible visions of threatening snakes.²² Likewise, while on the one hand Cardano includes in his recipe an old favorite of herbal folklore, the cinquefoil (whose identification as *Potentilla reptans* L. we will return to later), on the other, he ignores the archetype of all magical plants, the mystical mandrake (*Mandragora officinarum* L.).²³ Even Laguna's mention of this infrequent *Solanacea* is confined to its soporific effects, and entirely neglects its well-known magical connotations.

The two passages quoted above bring up yet another important point relevant to the character of Laguna's and Cardano's inquiries: the information the two scholars transmit is filtered through their knowledge of contemporary medical literature. Laguna, as we have seen, compares the ointment found in the old couple's cabin with a standard hypnotic salve of Medieval pharmacopeias, the *unguentum populeum*. This is hardly surprising coming from two scholars who are, first and foremost, medical doctors, but it certainly does not imply, as it has been suggested,²⁴ that the folk remedies they describe are merely a mystification of this old recipe of literate medicine. Important differences make this possibility very unlikely.

²¹ 'Sunt hae mulierculae mendicae, miserae, in vallibus victitantes castaneis et agrestis oleribus, et nisi lactis quippiam adesset, vivere omnino non possent. Ideo etiam macilentae, deformes, oculis emissitiis, pallidae, et suboscurae, atram bilem ac melancholiam ipso intuitu praeferentes.' G.Cardano, *De Rerum Varietate*, Avinione: M. Vincethius, 1558, p. 734.

²² 'Ophiusam in Elephantine eiusdem Aethiopiae, lividam difficilemque aspectu, qua pota terrores minasque serpentium observari ita ut mortem sibi eo metu consciscant . . .' *Naturalis Historia*, XXIV, 163. About Pliny's magical plants, see: J.Stannard, 'Medicinal Plants and Folk Remedies in Pliny, *Historia Naturalis*', *History and Philosophy of the Life Sciences*, 4 (1982), 3-23; W.H.S.Jones, 'Ancient Roman Folk Medicine', *Journal of the History of Medicine*, (1957), 459-470; C.Wessely, 'Synopsis Florae Magicae', *Bulletin de l'Institut Français d'Archéologie Orientale, Le Caire*, 30 (1931), 17-26; G.E.R.Lloyd, *Science, Folklore and Ideology*, Cambridge: University Press, 1983: 135-149.

²³ Select references on Mandrake include, C.B.Randolph, 'The Mandragora of the Ancients in Folklore and Medicine', *Proceedings of the American Academy of Arts and Sciences*, 40 (1905), 487-537; A.T.Starck, *Der Alraun*, Baltimore: J.H.Furst, 1917; Pauli-Wissowa's *Real-Encyclopädie*, vol. 14, s.v. 'mandragoras'. Additional references may be found here at footnotes 61 and 62.

²⁴ H. De Vries, 'Über die Sogennanten Hexensalben', *Integration*, 1 (1991), 31-42.

In the *Aggregator Paduanus de Medicinis Simplicibus*, written by the Paduan physician, Jacopo de' Dondi (1298-1359), the recipe for the *populeon* is attributed to the twelfth century's formulary by Nicolaus Salernitanus (the *Antidotarium Nicolai*) which was possibly based on an earlier text of the School of Salerno, and was to become, in 1471, the first printed pharmacopeia.²⁵ The popularity of Nicolaus' preparation was enormous and long-lasting. A version of it may be found, for instance, in John Arderne's treatise *De Fistula in Ano*, written in London ' . . . in the year when the strong and warlike Lord was taken to God' (Edward the Black Prince, who died in 1376). Arderne's recipes runs, in an early fifteenth-century English translation, as follows:

Ane untemment slepyng, with which if any man be anynted he schal mow suffre kutting in any place of the body without felyng or akyng. Recipe succus iusquiami, Mandrage, cicute, lattuce, papaueris albi & nigri, and the sedez of all thise forseid herbez, if thai may be hadde, ana; opii thebaici, opii Miconis ana, ʒj or ij; fresch swynez grese that sufficeth. Breke al thise wele & strongly togidre in a mortar, and afterward boile tham strongly and an cole tham. And if it be nozt thikke ynoz, putte to a littel propoleos, i.e. white wex, and kepe it to thine use.²⁶

Five centuries later we still find it, virtually unchanged, in a French translation of K. Ebermayer's *Handbook of Pharmacy*, published by J.B. Kapeler and J.B. Caventou in 1821.

An ointment made of poppy, henbane and nightshade (*onguent populeum*). It is composed of the fresh buds of black poplar, one pound, which you leave to macerate for twenty-four hours in fat, ready and molten, three pounds. You keep it till the suitable season, to mix it with fresh, crushed leaves of poppy, deadly nightshade, henbane and garden nightshade, of each four ounces. This ointment has a lovely green color, and the smell of poplar buds.²⁷

²⁵ Jacopo de' Dondi, *Aggregator Paduanus de Medicinis Simplicibus*, Venetiis, 1481, Cap. II (*Tabulae compositarum medicinarum plurium et diversorum auctorum memorialiter scripta ubi et a quibus scripserunt*), fol. 322; Nicolaus Salernitanus (Praepositus), *Antidotarium Nicolai*, Venetiis: N. Jenson, 1471. Regarding Praepositus, see P.O. Kristeller, 'The School of Salerno, its Development and its Contribution to the History of Learning', *Bulletin of the History of Medicine*, 17 (1945), 2 ff, and D. Goltz, *Mittelalterliche Pharmazie und Medizin, Dargestellt an Geschichte und Inhalt des 'Antidotarium Nicolai'*, Stuttgart, 1976. About the history of narcotic and anaesthetic medicines, see T.E. Keys, *The History of Surgical Anaesthesia*, New York: Dover, 1962, and F.J. Kuhlen, *Zur Geschichte der Schmerz-, Schlaf- und Betäubungsmittel in Mittelalter und Früher Neuzeit, Quellen zur Geschichte der Pharmazie*, Stuttgart, 1983.

²⁶ J.Arderne, *Treatises of Fistula in Ano, Hemorrhoids and Clusters*, D'Arcy Power (ed.), London: Kegan Paul, Trench, Trübner & Co., 1910, XII p. See also I.B.Jones, 'Popular Medical Knowledge in Fourteenth Century English Literature. II. The Theory and Practice of Medicine', *Bulletin for the History of Medicine*, 5 (1937), 538-575.

²⁷ J.B. Kapeler and J.B.Caventou, *Manuel des Pharmaciens et des Droguistes*, Paris: Brosson et Chauvé, 1821: 567.

Thus, it is composed of four basic ingredients: fresh leaves and buds of the black poplar (*Populus nigra* L.), which lend it the name; wild poppy, the common *Papaver rhoeas* L., to which the powerful Asiatic cognate, *Papaver somniferum* L. may be added; leaves of a nightshade: the deadly one, *Atropa belladonna* L., or its milder variety *Solanum nigrum* L. (Arderne's gallicizing *Mandrage*); the sticky, hairy foliage of the henbane, *Hyoscyamus* sp., from which one may prepare the aqueous extract Arderne calls *succus iusquiami*.²⁸ To these, the English surgeon also adds, faithful to Nicolaus' original prescription, the leaves and seeds of *Cicute* (most likely the European water hemlock, *Cicuta virosa* L., rather than Socrate's φάρμακον, *Conium maculatum* L.) and of *Lattuce* (*Lactuca virosa* L.).

Not unlike these are the components of other Medieval narcotic concoctions, whose major use was as anaesthetic medications during surgery: the *spongia soporifera*, already in use during the ninth century,²⁹ or the *dwale*,³⁰ a sleeping draft mentioned by Chaucer and described in Anglo-Saxon Leechdoms:

For to maken a drynke that men calle dwale, to make a man slep-en whyles men kerue hym – Take the galle of a borw-swyne and for a woman of a gilte and iii spoonful of the Ius of humloke and iii spoonful of the wylde nep and iii spoonful of letuz and iii spoonful of pope and iii spoonful of henbane and iii spoonful of eysylle; and medle hem alle to-gedre and boille hem a litil and do hem in a glasen vessel wel stoppede and do ther-of iii spoonful into a potell of good wyne or good ale and medle hem wel togedre, til it schal ben noted; and thanne lat hym that schal ben curuen sitte ageyne a goode fyre, and make hym to drinke ther-of till he falle on slepe. And thanne men may safly keruen hym.³¹

The only overlapping element between this armamentarium of narcotic substances and the odd recipe related by Cardano, is in the presence of the vaguely defined *solanum*. The existence of folk medicines containing hypnotic species of the *Solanaceae* family is confirmed by a number of other sources.³² But how could the remaining plants mentioned by the Milanese scholar (*apium*, *aconitum* and *pentaphyllum*) be inspired by contemporary medical literature if they were not in use as

²⁸ The preparation of this extract is described in Dioscorides, *Materia Medica*, IV, 69.

