Plant Series, No. 1. Manuscript MS408. Portfolio 2, Left (JPEG 004). Gerard E. Cheshire.

Abstract.
The plants individually described in Manuscript MS408 have all been identified as species from the environs of the Mediterranean Basin, in accordance with the location of origin for the manuscript. This series of papers presents each plant species separately with a translation of its accompanying text and any relevant cross-reference information. In addition to the linguistic value, there is plenty of historical, cultural and scientific knowledge to be gleaned from each of these manuscript pages, so they will be of interest to scholars from various disciplines.

Manuscript MS408 originates from Castello Aragonese, Ischia. It was written as an *aide-memoire* for Maria of Castile, Queen of the Crown of Aragon, c. 1444, whilst her husband, Alfonso V, was conquering the City of Naples. The manuscript remained in the castle library until 1912 when the citadel was sold into private hands by the Italian government and its contents were removed and traded off. Two years later the document found its way out of Italy and the nation unknowingly lost an important part of its heritage.

Within the manuscript there is a series of illustrations of medicinal herbal plants with accompanying text. This project identifies the plant species and translates the text to reveal the information imparted by the author and artist of each entry. The algorithmic method, of priority array queuing, was used to translate and identify the words in the text, as described in the following paper: https://ling.auf.net/lingbuzz/004653 The method takes Latin as the principal source, with Old and Modern Romance as the secondary and tertiary sources. We can see that the language is placed somewhere between Latin and Romance in linguistic evolutionary terms: i.e. it is a vestigial form of prototype Romance.

Palaeography from historic languages and writing systems is never an exact science, especially when both are unfamiliar, but the subsequent transliterations into English phrasing provide adequately legible intention of meaning. In addition, many of the words are unambiguous in their Latin root and the text cross-references with botanical and medicinal information about the plants described in the images, so serving to verify the methodology.

The plant images are naïvely and inaccurately drawn and coloured, as the artist was untrained and should be viewed as simplified cartoon representations rather than anatomical illustrations. The images also focus on the relevant medicinal or culinary parts of the plants, so that the specimens are often incomplete, disproportionate, unscaled and shown in varying stages of development from young seedlings to mature plants in seed. A few of the images also contain additional pictorial information or annotations to highlight particular points for identification.

Some of the plants would have been grown in the physic and vegetable gardens of Castello Aragonese or else collected from Ischia island. Others would have been purchased from herbal plant suppliers travelling from mainland Europe, as dead specimens collected in the field and preserved by desiccation. Tinctures and essential oils would also have been available for purchase. It is apparent that the illustrations essentially function in substitution for the plant names, simply because scientific names were not yet conceived, and common names would have varied regionally. So the combination of visual and written information was intended to enable the reader to identify the species and use them for medicine or food accordingly.

Plant No. 1. species:

Mediterranean Nightshade. *Atropa baetica.*
This plant is very similar to the better-known Deadly Nightshade (*A. belladonna*) except that is grows with an erect and shorter stem, rather than vining, and its leaves are yellowish. The black berries are also borne separately rather than in groups. Its roots are podial (foot-like), growing laterally to suit shallow soils, with many hair-like secondary roots for absorbing scarce moisture. Otherwise, it is much the same and was used historically for cosmetics and medicines in exactly the same way as *A. belladonna*, as it shares the same

alkaloid toxins[1], only in higher concentrations. It also has a long history as an abortifacient herb: i.e. to cause deliberate miscarriage and abortion. However, this use frequently had fatal consequences for the unfortunate patient. Nevertheless, it was common practice to terminate pregnancies in this manner, as attempts at contraception were not effective in the 15th century.

The roots are the most poisonous part of the plant, which is why they are drawn zoomorphically as the paws of a lion with extended claws, to denote their potentially lethal nature. As a cosmetic the plant extract was applied to the face, causing reddening of the skin, which was considered desirable, and to the eyes, causing dilation of the pupils, also considered attractive. The plant has a sweet floral aroma too, which was an additional benefit. As a medicine, the berries, leaves and roots were variously used in small doses as a cure-all: i.e. analgesic, sedative, diuretic, antihidrotic, antispasmodic, anti-inflammatory and spiritual hallucinogenic. As such, the plant was extremely highly regarded and valued, especially for gynaecological treatments, which is why it comes first in the manuscript. It was the 'go to' plant for many therapies. As Queen Maria was herself Spanish, then she would have been very familiar with *A. baetica* and kept samples in her apothecary cabinet at Castello Aragonese, so that she and her court could be treated when necessary. Historically the plant was known in Iberia by the name 'tabaco gordo' from the Arabic word 'ṭabāq' (طَبَاق), meaning a kind of medicinal herb, and the Spanish word 'gordo', meaning both loved or highly regarded, and dazed or stupefied, due to its pleasantly potent effects on the mind and body as a drug.

