

The Devil's Apples

J. Cule

Summary

The magic of the Mandrake grew with the passage of time. Elusive in its origins, where its associations lay with the age-long mysteries of love, its potency lingers on through the medicine of the Middle Ages, then beyond the Renaissance to find an historical mention even in the mid twentieth century physicians' vade mecum, Martindale's Extra Pharmacopoeia. (1)

But before it is stripped of its more dramatic pretensions to stand revealed, there are romantic byways to explore, where it has played a role as powerful as its pharmacological properties; and these are real enough. Its nature is of the essence of mediaeval medicine. Its first secrets were those of love and fecundity and sleep. Sterile marriages were anathema to the Jews. What better authority to search for the means of their correction could be found than in The Bible itself, which records the success of the Mandrake in promoting fertility, when every other subterfuge had been exhausted.

Résumé

Le génie de la mandragore n 'a fait que croître au cours des temps. Son origine est insaisissable mais on la retrouve depuis longtemps associée au mystère de l'amour et à l'Art de guérir, surtout au Moyen Age et à la Renaissance, voire au-delà, avec même une note dans la pharmacopée de Martindale.

Mais avant qu'on ne la prive de ses prétentions, il faut rappeler la dimension romantique de la mandragore qui a joué un rôle aussi significatif que ses propriétés pharmacologiques. Ses premiers secrets étaient l'amour, la fécondité et le sommeil. Les mariages sans enfant étaient l'objet d'anathème chez les juifs et la Bible la cite comme traitement. Qu'espérer de mieux pour en faire la promotion même dans les infertilités réfractaires ?

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*There will I give you my love,
when the mandrakes give their perfume,
and all rare fruits are ready at our door,
fruits new and old
which I have in store for you, my love.
Song of Songs I 12,13. New English Bible*

*Dr. John Cule, Abereinion, Capel Dewi, Llandysul,
Dyfed SA44 4PP, Wales, Great Britain*

All the wiles of the sisters Leah and Rachel, given in marriage by their father Laban to their Uncle Jacob, had to be summoned to overcome the reproach of Rachel's barrenness.

There had already been some strange attempt at deception at the very beginning of the story, when Jacob, who thought he had been married to the beautiful younger Rachel, found

- **Fig.1. Mandrake from Anglo-Saxon Herbal.**
 With acknowledgement to The Wellcome Institute Library, London.

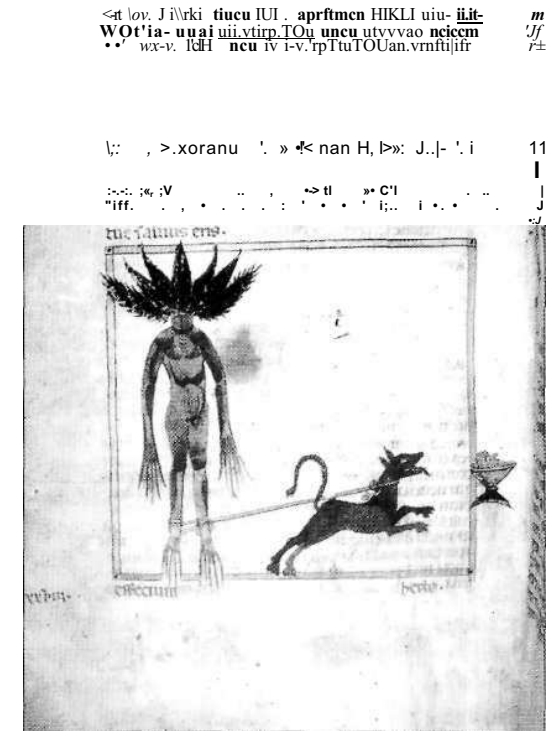
the elder and less attractive Leah in his nuptial bed the next morning. (He does not seem to have noticed it sooner !) His brother Laban, father of both the bride and of her sister, readily explained this flagrant substitution by saying that it would not have been right for the younger Rachel to have been married first.

Underhand as this deceitful complicity may have been, (though one must admire Laban's insouciance) one cannot help feeling that Jacob himself must have been both a little insensitive - and either careless or undiscerning - in his belated failure to recognise his bedmate. Perhaps he had been working too hard on completing the seven year contract, which had been insisted upon by his brother as the price for his chosen bride, and so had possibly retired exhausted on the wedding night.