²⁹ T.E. Keys, *History of Surgical Anaesthesia* (footnote 25), p. 7.

³⁰ The word *dwale* is associated to the Danish *dwale*, stupor, and *dwaledrik*, a soporific 'dwale-drink', and to the Swedish *dvala*, trance, derived from a Teutonic root **dwelan-* (Old English *dwellan*) 'lead astray, stupefy, hinder delay'. See W.W. Skeats, *A Concise Etymological Dictionary of the English Language*, Oxford: Clarendon Press, 1911, s.v. *Dwale* and C.D. Buck, *A Dictionary of Selected Synonyms in the Principal Indo-European Languages*, Chicago: University of Chicago Press, 1949: 457; Chaucer's passage is in *Canterbury Tales*, A.I. 1471-1474.

³¹ Quoted in I.B. Jones (footnote 26). The ingredients cited are, according to Jones: wylde nep, bryony; pope, poppy; eysylle, vinegar.

³² See, for instance, P. Camporesi, *Il pane selvaggio* (footnote 4), pp. 131-147.

sleep-inducing substances at that time? It seems more likely that, following Paracelsus' exhortation to turn towards the medicine of the poor, Cardano, like Laguna, had found a narcotic and psychoactive folk remedy, probably one of the many variations, forever lost to us, of what could have been a widespread prototype.³³

A few years after the appearance of *De Subtilitate*, a story similar to that related by Cardano was included by the eighteen-year-old Giovan Battista Della Porta in the first version of his book on natural marvels, *Magiae Naturalis* (1558).

At the end of dinner – he writes – when we go to sleep, if we chew with moderation some hypoglossa or melysophyllon, which others call lemongrass, or some similar plant, when asleep we will make a thousand beautiful and merry dreams: plants, meadows, trees, flowers and lushing green lands covered with beautiful shadows. . . But if we seek ugly and fastidious dreams, we should eat fava-beans, because they are dry and windy, and for this reason abhorred by the Pythagoreans...³⁴

Apart from Della Porta's high-flown style, the similarities between his description and Cardano's leave little doubt as to the source used by the young Neapolitan scholar. A few pages below, Cardano is quoted almost verbatim.

Hence is born the origin of those ointments, which are made by the witches. Even though many superstitions come into their composition, it is nevertheless by means of natural substances that they make the witches believe to be transported through the air, to listen to sounds and to songs, to see beautiful young men... Although they [the witches] mix in a great deal of superstition, it is apparent nevertheless to the observer that these things can result from a natural force. I shall repeat what I have been told by them. By boiling children's fat in a copper vessel, they get rid of its water, thickening what is left after boiling and remains last. Then they store it, and afterwards boil it again before use: with this, they mix celery, aconite, poplar leaves and soot. Or, in alternative: sium, acorus, cinquefoil, the blood of a bat, solanum and oil; and if they mix in other substances they don't differ from these very much...

Della Porta's description of the witches' ointment outdid in popularity those of his predecessors, even beyond the wishes of its author. The unfortunate recipe which, as one may readily see, was largely a

³³ In 1591, Agnes Sampson, a Scottish midwife, paid with her life the use of one such remedies to relieve the birth pain of one of her clients, a Eufame MacAlyane. See M.E.Babcock, 'Brief Outline of the History of Anaesthesia', *Grace Hospital Bulletin*, 10, (1926), 16-21, cited in T.E.Keys (footnote 25), pp. 8-9.

³⁴ G.B. Della Porta, *Magiae Naturalis, sive de Miraculis Rerum Naturalium*, Neapoli: M. Cancro, 1558, lib. II, chap. 26. A relevant passage may also be found in the Italian translation of this first edition of *Magiae* (*De i Miracoli et Meravigliosi Effetti dalla Natura Prodotti*, Venice: L. Avanzi, 1560), but, following the brush with the Roman Inquisition, it was eliminated from the second, enlarged Latin edition (*Magiae Naturalis libri XX*, Neapoli: O. Salviani, 1589).

quotation from Cardano's,³⁵ ended up being both the probable cause of a brush with the Holy Office, suffered by Della Porta between 1558 and 1578,³⁶ and the origin of a public accusation *criminiis magiae*, brought against him in 1580 by the French humanist Jean Bodin, in his treatise *De la Démonomanie des Sorciers*. To this accusation the Neapolitan replied vehemently:

A certain Frenchman in his book called *Daemonomania*, terms me a magician, a conjurer, and thinks this book of mine long since printed, worthy to be burnt, because I have written the Fairies Oyntment, which I set forth only in detestation of the frauds of divels and witches.³⁷

In fact, more than by detestation of devilish frauds, the founder of the *Academia Secretorum Naturae* appears to have been instigated by the same lay curiosity that moved Cardano, coloured by an experimental spirit that reveals the inventor of the *camera obscura*. This spirit emerges in Della Porta's account of his encounter with a 'certain old woman' who volunteered to show him the workings of her ointment. She rubbed herself with it, Della Porta recalls, and fell immediately in a deep sleep from which she could not be awakened even by a sound beating. When she woke up, she told all sorts of delirious stories: that she had crossed seas and mountains, seen beautiful young men, etc.

There again, Della Porta's narrative echoes something we are now familiar with: its similarity to Laguna's is too obvious to pass unnoticed.³⁸ Despite this, we cannot exclude that the young scholar, prompted by his readings, may have conducted some 'field-work' of his own: the additions he made to Cardano's list of plants suggest that this might indeed have been the case. These are minor, but interest-

³⁵ Della Porta's borrowing from Cardano has curiously escaped the attention of most modern commentators.

³⁶ Interestingly, the parallel passages in both Cardano's and Laguna's works, quoted above, were not censored by the Holy Office, even though these Authors had not escaped the Inquisition's vigilance on several other occasions. Della Porta's misfortune might have partly been caused by the delicate political situation created in the city of Naples in the aftermath of the 1547 uprising against the Spanish Inquisition. See L. Amabile, *Il Santo Ufficio della Inquisizione in Napoli*, Città di Castello, 1892, vol.1, 326 p. footnote.

³⁷ G.B. della Porta *Natural Magick*, London: T. Young and S. Speed, 1658 (English translation of the second edition of *Magiae Naturalis*) Preface, V p.

³⁸ We have found no evidence that either Giovan Battista or his elder brother and collaborator Giovan Vincenzo had met Laguna, even though the Spaniard had certainly visited Naples during his naturalistic trips around Italy (see, e.g., *Acerca*, footnote 14, I, 130 p.; III, 44 p.; V, 12 p.). However, it is unlikely that Laguna's *Commentaries* to Dioscorides had escaped the attention of the two Della Portas or of their preceptor, Domenico Pizzimenti, during the preparatory work that preceded the composition of *Magiae Naturalis*. The notoriety of Laguna's work was such that, by the time Cervantes wrote *Don Quixote* (first published in 1604), the wealth of botanical information collected in the *Acerca* had become proverbial (see *Don Quixote*, Part I, ch. 18).

ing. The addition of poplar leaves (*frondas populeas*) might have been suggested by Laguna's text, but what about *sium* or *acorus*? (Probably *Sium erectum* Hudson = *Berula erecta* (Hudson) Coville and *Iris pseudacorus* L., respectively, see below.) Once more, as in Cardano's case, a straightforward connection between these herbs and either contemporary learned pharmacopeia or magical literature is not easily drawn. We are left with the possibility that, if not in the idealized way described in the *Magiae Naturalis*, which sounds indeed too good to be true, somehow Della Porta did speak with a 'certain old woman', one of the many who peopled the universe of the *medicina pauperum*,³⁹ and collected from her at least some of the information which was going to cost him the rebuke of the Holy Office.

Unlike his unfortunate countrymen, Tommaso Campanella and Giordano Bruno, Della Porta learned the lesson, and, from then on heeded the advise of the Roman Inquisition, carefully avoiding the uncanny knowledge of country healers and limiting himself to quoting from the Ancients. He had good reasons to do so: popular herbal lore and folk-medicine were becoming a favorite target of the Catholic Church's attempts to eradicate deep-seated pagan practices and to secure a more complete Christianization of the natural world.