The genus name 'Atropa' (Linnaeus, 1852) alludes to Atropos, one of three Greek Moirai (goddesses of fate) who decided whether people lived or died. The species name 'baetica' (Wilkomm, 1875) alludes to the Baetic System of mountains in southern Spain, as that is the remaining stronghold of the plant, which has been hunted to extinction elsewhere due to its highly prized qualities. It is now on the IUCN Red List as 'Endangered'[2] with fewer than 150 known plants surviving in the wild.

Translations & transliterations.

1. *léta* [killer, slayer. Latin] *é o* [it's the. Portuguese] *naus* [food, eaten. Vulgar Latin] *or* [is, now. Italian] *ormé ea* [it's mark. Italian] *éas* [result. Latin] *e que as* [it is that. Portuguese] *asa* [v. ara. path. Latin]

It's a killer when eaten, that is the mark it leaves from taking that path.

2. *a meia* [v. meio: a little bit. Portuguese] *é as* [it's the. Portuguese] *os* [we. Spanish] *oé a* [what is. Portuguese] *néo* [new, young. Latin] *r* (recta) [rectify Latin] *lona* [worn, ageing (like an old sail). Old Portuguese] *olo* [v. oleō: betrayed. Latin] *nas* [in her. Portuguese] *éo na* [and onwards. Latin]

   Note: The use of the term 'lona' to describe aging, like a worn sail, is still used in Brazil, as the Portuguese tongue has retained many archaic idiosyncrasies in relative isolation.

   Note: The abbreviation 'r' (recta) is a standard Latin phrase to mean 'rectify' or 'put right'.

A little bit we use for a younger face, to rectify she who is betrayed by ageing.

3. *no* [for the. Portuguse] *elea eleo elea* [v. ellea: boy, elleo: girl. Latin] *æa* [ea: they. Latin] *n l* [non licet: not allowed. Latin] *æ ei a* [as to the. Latin] *emea* [procures. Latin] *lo méona* [the people. Portuguese] *nar* [abb. naraka: dead, hell. Latin, from Sanskrit].

For the young boys and girls it is not allowed, as for those people it brings death.

4. *nar* [death. Latin] *éoleo* [oil. Latin] *nais* [birth. French] *nasa* [v. nassa. trap. Latin] *to é ea lona* [on it is a cloth. Portuguese]

   Note: The plant was often distilled in order to acquire its essential oils in pure form.
   Note: Here, the word 'lona' is used in its literal sense to mean calico or canvas – sail cloth.

It is used as a death-trap oil for unwanted births when applied with a cloth.

5. *pomoa* [pomo + a: that of the berry, fruit: extract, substance, medicine Latin] *æ or* [in the now. Portuguese] *nais* [birth. French] *epe* [term. Galician] *o ar nas* [of air in her. Portuguese] *éia mona* [her genitalia: Italian] *o m* [omni mane: every morning. Latin] *o aus* [of below. French] *æo æa* [it he, it she. Latin]

   Note: The abbreviation 'o m' (omni mane) is a standard Latin phrase meaning 'every morning', just as 'o n' (omni nocte) means 'every evening'.

When in birth-term (pregnancy) apply the medicine in the naked vulva every morning to it (the baby: he/she) below.

6. *éo la* [and the. Galician] *éor* [sister. Latin] *emeo* [acquire. Latin] *r* (recta) [rectify. Latin] *æ or* [in the now. Portuguese] *o lar* [of the home, dwelling, chamber. Latin] *nor* [who. Galician] *éia* [her. Italian] *éo no* [and in. Portuguese] *ror* [red dew: blood. Latin] *éa* [so. Latin] *emea* [procures. Latin]

   Note: The word 'ror' is a Latin figurative term for menstrual blood – 'red dew' or 'red fluid'.

And our sister will now acquire to rectify it in her chamber by producing a bloody miscarriage discharge.

7. *do* [of, from. Portuguese] *or* [now. Italian] *éo eit* [and the. Portuguese] *é* [is. Portuguese] eor [their. Latin] *nor* [who. Galician] *emeia* [acquired. Latin] *alor* [nourish. Latin] *nor* [who. Galician] *noro* [v. nuero: clouded, fatigued, exhausted. Latin] *alor* [nourish. Latin] *nor* [who. Galician] *éo na* [and onwards. Latin]

Now she needs to acquire nourishment to feed her exhaustion.