'No matter', said Laban, 'just promise to do another seven years labour, sign here and I'll let you have my other daughter Rachel as well,' - adding rather generously - 'after you've put in the first week's work'. (2)

It will occasion the reader no surprise to learn, after this inauspicious beginning, that Jacob did not spend all his nights with Leah, once the well-favoured Rachel also joined to him in lawful wedlock and in the marriage bed. But he was not a man to bear a grudge and he did spend enough time with Leah to beget Reuben, Simeon and Levi. Meanwhile Rachel herself remained barren despite, most probably, Jacob's best endeavours.

Rachel, herself, after a while, seems to have developed a guilt complex over this deficiency. Seeing the hand of God in the fertility distinction made between her sister and herself, she thought the matter might be resolved by yet more cunning. She planned to conceal her barrenness by the marriage of her handmaid Bilha to her husband Jacob : the ingenuous suggestion being that Bilha should, in due course, become pregnant and at full term deliver her



progeny upon Rachel's knees. This simple subterfuge by proxy seemed, at first, to have satisfied the emotional needs of Rachel *'that I may also have children by her'*. It was optimistic to believe it could save the honour of her marriage. Meanwhile, Leah - now possibly ranking third in favour - found that her fertility fortunes too had changed. She no longer became pregnant. She decided therefore it was best that she followed suit, and like her sister, married off her handmaid Zilpah to Jacob.

But such conception by proxy could not and did not satisfy the once fecund Leah. Her thoughts turned to mandrakes. The Magic of Mandrakes could be the answer. And so it came to pass that 'in the time of the wheat-harvest Reuben went out and found mandrakes in the field, and brought them to his mother Leah'. *Genesis 30 14*

For some reason or another, possibly because she did not have her sister Leah's worldly wisdom, the idea of mandrakes had not occurred to Rachel. So when Rachel heard of this love therapy, she boldly asked Leah to give her some



• *Fig.2. Doghandler avoiding hearing the shriek of the mandrake. Illustration from Wellcome Ms 334, c.1475. With acknowledgement to The Wellcome Institute Library, London.*

It has been said that that the word used in the original Hebrew was *dudafm* from *dudim*, meaning the pleasure of love; which etymology could have given the mandrake or mandrake apples of the *Septuagint* and *Vulgate* as symbolic significance. But mandrake is the word which the translators of the *Cambridge Annotated Study Bible* (4) have chosen to be the most suited to the sense of the passage. And it makes a fine story.

The Greeks had already given the mandrake a place in the mechanics of parturition before the Greek Fathers of the Christian Church, in their turn, became concerned with the nature of its properties. The sixth century Ms made for Juliana Anicia, daughter of the Roman emperor of the west contains naturalistic drawings made to illustrate the hitherto unillustrated 6th century Latin translation of the *De materia medica* of Dioscorides, physician to Nero in the first century. Dioscorides had found it useful in promoting parturition and also gave his authority for its use as an anodyne and soporific, '*forsuch as cannot sleep, or are grievously pained and upon whom being cut or cauterised, they wish to make a not-feeling pain*' (5) The manuscript shows an illustration of Heuris bringing the mandrake to Dioscorides.

of her son Reuben's mandrakes, not wishing her sister to continue gaining an unfair advantage in fertility. But Leah would have none of it, and replied *'Is it a small matter that you have taken away my husband? Would you take away my son's mandrakes also?'* Rachel promptly responded: *'Then he may lie with you tonight for your son's mandrakes.'* Genesis 30 15

This sisterly concession greatly pleased Leah. Indeed, she hurried out to meet Jacob as he returned home from the fields in the evening, anxious to give him the news that he was to sleep with her that night, *'for I have hired you with my son's mandrakes'*. So that night he slept with her and God heard Leah's prayer, and she conceived and bore a fifth son. Then God, who is merciful, thought of poor Rachel, whose plans had been foiled once again; and hearing her prayer gave her a child.

So the story ended happily with the barrenness lifted from the beautiful Rachel and, as all good Biblical scholars know, she became the mother of Joseph, he of the coat of many colours.(3)

Its use as a soporific, to relieve pain, was probably the desirable quality sought during parturition, and which gave the mandrake its place in mediaeval medicine. It could well have been that this tranquillising property of the mandrake, which Leah used to assuage her anxiety, improved her love-making; and perhaps she gave it to Jacob to improve his. There is a known similarity in its effect to that of alcohol, which may account for its aphrodisiac reputation.