In 1528 a laborer in the noble house of the Orsini, a woman called Bellezza, was accused of and brought to trial for sorcery in the city of Fiano Romano. After several days of useless cross-examination the judge threatened to have her tortured if she did not confess all her crimes. She yielded, and enumerated them in her broken Italian.

I want to confess everything I have done since I was born. I am more than thirty years old, and, to give you an idea, I began my evil deeds before the French came to this country [1495-6]. I was left a widow, I was young, almost a girl, and so I was taken by these lords [the Orsini] and lived in Monterotondo, and took care of Madonna Jacoba and did the cooking for her. There, was imprisoned a woman, a certain Lucia de Ponsano, married to a Turrita, who is employed by these lords, and she was a witch, and known to be so, and my duty was to take care of her. And there I often asked her, and she promised to me that she would teach me everything she knew. . . she taught me how to make the oil of flowers [*olio fiorito*] in the following way, because no other is right: you need all the flowers that Nature engenders of all the trees and all the herbs, and put them in a small vase containing a measure of oil, or in pot, and then put it under the manure of buffalos or oxen, and let it stay there for 50 days...⁴⁰

³⁹ On the role of the *vetulae* in popular medicine, see T.R. Forbes, 'Midwifery and Witchcraft', *Journal of the History of Medicine*, 17 (1962), 264-283, and G. Cosmacini, *Storia della medicina e della sanità in Italia*, Bari: Laterza, 1987: 45-47.

⁴⁰ Cit. in M. Craveri, *Sante e streghe*, Milano: Feltrinelli, 1980.

Such references to the use of herbal remedies appear occasionally in the records of witchcraft trials and shed important light on the history of plant folklore. Bellezza's preparation of the *olio fiorito*, for instance, with its 50-day-long underground incubation, offers a botanical equivalent of the ritual theme of the *descensus ad inferos*, which has been recognized in other, unexpected aspects of country life, such as cheese-making.⁴¹ Unfortunately, most of these testimonies suffer from the same vagueness as Bellezza's. It is only occasionally that more specific information as to the nature of the plants used surfaces from the pleadings of the suspects.

At the question asked during the trial of a Ianara, or Witch, called Violantia – writes Pietro Piperno in 1634, Protomedicus in the Campanian city of Benevento – of what substance was made a certain narcotic powder, she answered, by the best valerian and hyssop, mixed together...⁴²

Cross-examined at his trial, held in Bormio between July 18 and December 5, 1673, Giovanni Borretti (surnamed Marendin) was asked to explain how he had accomplished his evil deeds. He confessed that he always carried in his pocket two plants, which he called in the dialect of his native Valtellina, *radisc de malann* ('root of disease', possibly *Aconitum napellus* L., *Veratrum album* L. or *Gentiana lutea* L.) and *erba tirella* (positively identified on ethnobotanical grounds as *Orchis maculata* L.).⁴³

These additional testimonies, although far from being complete, are sufficient to reveal a larger and more complex botanical provision than that we had encountered earlier. With them, the sorcerer's pharmacy grows to fulfill the various requirements of a country healer's trade, as well as the different needs of her or his clients: herbs for sleeping (like Violantia's mild tranquilizer, *Valeriana officinalis* L.); for rendering one insensible to the pain of disease and childbirth (the henbane of Laguna's german *bruxa*); for giving love and pleasure (Marendin's *Orchis maculata*), and, to return to our subject, for making people believe that humans can fly, bodies change shape, and men turn into animals, like those transmitted by Laguna, Cardano and Della Porta.

⁴¹ About the symbolic value of the *descensus ad inferos* see M.Eliade, *Zalmoxis, the Vanishing God*, Chicago University Press, Chicago, 1972: 21-70; on the relationship with cheese-making, see P.Camporesi, *Le officine dei sensi*, Milano: Garzanti, 1991: 47-77.

⁴² P. Piperno, *De Magicis Affectibus*, Neapoli: D.Roncalioli, 1634: 28.

⁴³ V.Credaro, 'Stregoneria e botanica: identificazione dell'erba tirella con *Orchis maculata* L.' *Bollettino della Società Storica Valtellinese*, 43 (1990), 115-118. We thank Dr. Camilla Maria Cederna for bringing this article to our attention.

Cardano and Della Porta enumerate, as we have seen, a total of seven plant ingredients of the *lamiarum unguentum*: *aconitum*, *solanum*, the binomial *apium/eleoselinum*, *pentaphyllum*, *sium*, *populus* and *acorus*. To these they both add two non-vegetal ingredients, fat (*pinguedo*), which cannot be omitted in the preparation of any ointment, and soot (*fuligo*), which, as we will discuss below, may serve an indirect pharmacological function. Della Porta has, in addition, the blood of a bat (*sanguis vespertilionis*), which, by sympathetic magic, conferred to those who consumed it the vital force of this nocturnal flying mammal. Laguna supports the testimonies of his Italian colleagues as far as *solanum* is concerned, but he neither confirms the presence of other plants, nor provides the names of additional ones. Later authors, such as Jean Wier, Reginald Scot, Jean de Nynauld and others, followed Cardano's and Della Porta's steps closely and, unlike them, moved entirely in the domain of literate tradition,⁴⁴ thus, we may safely lay them aside for the purpose of this study. Rather, we will focus on the herbs listed above and their botanical identification.

Because of the state of fluidity of plant-naming in pre-Linnaean science, and of the changes in nomenclature that have occurred since, the unambiguous botanical identification of a plant mentioned in a sixteenth century text is far from being straightforward. The more so in works, such as those we are dealing with here, which, documenting what may have been obscure oral traditions, were necessarily influenced by the vague terminology of their sources. As a result, a strategy for the identification of the plants listed in Cardano's and Della Porta's works should be based, first and foremost, on the internal evidence provided by those works, as well as on the analysis of contemporary consensus on plant classification, rather than on 'comparative' or 'pharmacological' arguments. We shall illustrate this strategy with two examples, which will also take us *in medias res*.

Based on the Murrayist conviction that 'the society of witches had a very creditable knowledge of the art of poisoning', the Scottish pharmacologist A.J. Clark, better known for his receptor theory of drug action than for this digression on sorcery, identified the plant termed *apium* in *De Subtilitate* and *eleoselinum* in *Magiae Naturalis*, as the poisonous umbelliferous herb, *Conium maculatum* L. (hemlock).⁴⁵

⁴⁴ I. Wier, *Histoires, Disputes et Discours* (1563), Paris: A. Delahaye et Lecroisnier, 1885: 376; R. Scot, *The Discovery of Witchcraft* (1584) reprint New York: Dover, 1972; I. de Nynauld, *De la Lycanthropie, transformation et extase des sorciers*, Paris: J. Millot, 1615.

⁴⁵ A.J. Clark, *Flying Ointments*, in Appendix to M.A. Murray (footnote 4), pp. 279-280.

The arbitrariness of Clark's conclusion, which was prompted by the argument that plants in a witch's ointment ought to be 'pharmacologically active', becomes apparent when one examines either Cardano's own text or the botanical terminology he was familiar with. In *De Subtilitate*, the term *Apium* is employed on several occasions to denominate unequivocally a species of edible celery or parsley, most likely a wild variety of the widespread *Apium graveolens* L. (*Umbelliferae*). Innocuous at weak doses, the extracts obtained from the seeds or from the leaves of *Apium* may have, at stronger ones, a series of pharmacological actions ranging from mildly psychoactive to drastically emmenagogue.⁴⁶ (A poisonous synonym of this familiar herb also existed: it was known as *Apium risum* or, in Italian, *herba sardonica*, and is identifiable with either *Ranunculus sceleratus* L. or *Oenanthe crocata* L., whose deadly properties were already described by classical authors.⁴⁷ But, despite this partial homonymy, no confusion appears to have ever occurred between the two plants in ancient times.)

To turn to our second example: Della Porta's *Acorum vulgare*. Modern commentators have interpreted this plant-name to be that of *Acorus calamus* L. (sweet-flag), an identification which has exerted some attraction because of the reported hallucinogenic and psychoactive properties of this aquatic *Aracea*.⁴⁸ Indeed, reed-like plants of the *Araceae* family may have played an important role in ancient plant lore. For instance, several Late-Minoan λάρναικες from Crete show the unmistakable spadix of one of these paludal herbs, likely an *Arum* or a *Dracunculus*, surrounded by fishes and birds.⁴⁹ Likewise, a Mycenaean Linear B tablet from Knossos lists a plant termed *ko-no* (= σχοῖνος, reed) among other aromatics dedicated to *pa-si-te-o-i* (θεοί πᾶσιν, all the Gods).⁵⁰ It is tempting to speculate, although impossi-

⁴⁶ Regarding the psychoactive actions of *Apium graveolens*, see V.K. Kulshrestha, N. Singh, R.C. Saxena and R.P. Kohli 'A Study of Central Pharmacological Activity of Alkaloid Fraction of *Apium graveolens* Linn' *Indian Journal of Medical Research*, 58 (1970), 99-102. Hildegard of Bingen wrote of a stupefying action of an *Apium* in *Physica*, 1, 69.