8. *olor* [an odor, scent. Spanish] *æ or* [in the now. Portuguese] *lor* [to them. French] *le éa* [that one. Galician] *éor* [sister. Latin] *la éor* [the sister. Latin] *eme or* [acquire now. Latin] *éo na* [and on. Portuguese] *éor* [sister. Latin] *naus* [food, eat, Vulgar Latin]

9. *æ os olor* [to we smell. Spanish] *éor* [sister. Latin] *nor* [who. Galician] *la nas* [that in her. Portuguese] *æ or* [at the moment. Galician] *néos* [fresh. Latin] *o méo* [to pass. Latin] *nas* [in her. Portuguese] *éo na* [and onwards. Latin]

10. *maos* [hands, grip, fist. Portuguese] *é o* [it's the. Portuguese] *méia nar* [half-death. Portuguese, Latin from Sanskrit] *éo na* [and on. Portuguese] *t* [terminus. Latin] *éo na* [and onwards. Latin] *por éo nas* [for and in her. Latin]

We can smell the odour of our sister, but she will have a fresh scent as she eats and continues to recover from the grip of half-death.

The information provided by the text is clear enough. In precis: It warns of the potentially lethal nature of the Mediterranean Nightshade plant, especially to children, but then mentions its usefulness as a rejuvenating cosmetic. The text then describes its use as an abortifacient by inducing miscarriage but also coming close to killing the patient in the process.