Its psychiatric use had already been noted in the Hippocratic treatises as a treatment for suicidal mania, with the advice *'Give the patient a draught made from the root of mandrake, in a smaller dose than will induce mania'*. Mandra-

Figure 3. Male mandrake from Cube's Herbal. With acknowledgement to The Wellcome Institute Library, London.

gora was also recommended in the treatment of convulsions, 'applied by means of fires lighted around the patient's bed'. (6) The efficacy of this administration by distant inhalation seems less convincing.

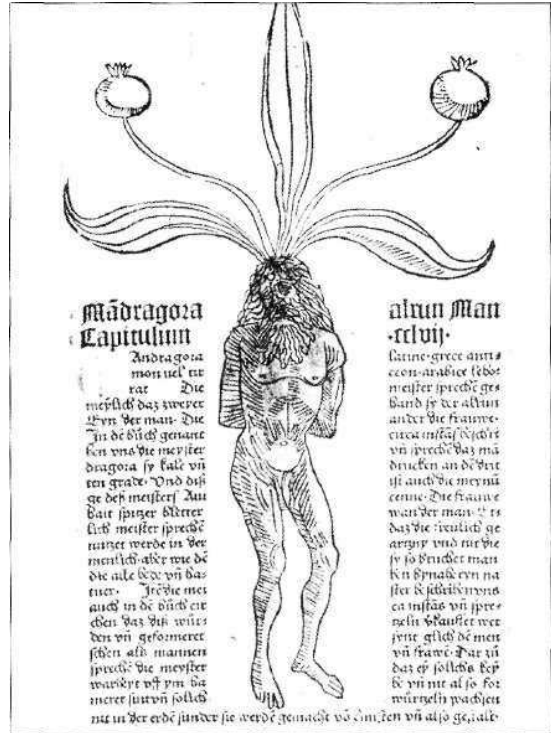
Aretaeus distinguished between the mania induced by toxic causes such as Wine and Mandragora and that of the psychotic form. The classical medical writers had also realised, like the wine with which it was so often prescribed, that mandragora produced a phase of excitement followed by a phase of sedation. Aretaeus, writing on madness, comments that

'...wine inflames to delirium in drunkenness; and certain edibles, such as mandragora and hyoscyamus, induce madness: but these affections are never called mania; for, springing from a temporary cause, they quickly subside, but madness has something confirmed in it.' (7)

A classical nicety of distinction was therefore made between toxic and functional psychosis.

Celsus also describes the use of Mandragora for its use in pain relief through sleep, adding that these remedies are called anodynes. He warned that unless it was felt there was an overwhelming necessity, it was improper to use them 'for they are composed of medicaments which are very active and alien to the stomach'. (8) An example that was more soporific, but worse for the stomach, consisted of mandragora G 1; celery seed and hyoscyamus seed, G 16 of each; rubbed up after soaking in wine'. One dose of this was considered to be 'quite enough to take'.

'But whether there is headache or ulceration or ophthalmia or toothache or difficulty in breathing or intestinal gripings or inflammation of the womb or pain in the hips or liver or spleen or ribs, or whether owing to genital trouble, a woman collapses speechless, a pill of the following kind counteracts pain by producing sleep.'



This panacea contained both poppy tears - an appreciation of the method of opium extraction - and dried mandrake apples. Together with the other ingredients they were pounded, rubbed up together

'whilst gradually adding raisin wine until the mixture is of the consistency of sordes.' 'A small quantity is either swallowed or dissolved in water and taken as a draught'. (9)

The consistency of Sordes seems an unfortunate if not positively unpleasant description, being that of the sweat scraped off by the strigil after exercise. It also seems a curious way to make a pill, but the next recipe suggests heating first to the consistency of sordes - then 'when the mixture has cooled, pills are formed'.

Celsus described the insomnia that accompanies depression. In a passage on insanity, Celsus noted the wakefulness in depressed patients as well as the anorexia. After describing a psychotherapeutic regimen, he concluded: 'But certainly for all so affected sleep is both difficult and especially necessary; for under it many get well'. For this purpose, as also for composing the mind itself, saffron

Figure 4. Female Mandrake from Cube's Herbal. With acknowledgement to The Wellcome Institute Library, London.

ointment with orris, applied to the head, was felt to be beneficial.