⁴⁷ Vergil, *Ecl.* VII, 41; Apuleius Barbarus, *De Medicaminibus Herbarum*, Tiguri, 1537, 65 p.; P.A. Mattioli, *De Materia Medica*, Venetiis, 1544, 204 p.; G.B. Della Porta lists *apium risum*, inter alia, in the series of poisons contained in his *Indice al Libro III della taumatologia*, edited by G. Paparelli in *Rivista di scienze mediche e naturali* 47 (1956), 1-41.

⁴⁸ P.C. Dandiya, R.M. Baxter and H. Cullumbine 'Studies on *Acorus Calamus*: Phytochemical Investigation' *Canadian Pharmaceutical Journal* 91 (1958), 607-610; S.B. Vohora, S.A. Shah and P.C. Dandiya 'Central Nervous System Studies on an Ethanol Extract of *Acorus calamus* Rhizomes' *Journal of Ethnopharmacology* 28 (1990), 53-62. F. Festi and G. Aliotta (footnote 14).

⁴⁹ L. Banti, 'Arte Minoico-Micenea'. In: R. Bianchi-Bandinelli and G. Becatti (ed.), *Enciclopedia dell'arte antica, classica e orientale*, Roma: Istituto dell'Enciclopedia Italiana, s.d.; H. Baumann, *Le Bouquet d'Athéna*, Paris: Flammarion, 1984: 181 (fig. 371) and pp. 184.

⁵⁰ The tablet is edited in L.R. Palmer, *The Interpretation of Mycenaean Greek Texts*, Clarendon Press, Oxford, 1963: 271-274; for an alternative identification of *ko-no* (as *Cymbopogon scoenanthus*, ginger-grass) see L. Baumbach, *Studies in Mycenaean Inscriptions and Dialect 1953-1964*, Roma: Edizioni dell'Ateneo, 1968, s.v. *ko-no*.

ble to demonstrate, that this reed corresponded to those represented in Minoan iconography, an hypothesis whose potential interest is strengthened both by the proposed existence of an ecstatic Tree-Cult in proto-historic Crete and by the presence of compounds of the asarone group (potentially psychotropic) in several members of the *Araceae* family.⁵¹

Despite its undeniable allure, Della Porta's *Acorum vulgare* cannot be identified with *A. calamus* for two reasons. First, the sweet-flag was introduced into Europe only after Pietro Andrea Mattioli had received some specimens of it from Constantinople, in 1557, and it could hardly have become widespread at the time of the *Magiae Naturalis* (1558).⁵² Second, and most important, the herb which Della Porta termed *acorum*, as the Neapolitan scholar himself explained thirty years later in his *Phytognomica* (1588), was rather a species of the genus *Iris* (*Iris pseudacorus* L.), a plant common in European marshlands (sometimes employed to counterfeit the expensive dried rhizomes of *A. calamus* which were imported from the East for their aromatic properties since Classical times).⁵³ To our knowledge, no mind-altering action has been reported, thus far, either for total extracts of *Iris pseudacorus* or for the unique terpenoid and quinone compounds isolated from this plant. Indeed, Della Porta suggested its use in the treatment of nervous illnesses and convulsions, but, following the Doctrine of Signatures, he based his proposal less on an effect of this species on the central nervous system than on the nerve-like shape of its foliage.⁵⁴

In the case of *solanum*, whose presence in the ointment is confirmed by all our records, there is hardly any doubt that the name used to designate a hypnotic plant of the *Solanaceae*. Indeed, as we have seen, it was while describing the properties of a member of this family (Dioscorides' στρύκνος ὁ μανικός, *Atropa belladonna* L. or *Datura metel* L.) that Laguna inserted the episode of his encounter with the Nancy witches. From a pharmacological standpoint, it is cer-

⁵¹ About the Cretan tree-Cult, see A. Delatte, 'Herbarius. Recherche sur le cérémonial usité chez les anciens pour la cueillette des simples et des plantes magiques.' *Mémoires de l'Académie Royale de Belgique*, 54 (1961), 1-223.

⁵² P.A. Saccardo, *Cronologia della flora italiana*, Bologna: Edagricole, 1971: 37; T.G. Tutin, V.H. Heywood, N.A. Burges, D.H. Valentine, S.M. Walters, D.H. Webb, *Flora Europaea*, Cambridge, 1964-1980, vol 5, pp. 268-269.

⁵³ G.B. Della Porta, *Phytognomica*, Francofurti: I. Wechel and P. Fischer, 1591, lib. II, 133 p. (*Acoro et iridi eadem facies . . .*) and lib. III, 195 p. On the use of *Iris pseudacorus* as a substitute for *A. calamus*, see Laguna, *Acerca*, pp. 12-13 and V. Petagna, *Delle facultà delle piante*, Napoli: 1796, 317-318 pp.

⁵⁴ G.B. Della Porta (footnote 53), *ibidem*.

tain that a lipophylic extract of leaves, roots or berries of *Atropa belladonna* and other allied *Solanaceae* would cause marked effects on the central nervous system, even when administered as a topic ointment (as it has been repeatedly pointed out since Gilbert's and Clark's time). The active principles variously present in these plants (atropine, hyosciamine and scopolamine, potent receptor antagonists of the neurotransmitter, acetylcholine) are slowly absorbed through the skin, and their penetration may be enhanced by the presence of small abrasions, inflammation or by slight alkalization of the applied salve (see below). While these conclusions may provide a pharmacological rationale for the presence of *solanum* in Cardano's recipe, they leave open the question of which genus of *Solanaceae*, among the several possible, he was precisely referring to. Following Dioscorides' *Materia Medica*, sixteenth century botanists of the ascribed four members to the genus *solanum*: *S. hortense* (Dioscorides' στρύκνος, our *Solanum nigrum* L.), *S. halicacabum* (σ; ὁ ἀλικάκαβος, *Physalys alkekengi* L. or *P. somnifera* Dunal) *S. hypnoticum* (σ; ὁ ὑπνωτικός, *P. somnifera* or *S. dulcamara* L.) and *S. furiale* (σ; ὁ μανικός, *Atropa belladonna* or *Datura metel*).⁵⁵ The anatomical features of these species are described in detail, and their numerous pharmacological effects, ranging from the mild pain-killing of *S. nigrum* to the hallucinogenic of *A. belladonna* and *D. metel*, are carefully listed. Why, then, did a scholar of botany such as Cardano, who must have been well aware of this biological diversity, not attempt to provide a more precise identification for the herb he mentioned? An 'economical' explanation may be that he did not want to. That he may have chosen to be vague in order to reflect the vagueness of his (oral?) source. It is reasonable that, depending on the season, place and availability, different psychoactive species of the *Solanaceae* family could be used to obtain similar (but not identical) results. Della Porta supports this supposition when he writes that 'other not dissimilar herbs' may enter the composition of the 'witches' ointment' (see above), and parallel examples from modern ethnobotanical literature are not uncommon (as shown, for instance, in the case of the Peruvian hallucinogenic brewage, *yagé*).⁵⁶

The identification of the remaining plant ingredients, *aconitum*, *sium* and *pentaphyllum*, raises fewer problems. Numerous different species of the genera *Aconitum* (*Ranunculaceae*), *Sium* (*Umbelliferae*) and *Potentilla* (*Rosaceae*) have grown in the mountains of Italy and in

⁵⁵ Dioscorides, *Materia Medica*, IV, 71-74.