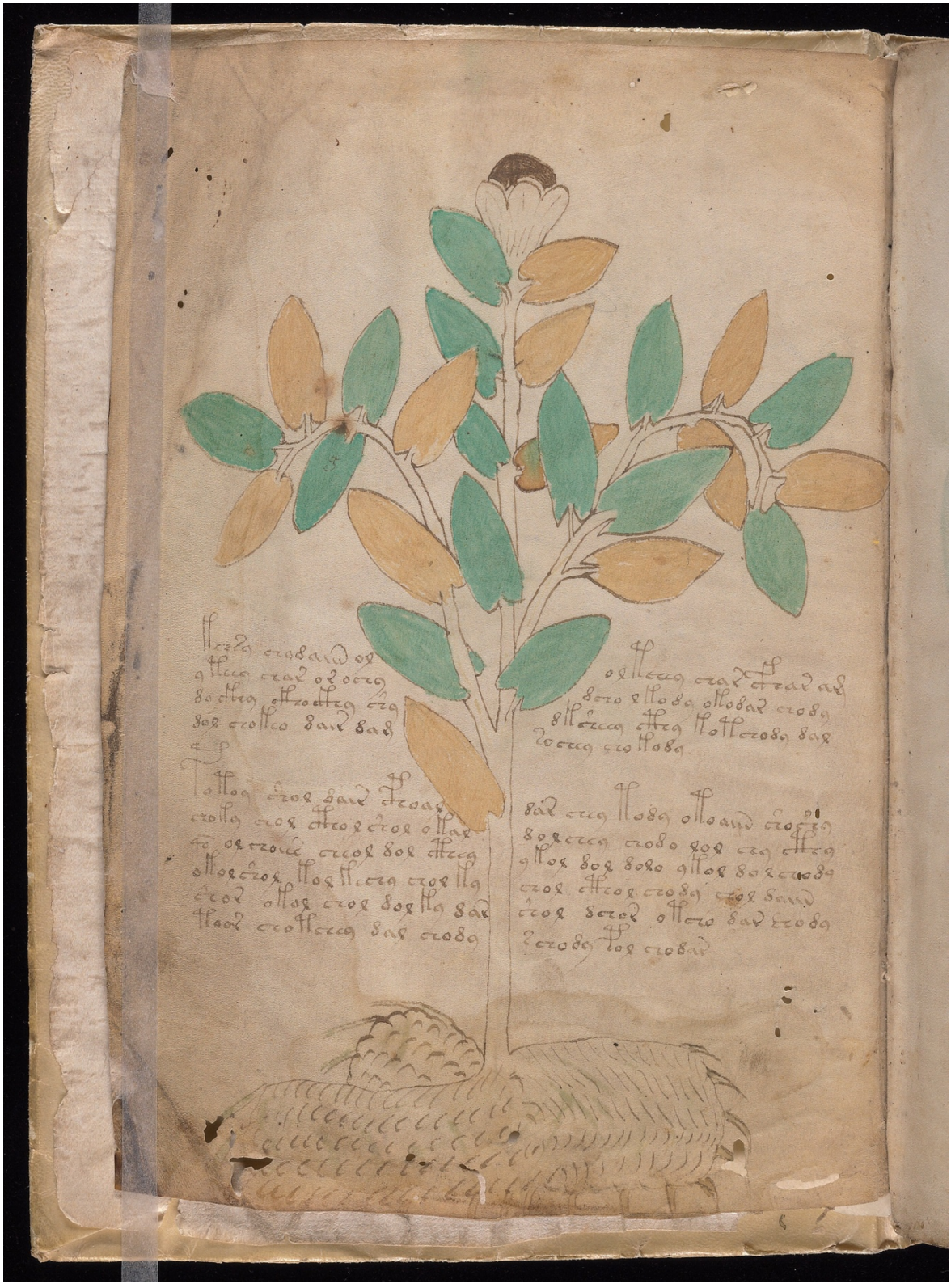

Fig 1. Portfolio 2. Left. Mediterranean Nightshade (*Atropa baetica*) manuscript page.

Fig 2. Mediterranean Nightshade (*Atropa baetica*) – living specimens.

Fig 3. Mediterranean Nightshade (*Atropa baetica*), 19th century tinted engraving.

Figure 1. shows the image of Mediterranean Nightshade (*Atropa baetica*) in the manuscript, and Figure 2. shows the plant growing in its natural setting. Figure 3. shows an antique engraving of the plant in flower[3] by the scientist who named the species; German botanist Heinrich Moritz Willkomm. This species of *Atropa* has a self-supporting stem, as it grows in barren mountainous terrain where there are few other plants suitable to lean on. By comparison, Deadly Nightshade (*Atropa belladonna*) has a longer vining stem, as it uses other plants for support in woodland. We can also see that the leaves have a different hue above and below, as shown in the manuscript image: dark green and pale green respectively.

It is interesting to note that the engraving uses a specimen of *A. baetica* from the Balearic Islands in the Mediterranean Sea, where the plant is no longer found, demonstrating that it was once more widespread even in the 19th century, before the, aforementioned, human exploitation reduced its range to the places most difficult to reach. Also, the fact that the essential oils of the plant were available makes it clear that large quantities were once harvested for distillation.

The indications are that Mediterranean Nightshade was originally quite frequent in the more arid maquis habitats of the Mediterranean Basin, where Deadly Nightshade does not naturally grow, as the two have speciated to suit different ecological conditions. Indeed, hybrid specimens have been recorded in places where populations of the two closely related species happen to overlap[4].

Citations:

1. Tropane Alkaloid Distribution in *Atropa baetica* Plants. Zárate, R., Hermosin, B., Cantos, M. et al. *J Chem Ecol* (1997) 23: 2059. https://doi.org/10.1023/B:JOEC.0000006489.76006.cb
2. IUCN Red List: Atropa baetica. https://www.iucnredlist.org/species/162391/5584908
3. *Illustrations of Flora from the Spanish Balearic Islands* [Illustrationes Floræ Hispaniæ Insularumque Balearium]. Vol. 2. Tableau 170 [CLXX]. (1881-92). Heinrich Moritz Willkomm. Libraria de E. Schweizerbart & E. Koch. Stuttgart.
4. *Atropa baetica*: Wikipedia entry. https://en.wikipedia.org/wiki/Atropa_baetica

Further reading:

1. The Language and Writing System of MS408 (Voynich) Explained. https://www.tandfonline.com/doi/full/10.1080/02639904.2019.1599566
2. Linguistic Missing Links. https://ling.auf.net/lingbuzz/003737
3. Linguistically Dating and Locating Manuscript MS408. https://ling.auf.net/lingbuzz/003808
4. Consonants & Vowels, Castles and Volcanoes. https://ling.auf.net/lingbuzz/004381
5. The Algorithmic Method for Translating MS408 (Voynich). https://ling.auf.net/lingbuzz/004653

Symbol-Italic key for MS 408.			
Symbol	Italic	Symbol	Italic
	a (trapped)		a (free)
	ais		aus
	æ (ae, a, e, i)		d
	e (short)		e’e (intonation)
	é (long)		i
	l (ll)		ele (elle)
	m (mm)		eme (emme)
	n (nn)		o
	p (pp)		epe (eppe)
	qu		eque
	r (rr)		s/z (ss, zz)
	s/z (ss, zz)		sa/za
	t (tt)		ta
	u		v, f, fv, ph, pv