'If in spite of this patients are wakeful, some endeavour to induce sleep by draughts of decoction of poppy or hyoscyamus; others put mandrake apples under the pillow'. (10)

The poppy or hysocyamus decoctions sound the more effective.

The later mediaeval medical writers did not show the cynicism expressed by Plato's pupil Theophrastus in relation to its harvesting. He regarded the instructions for the gathering of the mandrake as 'far-fetched and irrelevant'. As indeed they were.

'...it is said that one should draw three circles round the mandrake with a sword, and cut it with one's face toward the west; and at the cutting of the second piece one should dance around the plant and say as many things as possible about the mysteries of love'. (11)

The scorn is less evident in Theophrastus' description of its therapeutic value.

'...mandrake; for the leaf of this, they say, used with meal, is useful for wounds and the root for erysipelas, when scraped and steeped in vinegar, and also for the gout, for sleeplessness and for love potions. It is administered in wine or vinegar; they cut little balls of it, as of radishes, and making a string of them hang them up in the smoke over must'. (12)

The *Herbarium of Apuleius Platonius*, originally compiled from Greek material about the year 400, perpetuates the magic and sets the general pattern for its copies into the Anglo-Saxon herbals, such as that of the Anglo Saxon herbal in the *Pseudo Apuleius Herbarium of Wellcome Ms 573*, [f35r] made about 1250 AD. (Fig.1)

The story of the human aspect of the plant and the need for a dog to extract it now appears,

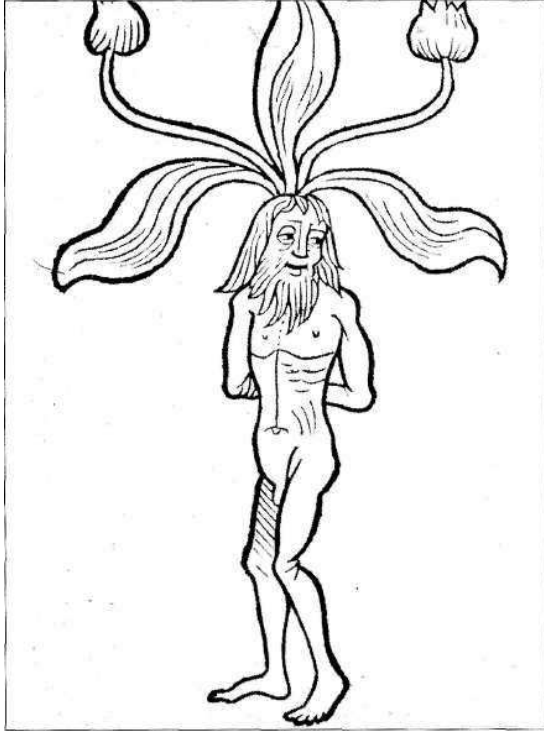
Phlegmaticus hinc istud est groy als ort vnder gewone genat
ten für die jehende der frauen dreyget mensuren vñ dreyet vñ das
der hirt. Dis vnder geloffen zu pulser vñ geniget mit eys
nem elixier machet schlaffen vñ triven für alle ander künst.
Item dis wüangel geformt in wyn vñ vff das gegicht gelieft der
gledder ist vñ vordum tiffen.



accompanied by magical spells. An illustration taken from the Anglo-Saxon herbal (*Pseudo Apuleius* f35r) gives instructions that the search for the plant is helped because it is of illustrious aspect causing it to shine at night, 'like a lamp'. As soon as you see it, you should immediately mark all around it with iron, to stop it escaping. But you should take especial care not to touch the plant itself with iron, but dig around it with an ivory staff until you find the hands and feet. Then tie it up. Tie the other end to a hungry dog and put some meat just outside its reach, so that he can only get it by pulling the plant out. The plant has still a few tricks left to escape; and the herbalist is advised to extract the juices immediately by squeezing them out. (13)

An illustration in *Wellcome Ms 334*, a Latin Herbal of plants and recipes, made about 1475, shows the dog handler 'stopping' his ears to prevent the fatal consequences of his hearing the mandrake shriek. (Fig.2)

The mandrake had assumed human shape. Such a popular drug in those unscientific ages, when the nature of a pharmacological action



• **Figure 5. Male Mandrake from Hortus Sanitatis [Latin] Mainz, J. Meydenbach 1491, f.s. Hi v.**
With acknowledgement to The Wellcome Institute Library, London.

in his foot, let him eat from its foot: or in whatsoever member he suffers, let him eat from the similar member of its form, and he will be better.' (14)

There could scarcely be found a more universal remedy. Pharmacognosy took on a new meaning.