⁵⁶ K.M. Kensinger, 'Banisteriopsis Usage Among the Peruvian Cashinahua' In: *Hallucinogens and Shamanism*, M.J.Harner (ed.), New York: Oxford University Press, 1973: 9-15.

other parts of Europe since ancient times, and could have been unambiguously recognized by Renaissance botanists. Most contemporary editions of Dioscorides' *Materia Medica* contain, in addition to basic descriptions of these plants that are in good agreement with modern classification, information on their folk names, removing any possible doubt as to their correct attribution (at least as far as botanical genera are concerned).⁵⁷

Wolf's-bane (*Aconitum* sp.) is a deadly poison, known as such by Theophrastus and Pliny, and banned by both Greek and Roman law.⁵⁸ Prohibition did not hinder its widespread use, most often for criminal purposes, but occasionally even in public executions.⁵⁹ This *Ranunculacea* owes its toxic properties to the cardiac actions of its alkaloid content, most importantly aconitine, a powerful Na⁺ channel agonist which slows the heart-rate indirectly by activating the vagal nerve (a phenomenon known in older textbooks of Pharmacology as the vago-vagal reflex of Bezold-Jarisch). These extreme effects are probably what the unknown author of *Περὶ Δηλητηρίων Φάρμακων* (*On Harmful Drugs*) refers to, when he enumerates wolf's-bane (ἀκόνιτον) among the substances that cause mental derangement (παραφρονεῖν).⁶⁰ Except at sublethal doses, when vertigo may ensue from the marked bradycardia and cardiac arrhythmias caused by the drug, no direct effects of aconitine on the central nervous system have been demonstrated as yet. A weak local anaesthetic effect of the tincture of aconite explains its past usage in the treatment of local pain, now outdated because of a highly unfavourable therapeutic index (that is, the low efficacy and high toxicity of its active principles). This pain-killing action is the subject of an intricate passage in the ninth Book of the *Historia Plantarum*, where Theophrastus attributes to wolf's-bane the ability to 'produce no sensation' (ὀυδεμίαν αἴσθησιν ποιεῖν) when the plant is compounded 'in a certain manner' unknown

⁵⁷ See, for example, P.A. Mattioli, *Commentarii in sex libros Pedacii Dioscoridis Anazarbei de Materia Medica*, Venetiis: V. Valgrisio, 1565, 484, 1017-1020, 1080-1095 pp. Unlike 'natural philosophers', practicing physicians were most often unable to identify even common plant species. See S. Toresella and M. Bettini 'Gli erbari a impressione e l'origine del disegno scientifico' *Le scienze*, 5 (1988), 64-78.

⁵⁸ For Greece, see Theophrastus, *Enquiry Into Plants*, Transl. by A. Hort, Cambridge: University Press, and London: Heinemann, 1926: vol. II, 299-303. For Rome, the *Lex Cornelia de Sicariis et Veneficiis*: 'Alio senato consulto effectum est ut pigmentarii, si cui temere cicutam, salamandram, aconitum, pituocampas, aut bubrostim, mandragoram, et id, quod lustramenti causa dederint cantharidas, poena teneantur huius legis.' Digesto, 48, 8, par 3 (we thank Dr. Danilo Del Gaizo, Avvocatura Generale dello Stato, Italy, for providing us with this reference).

⁵⁹ F. Hoefler, *Histoire de la Chimie*, Paris: Didot, 1866: 217-223; P. Camporesi, *Le officine dei sensi* (footnote 41), p. 127.

⁶⁰ *Medicorum Graecorum Opera*, edited D.C.G. Kühn, vol 26, C.Sprengel (ed.), Lipsia: C.Cnobloch, 1830: p. 22.

to physicians.⁶¹ Theophrastus gives no further details either on this 'certain manner', or on the people who knew about it, but from reading between the lines of the passage (unfortunately quite corrupted) one may surmise, as suggested by John Scarborough, that Aristotle's pupil was relating some kind of folk use of the plant.⁶² How drug-vendors (φαρμακοπώλαι) or root-cutters (ρίζοτόμοι), such as those attacked by the Hippocratic author of *On Sacred Disease*, might manage to reduce the violent toxicity of wolf's-bane remains unknown. One possibility is that, by treating the aqueous plant extracts with an alkali they were able to favour the hydrolytic cleavage of aconitine to the reportedly less dangerous but still active derivative, aconine.⁶³ Interestingly, the alkaline environment created by the presence of soot in Cardano's and Della Porta's ointments might have been sufficient to effect a similar reaction, thus decreasing the toxic potential of the salve.

In contrast to the effects produced by the violently poisonous *Aconitum* sp., those of *Sium* and *Potentilla* are mild and weak: the former, *Berula erecta* (Hudson) Coville, a marsh-dwelling *Umbellifera*, was described by Dioscorides as a diuretic and emmenagogue (very much like its congener, *Apium graveolens*); the latter, *P. reptans* L., a favorite of plant folklore, as we have said above, was attributed all sort of magical and purificatory powers. It was gathered following a complex set of practices, which involved the choice of a special day for collection (Thursday) and a ritual circumscription (περιγράφειν), that consisted in drawing one or more circles around the plant before collecting it, similar to that prescribed for the gathering of *Iris* and *Atropa*.⁶⁴ Beside its astringent properties, the genus *Potentilla* has no other known medicinal action.

Finally, the last two ingredients of potential pharmacological interest are: poplar leaves and soot. As we have suggested above, the inclusion of *frondas populeas* in Della Porta's recipe may have been prompted by Laguna's passage where the ointment used by the Nancy 'witches' is compared to the *unguentum populeum*. Whether this is the case or not, the rationale for the addition of fresh buds and leaves of poplar to a fat-based unguent is fairly clear: the antiseptic

⁶¹ Theophrastus, *Enquiry into Plants* (footnote 58), 299-301.

⁶² J. Scarborough, 'Theophrastus on Herbals and Herbal Remedies' *Journal of the History of Biology*, 11 (1978), 353-385.

⁶³ The reaction involves the stepwise hydrolysis of aconitine into benzoyleaconine (loss of acetic acid) and aconine (loss of benzoic acid). The Chinese *Aconitum carmichaeli* Debx is also submitted to a chemical treatment before use as a pain-killer, see C.P.Li, *Chinese Herbal Medicine*, J.E.Fogarty International Center for Advanced Study in Health Sciences, 1974, p. 48.

⁶⁴ Dioscorides, II, 154; IV, 42. On perigræfin, see A. Delatte (footnote 25) *passim*.

and antioxidant principles contained in this *Salicacea* could have helped prevent the process of fatty acid peroxidation, and would prolong the usability of the salve.⁶⁵ Likewise, the inclusion of soot may be attributed less to a direct pharmacological action of this substance than to its ability to enhance the passage of organic bases (such as the alkaloids contained in *Atropa belladonna* and *Aconitum* sp.) through intact skin and other mucosae. The positive ionic charge present on alkaloids at neutral pH hinders their penetration through the hydrophobic layers of the epidermis. However, a weakly alkaline environment is normally sufficient to neutralize this charge, and to allow diffusion of the active principles into the bloodstream. (The same pharmacokinetic principle is exploited by Peruvian coca chewers, who mix in their mouths the cocaine-containing leaves of *Erythroxylon coca* with alkaline cinders.)

By replacing A.J. Clark's poisonous *Conium maculatum* with the apparently innocuous *Apium graveolens*, by expunging the potentially hallucinogenic *Acorus calamus* from the ointment recipe and by showing that more than half of its possible plant components, including species belonging to *Iris*, *Potentilla*, *Sium* and *Populus*, could exert little or no action on the central nervous system, we have reduced much of the support for the hypothesis of mind-altering salves, which our testimonies initially suggested. If the inclusion of *Atropa* and *Aconitum* species is sufficient to guarantee the effectiveness of the ointments, as it appears from the results of our analysis, how are we to interpret the presence of the remaining plants? Should we conclude that Cardano and Della Porta had jumbled them up, perhaps with the merely intent of astounding the reader? (A practice which was not all that uncommon to the two scholars: so much that, with his usual vehemence, Giordano Bruno spoke of the Milanese doctor as a *rudis et amens fabulator* – an ignorant and brainless story-teller.)⁶⁶ Before subscribing to Bruno's harsh, but partially justified judgment, we need to take a step back and reconsider our working hypothesis critically. The 'deep sleep' in which people accused of witchcraft were found, and the 'wonderful things' they claimed to see during their temporary losses of consciousness, suggested the use of psychoactive agents. To search for such agents, the application of the notions of modern pharmacology appeared justified. However, the concept of 'pharmacological activity' is a historically determined one, extraneous to a premodern mind, for whom the choice of what substance should be considered

⁶⁵ M. Grieve, *A Modern Herbal*, New York and London: Hafner, 1967: 79.