Despite the wide transcontinental acceptance of this sort of magical medicine, there were before the sixteenth century already notes of scepticism. The *grete herball* was the first illustrated British herbal. It had a prestigious lineage, being a translation of the French *Le Grand Herbierox Arbolayre* of 1486, itself derived from the Latin *Circa instans*.

The *grete herball* of 1526 unequivocally stated that '*nature never gave forme or shape of mankynde to any herbe*'. (15) And yet the herbals had been consistently showing very human shapes, male and female in the roots of plants in hundreds of manuscripts and copied in printed herbals. Fifteenth century herbals contained many illustrations of the mandrake in both male and female shapes.

The important *German Herbarius* or *Cube's Herbal*, which is not a translation of the *Latin Herbarius* of 1484, both published by Schoffer of Mainz, shared the same wealthy patron as Meydenbach's *Hortus Sanitatis* of 1491, mentioned below. They are mainly drawings from living plants though this is not evident from the representations of the mandrake shown in figures 3 and 4.

could not possibly have been understood, would have had a variety of theorists seeking to attach their favourite explanations for its mode of action. The Doctrine of Signatures claimed that recognition of the use to which a plant could be put had been simplified by Divine Providence. This had made the effective part of the plant resemble either a clinical sign of the malady or that of the bodily part to be treated.

The mandragora root was said conveniently to resemble the whole human form. It was the stuff of which panaceas are made. And when perchance it did not, then the carver's art could soon effect a resemblance! Joan of Arc (1411-1431) was reputed to possess a mandrake mannikin which she carried with her.

Thus Saint Hildegard in her *Physica* could prescribe remedies from it for every part.

'If a man suffers from any infirmity in the head, let him eat of the head of this plant: or if he suffers in the neck, let him eat of its neck: or if in his back, from its back: or if in his arm, from its arm: or if in his hand, from its hand. or if in his knee, from its knee: or if

The Latin *Hortus[Ortus]Sanitatis* published by J. Meydenbach in 1491 is in part a modified translation of the *German Herbarius*. Figures 5 to 7 demonstrate that the herbal copyist did not appreciate the true nature of the plant he was illustrating. Figure 5 showing a rather coy male mandrake is matched in Figure 6 with an equally modest female. Whilst Figure 7 of emerging

- **Figure 6. Female Mandrake from Hortus Sanitatis [Latin] Mainz, J. Meydenbach 1491, f.s. iv.**
With acknowledgement to The Wellcome Institute Library, London.)

mannikins from a white daffodil confirms that the artist did not always follow nature. (16)

William Turner by the middle of the century was scathing in his *New Herball*. (1551).

'The rootes which are counterfited and made like title puppettes and mammettes, which come to be sold in England in boxes, with hair, and such forme as a man hath, are nothyng elles but folishe feined trifles, and not naturall. For they are so trymmed of crafty theves to mocke the poore people with all, and to rob them both of theyr wit and theyr money.

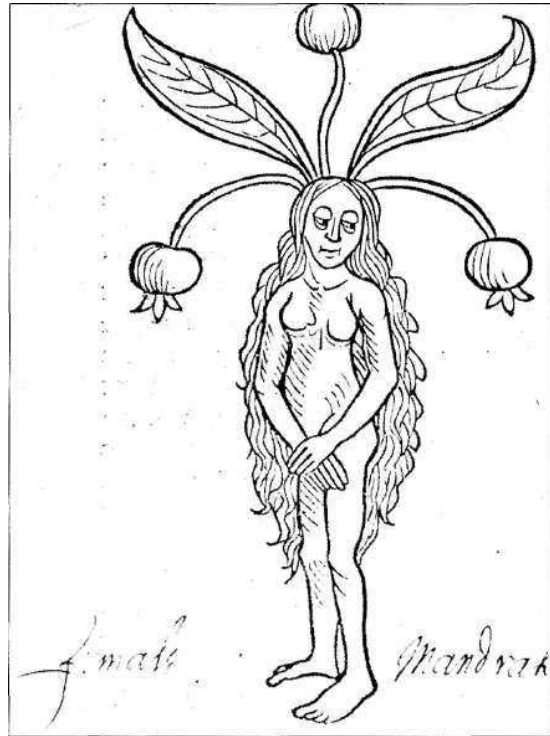
I have in my tyme at diverse tymes taken up the rootes of Mandrag out of the grounde, but I never saw any such thyng upon or in them, as are in and upon the pedlers rootes that are comenly to be solde in boxes.' (17)
(Figures 8 & 9)