⁶⁶ E. Garin, *Storia della filosofia italiana*, vol. 2, Torino: Einaudi, 1978: 627.

a drug was made less on the criteria of usefulness than of world-ordering. As Lévi-Strauss put it: for the 'primitive' mind '... animal and vegetal species are not known because they are useful: they are considered useful or interesting because they are known . . . The real question is not to determine if the contact of a woodpecker's beak heals toothaches or not, but, rather, if it is possible, from a certain standpoint, to make the woodpecker's beak and the man's tooth go together ... and by means of these associations of things, introduce a beginning of order within the universe'.⁶⁷

As a result, substances qualified by today's pharmacological sciences as biologically inactive (and rightly so) could legitimately belong in a medical preparation of the ancients, if they entered what we may call its 'semantic sphere'. For instance, if Hekate was an ambivalent goddess of the roads (especially of cross-roads), as her surname 'Evóδια implies, it is only natural that one of her favorite plants, the lunar *Arthemisia* (*Compositae*), probably *A. vulgaris* L. or *A. arborescens* L., should have prevented foot fatigue to the way-farer.⁶⁸ Likewise, a Mariological flower such as that of the *Aquilegia* sp. (*Ranunculaceae*) owed, at least partly, its use in Medieval gynecology to its association with the Holy Spirit announcing to the Virgin Mary the advent of her divine offspring.⁶⁹ (Space constraints oblige us to limit this list of examples, some of which are nevertheless of unexpected ethnobotanical and historical interest.)⁷⁰

A corollary of this view is that the very biological activity of certain substances could be seen as a *confirmation* or an *integration*, rather than a basis, of their cultural attributes. For instance, the hallucinogenic and analgesic properties of henbane (*Hyoscyamus* sp.) explain the most widespread of its ancient names, *herba Apollinaris* in the Latin-speaking world and *belenuntia* in the Celtic one, connecting it to the realm of religious divination pertaining to both Apollo and Belenos.⁷¹ But it is the Christianization of the name *Apollinaris* into *herba Santa Apollonia* that most likely accounts for the popularity of one of its uses, that of an analgesic in the treatment of toothaches. Apollonia, recalls Eusebius in his *Historia Ecclesiastica*, was a Chris-

⁶⁷ C. Lévi-Strauss, *La Pensée Sauvage*, Paris: Plon, 1962: 21.

⁶⁸ About Hekate/Enodia, see Pauli-Wissowa, *Real-Enkiklopädie*, s.v. Hekate.

⁶⁹ N. Schneider, *Les Natures Mortes*, Köln: Taschen, 1991: 135.

⁷⁰ The reader is directed to the old, but still useful reference works by A.de Gubernatis, *La Mythologie des Plantes*, Paris: C. Reinwald, 1878-1882, and by J.H.Dierbach, *Flora Mythologica oder Pflanzenkunde in Bezug auf Mythologie und Symbolik*, Frankfurt am Main: J.D. Sauerländer, 1833.

⁷¹ Pliny, *Naturalis Historia*, XXV, edited by J. André, Paris: Les Belles Lettres, 1974: 105; J.Grimm and W.Grimm, *Deutsches Wörterbuch*, Leipzig: S. Hirzel, 1860: vol. II s.v. bilse.

tian virgin from Alexandria of Egypt, who was martyred at the time of the emperor Decius (248 AD). While imprisoned, she was said to have suffered horrible tortures including the extraction of all her teeth. Logically enough, after her death and canonization, she was adopted as the Patron Saint of Dentistry and looked upon as the Protectress of those who suffered from toothache. An echo of the popularity she attained in this quality comes from the many representations that depict her carrying her own teeth in a plate, together with the tongs used to extract them (for example, in a painting by Sassetta, now in the National Gallery of Art in Washington, D.C.). With the help of homophony, the name of the Christian Martyr replaced that of the pagan god of Medicine and Divination – an interesting, but far from unique example of metamorphosis of prechristian beliefs – and the biological effects experienced with the use of the plant came to ratify the symbolic nature of the name. The combination of these two elements, empirical and symbolic, concurred to assure the complete therapeutic success of henbane.⁷²

It is clear that the nature of the psychotropic ointments whose traces we have collected here cannot be understood solely by taking into account the pharmacological potential of their ingredients. We need also to address the conceptual framework these plants were placed in by those who used them.

Thus, we will examine some cultural denominators shared by these plants, which may have set the stage for their association with Medieval witchcraft. To pursue this issue, we will move from the domain of ethnopharmacology to the history of plant symbolism and mythology. Before taking this step a clarification is called for. At the outset, one of our declared intentions was to search for an ‘objective correlate’ to the credence in the witches’ Sabbat. Doing so, we have come across what we interpret as the trace of ancient psychoactive salves, surviving in Medieval folk medicine from an apparently remote past. Now, in the attempt to explain fully the intriguing composition of these ointments we must return to that very ‘subjectivity’ of myth that we were trying to avoid. This step shows once more how ambiguous are the borders between the physical and the mythical in ancient culture, even in disciplines such as pharmacy or pharmacology, that are so deeply linked to the biology of the human species.

⁷² The persistence of these archaic schemes is remarkable; to this date, the smoke of henbane is used in the Roman countryside to cure toothache. According to those who make use of it, the efficacy of the remedy is so extraordinary that ‘one may see the worms run off the teeth’ (Prof. G. Pinto, University of Naples, personal communication).

In ancient Greek myth, the appearance of wolf's-bane is related by two distinct traditions. One, transmitted by Apollonius Rhodius (third century BC) and re-elaborated in Diodorus Siculus' *Bibliotheca Historica* (ca. 60-30 BC), attributed its discovery to Hekate, the chthonian goddess of Carian origin associated on one hand with Artemis – with whom she was often identified *tout court* – and on the other hand with sorcery and magical arts.⁷³ Moreover, the *Argonautica Orphica*, a work probably written in the fifth century AD, but which draws both from Apollonius and from other Orphic compilations, mentions an ἄκόνιτον among the medicinal and poisonous herbs found in Hekate's garden, where the uncanny goddess kept in custody the Golden Fleece.⁷⁴ According to an alternative tradition, when Cerberus was brought up to the upper world by Heracles, who had stolen the infernal watch-dog from the House of Hades, it was so enraged that it spread its saliva all around the doors of the Underworld (located not far from the Megarian and Boetian colony of Heraklea on the Pontus, on the site of the modern town of Ereğli). From its spittle was born the deadly *Aconitum*.⁷⁵

That a poisonous plant should be closely associated with the Underworld, as these traditions clearly imply, may not be particularly surprising. However, a comparable relationship with the Realm of the Dead cannot be demonstrated for any other poison known in ancient times, even widely employed ones. Among the number of lethal vegetal poisons described by classical authors, including hemlock (*Conium maculatum*), *herba sardonica* (*Ranunculus sceleratus* or *Oenanthe crocata*) and meadow saffron (*Colchicum* sp.), only the aconite displays such profound links with chthonic beliefs. This uniqueness suggests that at one point (but we do not know either when or why) wolf's-bane was preferred over other deadly plants to signify Poison *par excellence*. It was chosen to represent the quintessence of Hades and the helpless rage of Cerberus fallen into Heracles' hands.⁷⁶

Heracles himself, or rather one of his various incarnations, the one immortalized for example in Euripides' homonymous tragedy, had the

⁷³ Diodorus Siculus, *Bibliotheca Historica*, IV, 78; on Hekate see footnote 68.

⁷⁴ *Argonautica Orphica*, 910-924, transl. F. Vian, Paris: Les Belles Lettres, 1987: 141.

⁷⁵ Ovid, *Metamorphoseon*, VII, 405-418; Pliny, *Naturalis Historia*, XXVII, 4 ('Ortum fabulae aconiti narravere, e spumis Cerberi canis, extrahente ab inferis Hercule, ideoque apud Heracleam Ponticam, ubi monstratur is ad inferos aditus, gigni'). On the Anatolian origin of the aconite, see Strabo, *Geography*, XII, 58-59; Theophrastus, *Enquiry into Plants*, IX, 16, 5.

⁷⁶ This may have been an ancient Indo-European association, as suggested by the Sanskrit name of the aconite, *ativisha* ('supreme poison').

strong features of a chthonic hero. His voyage to the Underworld approaches him to Orpheus, with whom he also shares an association with the Mysteries of Eleusis, as well as a remarkable propensity for medicinal botany. Of these various characters, only the latter, Heracles' connection with botany, interests us here. It is apparently a strong connection, as judged, among other things, by the number of medicinal plants whose discovery (εὐρέσις) is attributed to the Argive hero.⁷⁸ Three among them are particularly noteworthy, because they are already familiar to us and relevant to our discussion. These are the poplar (*Populus nigra* L.), the henbane (*Hyoscyamus* sp.) and the celery (*Apium graveolens* L.) Thus, according to this tradition, reported by Plutarch and Macer Floridus, *Apium* and *Aconitum* were united, long before Cardano's recipe, by their mythical discoverer, Heracles, wherein their common chthonic nature found its expression.⁷⁹

An alternative tradition for the origin of *Apium* is related by Arnobius of Sicca in his *Adversus Nationes* (where he elaborates a legend already mentioned a century earlier by Clement of Alexandria).