John Gerard (1545-1612), despite his later tarnished reputation, was still exposing the fraud at the end of the sixteenth century, but the genuine root continued to be used for its anodyne and soporific properties in such preparations as *oinos mandragorites*, the mandragora wine of the Greeks. Shakespeare who provides an accurate picture of his age, mentions poppy but once and madragora six times.

Perhaps best remembered in *Othello* :
*'Not poppy, nor mandragora
Nor all the drowsy syrups of the world.'*
(*Othello*. Act III)

The soporific sponge in later pharmacopoeias consisted of a mixture of opium, hyoscyamus, mulberry juice, lettuce, hemlock, mandragora and ivy.

The soporific sponge, *spongia somnifera*, *confectio somnifera* or *soporis* of later pharmacopoeias in basic form usually consisted of a mixture such as opium, hyoscyamus, mulberry juice, lettuce, hemlock, mandragora and ivy, in which a sponge was steeped and fried. This was moistened before inhalation to induce sleep.



The antidote was said to be fennel juice to the nostrils to awaken the sleeper. (18)

Toward the end of the eighteenth century, *The Edinburgh New Dispensatory* (1786) had the following entry.

Mandragora folia : *Mandragora fructu rotundo* C.B. *Atropae mandragorae* Lin.
Mandrake: the leaves.

The qualities of this plant are very doubtful: it has a strong disagreeable smell, resembling that of the narcotic herbs, to which class it is usually referred.

It has rarely been any otherwise made use of in medicine, than as an ingredient in one of the old officinal unguents.

Both that composition and the plant itself are now rejected from our pharmacopoeias.

Edinburgh New Dispensatory 1786.

But the day of the Mandrake was not yet done. There was to be scope for further and scientific examination of this exotic plant. In the nineteenth century, a well known British anaesthetist, Dr Benjamin Ward Richardson (1828-1896) did some experiments to see

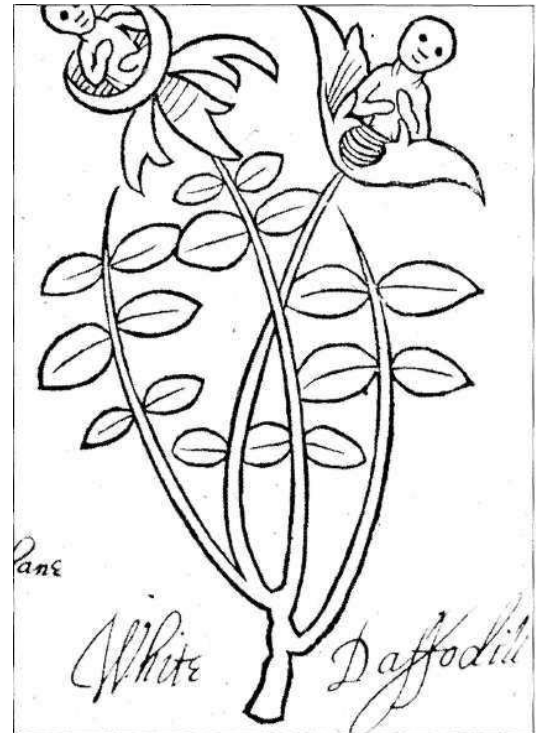
- **Figure 7. White daffodil from Hortus Sanitatis [Latin] Mainz, J. Meydenbach 1491, f.s. viii r. With acknowledgement to The Wellcome Institute Library, London.**

whether the ancients' views on Mandragora had any substance. Daniel Hanbury, F.R.S., a founder of the well known English pharmaceutical firm of Allen and Hanbury, supplied the root.

Richardson made his first attempt using a tincture of the root in absolute alcohol. He found it inactive. The active principle was, in fact, most soluble in water like the active principle of *Atropa belladonna*. Armed with this knowledge he then followed the ancients' method of making an infusion of mandrake and later adding wine as a simple preservative. He made a weak tincture, using only one sixth alcohol and macerating powdered root in it for four weeks, which was found to have similar active properties to those historically claimed. Given by mouth or subcutaneous injection, infusion of mandrake was rapidly absorbed and produced narcosis, dilated pupils, muscle paralysis and excitement during the recovery phase.

In his experiments with pigeons and rabbits, Richardson concluded that the effect was on the nervous centres. Finding that relatively large doses could be tolerated by rabbits, inducing a very gentle sleep without danger, he was emboldened to try it on human beings. He found that in doses of twenty minims it was

'insufficient to produce comatose symptoms, but [was nevertheless] exceedingly potent in effect.



'It caused a desire for sleep, a sense of fullness in the vessels of the brain, a peculiarly enlarged confused vision, an exaggeration of sounds, and a curious restless excitability, akin to hysteria.'

'These symptoms were not removed for a day, and they left some lingering uneasiness and coldness longer.' (19)

Richardson concluded that *'the historical repute of mandragora for good or evil is maintained. The action of the agent in producing deep and prolonged sleep, and also created a kind of delirium in those who had eaten of "The insane root that makes the reason prisoner"'* (Banquo Macbeth)

Table 1

Mandrake

Mandragora of Hippocrates = mandrake of Genesis = *Mandragora officinarum*
Dictionary of Gardening

Mandragora is obtained from the root of *Mandragora officinarum (autumnalis)*
Martindale

Popular terms ; The Devil's Apples. Phallus of the Field.

Figure 8. Title page of William Turner's *New Herball* 1551.
With acknowledgement to The Wellcome Institute Library, London.

So do we now know what plant the mandrake is? Volume Three of the authoritative *Dictionary of Gardening*. Oxford : 1951 states that the mandragora of Hippocrates and the mandrake of *Genesis* XXX are one and the same as *Mandragora officinarum* of the family Solanaceae, an almost stemless mediterranean herb with a large root. Professor Ghalioungui states that *m. officinalis* (*officinarum*) is the female mandrake and *m. vernalis* is the male. But the *Dictionary of Gardening* regards these terms as synonymous. Martindale agrees that the mandragora, obtained from the root of *mandragora officinarum* (*autumnalis*), has similar pharmacological properties to belladonna and was formerly used as a narcotic. Other exciting names for it have been The Devil's Apples and Phallus of the Field. (Table 1)

But beware you do not confuse it with the American Mandrake (*Podophyllum* rhizome or May Apple root), which is the dried rhizome [and root] of the *Podophyllum peltatum* of the Berberidaceae and from which podophyllum resin may be prepared. And, of course, you would take care not to mistake it for the English Mandrake, which admits itself to be called the False Mandrake in an alternative title. This is white bryony, *Bryonia dioica*, one of the Cucurbitaceae. It featured as Bryonia in the *BPC* of 1934, used as a useful tincture to allay the cough of pleurisy. And, by the way, to revert briefly to the American mandrake (from which you recall podophyllum resin may be prepared) it will not have escaped your attention that the word podophyllum comes from *podos*, a foot and from *phylon*, a leaf - from the fancied resemblance of a leaf to a webbed foot. But do not use it for making podophyllum resin, because this is better obtained from Indian podophyllum - *P. emodi*- which is gathered in Tibet. So you see - in this confusing subject - that Indian podophyllum does not come from India, American mandrake has no relation to the historical mandragora and English mandrake makes no pretence to authenticity.

A Booke of the natures and
properties, as well of the bathes in England as of other ba-
thes in Germany and Italye, very necessarie
for all these perionies that can not be healed
without the helpe of naturall bathes,
largely overseene and enlarged by
William Turner Doctor
in Physick.

God saue the Queene.



Imprinted at Colles by Arnold Birckman In the yeare
of our Lorde M. D. LXXIII.