We should also consign to oblivion – Arnobius writes – the Mysteries of the Corybantes, wherein this holy doctrine is related: a brother is slain by his brothers; from the blood of the victim the celery is born; serving this plant at table is prohibited, lest the Manes of the dead take implacable umbrage.⁸⁰

This succinct passage has several interesting implications. First, through the Corybantes and their congeners, the Kabiroi and the Kouretes, we find ourselves again in a Mystic setting, one that may even predate, according to Karoli Kerényi, the great Mysteries celebrated at Eleusis.⁸¹ Two salient features of the Kabiroi, the Corybantes and all of these male semi-divine counterparts of the Nymphs are, on the one hand, their membership in the entourage of the Anatolian Great Mother and, on the other hand, their peculiar relationship with

⁷⁷ Regarding the connection Heracles/Orpheus, see G. Colli, *La sapienza greca*, Milano: Adelphi, 1977, vol. I, 119, 203, 389 pp.; about Orphic botany, see J. Coman, 'Orphée, civilisateur de l'humanité', *Zalmoxis*, 1, 1938, 130-176; Heracles' connection with medicine: Pausanias, *Guide to Greece*, I, 34, 2; IX, 24, 3; useful information in *Dictionnaire des Antiquités Grecques et Romaines*, C. Daremberg and E. Saglio (eds.), Paris: Hachette, 1890, s.v.

⁷⁸ A complete list of the plants discovered by Heracles is given in J.H. Dierbach, *Flora Mythologica* (footnote 70) pp. 189-191.

⁷⁹ The chthonic and mystic connotation of the poplar is confirmed by Demosthenes' *On the Crown*, 18, 259-260.

⁸⁰ Arnobius of Sicca, *Adversus Nationes*, C. Marchesi (ed.), Torino: 1934, V, 19. Parallel passage in Clemens of Alexandria, *Protrepticus*, II, 19-20.

⁸¹ K. Kerényi, *Miti e misteri*, (Italian transl.) Torino: Boringhieri, 1979: 143-189.

madness (μανία). A scholium to Aristophanes informs us that the object of the Mysteries of the Corybantes was purification (καθάρ-μός) from μανία, which they claimed to cure by falling in a state of ecstasy through dance and music.⁸² Second, Arnobius' tale closely resembles the ancient Greek λόγος on the mythical birth of iron. In that case too, the corpse of one of the brothers Corybantes (or Kabiroi), buried in the depths of a mountain, engendered the powerful but potentially dangerous (and therefore ambiguous) metal.⁸³ The analogy suggests that, like iron, wild celery may have been considered an ambivalent product of the Underground, useful (because edible) and pharmacologically active (most likely as an abortifacient), but deadly if misused. Moreover, the plant's favorite habitat, marshes and swamps, must have contributed to its reputation as a borderline creature: wet lands were traditional boundaries between Upper and Nether worlds; frontiers, sacred to both Artemis and Poseidon, where the opposing realms of the Alive and the Dead coexisted and interacted.⁸⁴ In this same habitat, so dense in stratified meanings, grow two other ingredients of Della Porta's recipe, *Iris pseudacorus* and *Berula erecta* (Hudson) Coville, whose presence in the 'witches' ointments' finds no plausible justification in their anodyne pharmacological properties.

The ancient Greek tales of the birth/discovery of *Aconitum* and *Apium* lead us into a network where all references point to a connection with the Realm of the Dead. Were these beliefs spread in Classical times? And if so, among what strata of the population? Did they survive the long agony of the Ancient world? Through what semantic metamorphoses? Of course, we have no answers to these questions. Yet, it is intriguing to see that, many centuries after Diodorus and Arnobius, when Cardano wrote his *De Subtilitate*, the names of these two plants were still associated to each other, and linked to a chthonic figure, that of the witch.

The pathway that starts with the nightshade and takes us to witchcraft and the Underworld, is a devious one. It begins with its very name, Belladonna.

⁸² H. Jeanmarie, *Dyonisos. Histoire du culte de Bacchus*, Paris: Payot, 1951: 132-134.

⁸³ M. Eliade, *Forgerons et Alchimistes*, Paris: Flammarion, 1977: 58-59.

⁸⁴ M. Nilsson (footnote 9), vol. 1, pp.451-453; J.P. Vernant, *La Mort dans les Yeux*, Paris: Hachette, 1985, passim.

The Deadly Nightshade – wrote the English botanist, John Ray, in the second half of the seventeenth century – is called *Bella Donna* by the Venetians and by other Italians because women use its juice to prepare a pomade, which they lubricate their face with, to make it look paler . . .⁸⁵

Ray's attempt to provide a rational interpretation to what must have appeared to him a blatant misnomer – *Bella Donna* (= beautiful woman) to a plant of unpleasant aspect and poisonous properties – was already questioned in 1745 by Jean-François Séguier, who, being unable to find in Renaissance Cosmetic treatises any trace of this alleged use of *Belladonna* as beauty-aid, argued in favour of a greater antiquity of its name, and of an altogether different etymology.⁸⁶ Furthermore, among the many means used by Renaissance women to whiten their faces, we read in contemporary texts that a host of substances including white lilies, lead monoxide or even mercury sublimate were commonly employed, but we find no mention of the nightshade or of any similar plants. Likely, Ray's etymology was prompted by a mistranslation of the old Italian *donna* as 'woman', as opposed to the correct 'mistress' or 'lady'.

The herb *Bella Donna* was a Beautiful Mistress, then, not just a beautifying plant. But why Mistress, and Mistress of what? An intriguing analogy may provide a clue to this question. In Rumanian folklore, *Atropa belladonna* is considered a magico-medicinal plant which brings health, wealth and fertility. During its collection, surrounded by a complex series of ritual precautions, the plant is personified and addressed to by the person who gathers it as 'Doamna Buna' (Good Mistress) or else as 'Mistress of the Forest', 'Great Mistress', 'Herb of the Forest', 'the Empress' and 'the Empress of Herbs'.⁸⁷ Thus, it appears that two distinct folk traditions, Italian and Rumanian, recognize in one of the most powerful psychoactive herbs found in European countryside a Mistress of the woods, a Lady of the vegetal world.

This can hardly be a coincidence. Likewise, it is difficult to consider fortuitous that a series of analogous names were used to designate a family of female genii who dwelt in European woods and streams: from the Sicilian, 'Belli Signuri', (Beautiful Ladies), whose believers were persecuted by the Holy Office starting from the second half of 1500, to the Irish fairy, 'Béfinn' (Beautiful Woman), who could transform herself into a raven to bring help to her son Fraêch in peril,

⁸⁵ J. Ray, *Historia Plantarum*, London, 1686-1704, p. 679.

⁸⁶ J.F.Séguier, *Plantae Veronenses*, Veronae: Typis Seminarii, 1745: 132-133.

⁸⁷ M. Eliade, 'The Cult of Mandragora in Romania', in *Zalmoxis, the Vanishing God* (English transl.) Chicago and London: University of Chicago Press, 1972: 204-225.

passing through the 'Beautiful Lady/Great Lady', queen of the Neo-Greek Nymphs. These feminine chthonic spirits of nature, endowed with the power to heal and to divine, mothers of remarkable mortals (Epimenides, the Cretan root-cutter and purifier, was the son of a Nymph) and mortal themselves, were often confused with the witches, upon whom the very same name, Beautiful Ladies, was bestowed.⁸⁸

This picture does not change substantially if we move from Southern to Northern Europe. There, the various names of *Atropa belladonna* (*alrune* in Old Norse, *alrûna* in Old High German, *alrûne* in Old French, etc.), evidently share a common linguistic root. An association has been suggested between this family of words and the Old Norse *rûn* corresponding to Old English and Old High German *run* (= secret, whisper, and lastly the incised character used by ancient Germans for divination). The derivation of *alrûna* from a contraction of the Old Norse *ala-rûnar* (birth rune) has also been proposed, suggesting a connection between Nightshade and Northern divinatory practices.⁸⁹ This subject is beyond the scope of the present study: what matters here is that the very same word, *alraun*, is again used interchangeably to term both a psychoactive *Solanacea* and a group of magical female spirits of the forests:

For the ancients Goths, Alrumna was a conjurer or a sorcerer . . . – wrote R. Argentine in 1568 – whom they also called Hellerumna, that is, who speaks secretly with the Underworld and the Devils, hence the herb Mandrake is also termed hellerumna.⁹⁰

In our language this plant is called Alraun, or Alrun – explained J. Thomasius in his *Dissertatio Philologica de Mandragora*, written in 1739 – without any doubt this name derives from those old sage women, whom Jordanes affirms are called Aliorunas by the Goths.⁹¹

Thus, distinct linguistic groups and diverse folk traditions throughout Late Ancient and Medieval Europe linked a mind-altering herb of the *Solanaceae* family with a host of magical female beings, connected to the bordering worlds of death, healing and divination – assimilated

⁸⁸ About Sicilian Belli Signuri, see C. Ginzburg (footnote 1), 99-101; on Béfinn, see J. Markalé, *Le Druidisme*, Paris: Payot, 1985: 105; on Greek Nymphs, see M.P. Nilsson, *La Religion Populaire dans la Grèce Antique*, (French transl.) Paris: Plon, 1955: 25-29.

⁸⁹ J.E. Talley, 'Runes Mandrakes and Gallows', in *Myth in Indo-European Antiquity*, G.J. Larson (ed.), Los Angeles and London: University of California Press, 1974: 157-168.

⁹⁰ R. Argentine, *De Praestigis et Incantationibus Daemonum et Necromanticorum*, Basileae, 1568; see also C. Du Cange, *Glossarium Mediae et Infimae Latinitatis*, Paris: Didot, 1840, s.v. *alraunae*.

⁹¹ J. Thomasius, *Disputatio Philologica de Mandragora, von der Alraun-Wurzel*, Halae Magdeburgicae: Litteris Hendelianis, 1739, cap. 1, par. 5.

by the Medieval imagery, and later by the Holy Office, with the figure of the country sorcerer. The great antiquity of this association may now only be surmised, and its origins and development are lost to us.

The pharmacological properties of the deadly nightshade confirm its chthonic nature. We have seen that the ability to metamorphose was a distinctive feature of the Medieval witch, a trait which modern researchers have linked to other archaic folk credences and practices, such as ritual masking. The transformation of men into wolves belongs to this category of beliefs. While referring the interested reader to the large body of literature published on this subject,⁹² we need to underline here two important points. First, before the fifteenth century, werewolves were considered innocent victims of a mysterious illness (like epileptics) rather than the diabolic and blood-thirsty creatures depicted later by the inquisitors (who came to identify them with the witches). Second, some key features of their condition (ability to fall into a ecstatic trances, shape-shifting, night revels and philtering, participation in battles for fertility) assign them to a group of folkloric figures, to which the witches also belong, pertaining to the neighbouring domains of Death and Fertility.⁹³

If lycanthropy was an illness, what were its medical symptoms? We are informed of them by a passage of Paulus of Aegina, physician and medical author of the seventh century:

Those who are enchained by lycanthropia, having left their houses at night-time, act in everything like wolves and, frequently, wander around cemeteries until day-break. These are the signs that accompany them: a pale face, dry eyes incapable of seeing, parched tongue, no saliva in the mouth, excessive thirst...⁹⁴

This curious syndrome of 'inner burning' is reminiscent of the unextinguishable thirst of the revenant dead, to whom werewolves are related, and finds confirmation in the numerous stories on superhuman drinking feats by night-going werewolves.⁹⁵ Surprisingly, though, closer to Paulus of Aegina's account than any folk tale are modern descriptions of nightshade poisoning.

⁹² C. Ginzburg (footnote 1), pp. 130-160, with bibliography; M. Eliade (footnote 41), pp. 1-20; G.B. Bronzini, 'Il lupo mannaro e le streghe di Petronio', *Lares*, 54 (1988), 147 ff.

⁹³ C. Ginzburg (footnote 1), pp. 130-160.

⁹⁴ P. Aegineta, *Opera*, Lugduni: G. Rovillium, 1566: 253.

⁹⁵ C. Ginzburg (footnote 1), pp. 130-160.

The first manifestation is an almost immediate sensation of dryness and burning of the mouth. Talking and swallowing become difficult or impossible. There is intense thirst. Blurred vision and marked photophobia reflect the pupillary dilation and loss of accommodation. The skin becomes flushed, hot and dry. Tachycardia and fever develop, the temperature sometimes rising to the alarming height of 42.8 °C (109 °F) in infants. The heart rate may, however, not rise unduly in infants and old people. The desire to void urine is present, but there is difficulty in doing so. These signs and symptoms are often accompanied by marked confusion and muscular incoordination. Mania, delirium and frankly psychotic behavior may develop and continue for hours or days.⁹⁶

Obligated to avoid sunlight and to wander restlessly at night-time (*photophobia*), the werewolves act in everything like wolves (*muscular incoordination, mania and delirium*), their face pale (*tachycardia, insufficient cardiac output*), their eyes weak and dry (*loss of accommodation, blurred vision*), their mouth parched and hot (*dryness and burning of the mouth, intense thirst*). The close, virtually one-to-one correspondence between the signs of atropine poisoning (or, more precisely, of cholinergic blockade) and those attributed to lycanthropy by Paulus of Aegina is further strengthened by the uniqueness of the former's clinical appearance.

Identified by its name with the nymph/witch, nightshade is identified by its pharmacological actions with the revenant/werewolf. This network of reciprocal recalls is too intense to be merely coincidental. Rather, it prompts a unifying hypothesis: the psychotropic properties of the Belladonna alkaloids opened up, in their own limited and treacherous way, the doors to the perception of a different world, which could readily become, in the spirit of a premodern culture, the Other World. But the ability of nightshade to prefigure the Realm of the Dead was not limited to that. At high doses, its active principles could also mimic some of the most striking characteristics attributed by the ancients to the revenants: inextinguishable thirst, blurred vision, photophobia. Those who used the poisonous *Solanacea* (that is, those who knew how to use it safely) were not only able to *see* the Netherworld, but also to *become a part of it*. By this, we do not wish to suggest that the use of nightshade may 'explain' beliefs in the Under-

⁹⁶ J.M. Arena, *Poisoning: Toxicology – Symptoms – Treatments*, Springfield: Thomas, 1974: 345-346. Earlier descriptions of Belladonna poisoning do not differ significantly from modern ones. See, for example, J.M. Faber, *Strychnomania*, Augustae Vindelicorum: T. Goebel 1677, 19 p. ('Quidam scriba emit succus inspissatum pro Rob. Sambucino, et cum cochleare plenum deglutivisset, sensit se insigniter debilitari. Oculi obtenebrati, tanquam per nebulam, viderunt: mens hallucinata est, ut etiam sciens non potuerit sibi temperare ab incongrue dictis, et deliriis. Manus, imo totum corpus concussum tremuerunt, pedes quasi spasmus inter digitus senserunt. Metuit sibi ab Epilepsia prae concussionem. Oculi visi sunt ex orbitibus suis exprimi. Siccitatem in alvo, oesophago et cerebro percepit . . .').

world. Rather, that, in different times and places, the biological activity of this plant, by far the most effective psychotrope in Europe, could have come to confirm beliefs which were already shaped, or in the process of being shaped, possibly contributing to their mythopoietic process.

Did such a thing as a 'witches' ointment' ever exist? We know now that, put in these terms, this question is unanswerable, as would be the question 'did witchcraft ever exist?'. The same heterogeneous elements that made up the image of the witch – the beliefs of the folk, the fear of the powerful – we can find in the making of her ointment. The inquisitors did not invent it, nor did they borrow it from the pages of Apuleius of Madaura,⁹⁷ as they had not invented any other of the credences, rituals and ancestral habits which they gathered under the name of *heresis strigiatus*. Looking at some odd herbal folk recipes, the Inquisition forced them into its own image of the *lamiarum unguentum*, and transformed them, distorted them to the point of making them almost unrecognizable. But not completely. We have attempted to demonstrate that a faint echo of their original spirit survived, enough at least to allow us to reconstruct their contours. More than just folkloric homologues of the *unguentum populeum* (with which they shared some therapeutic uses), these salves were a coalescence of heterogenous and archaic chthonic beliefs. More than quacks' philtres, they were able to produce from a host of psychoactive effects – which we may call their 'objective nucleus' – whose secret was transmitted orally by an anonymous crowd of Medieval root-cutters. The efforts put by the Inquisition into equating these psychoactive salves with the 'witches' ointments', was part of the Church's program to Christianize the natural world, on the one hand, and to construct the image of witchcraft as a heretic unit, on the other.

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⁹⁷ Apuleius, *Metamorphoseon*, III, 21.