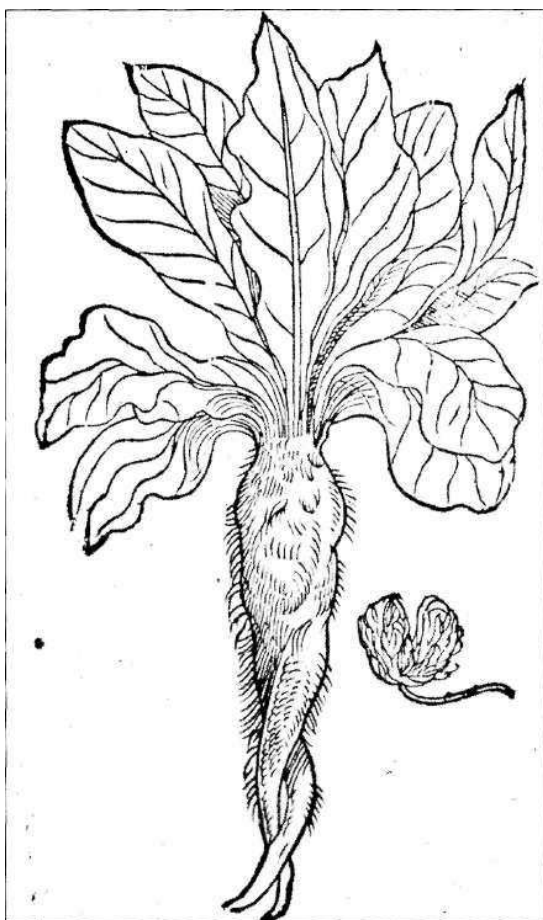
Cum Gratia & Privilegio Reg. Maestri

The mandrake root has inspired immortal poetry from our greatest poets.

*Goe and catch a falling starre,
Get with child a mandrake root,
Tell me, where all past yeares are,
Or who cleft the Divel's foot,
Teach me to heare Mermaid's singing,
Or to keep off envies stinging,
And finde,
What winde
Serves to advance an honest minde.*

John Donne (1573-1631)

But what of the apples? The mandrake of history is demonstrably *Mandragora officinalis*, the root tried and tested by the Greeks and confirmed by Richardson as a narcotic and aphrodisiac. Theophrastus used the leaf for wounds and the root for erysipelas, gout, insomnia and love potions. *The Edinburgh Dispensatory* refers to the leaves and discards them. Celsus uses the dried apple. What about the fresh biblical apples? Dioscorides refers to their soporific qualities. The ancient herbals only ever illustrated the roots. And I had the greatest difficulty in England and Wales in finding any mandrake apples to photograph. (Figure 10).



Notes and references

1. *Extra Pharmacopoeia Martindale* (ed RG Todd). London: The Pharmaceutical Press, 25th ed. 1967. p. 1533.
2. *Genesis* 29.
3. *Genesis* 30.
4. Kee, Howard Clark. *Cambridge Annotated Study Bible*. Cambridge University Press. New revised standard version. 1993.
5. 'And some do seeth the roots in wine to thirds, and straining it set it up. Using a cyathus of it for such as cannot sleep, or are grievously pained and upon whom being cut, or cauterised, they wish to make a not-feeling pain. Ye wine of ye bark of ye root is prepared without seething but you must cast 3 pounds into a Metreta of sweet wine, and that there be given of it 3 Cyathi to such as shall be cut, or cauterised, as is aforesaid. For they do not apprehend the pain, because they are overborne with dead sleep, but the apples being smelled to, or eaten are soporiferous, and ye juice that is of them... They give out also that there is another sort called

Figure 9. Mandrake root from William Turner's Herbal. Cologne; A Birkman 1562. f6r.
With acknowledgement to The Wellcome Institute Library, London.

Morion [*Morion* was the name of the male Mandrake]... For a man sleeps in ye same fashion, as when he ate it, sensible of nothing for 3 or 4 hours, from ye time that it is brought him. And physicians also use this, when they are about to cut or cauterise.'

Dioscorides. *Manuscript Anicia* by Pedanius Dioscorides. Englished 1655 by John Goodyer. Gunther's edition, Oxford University Press, 1934, 4, 76. Cited by E.S.Ellis. *Ancient Anodynes*, London: Heinemann, 1946. p.64.

A cyathus was a twelfth part of a sextarius or ten Greek drachmae. A sextarius was a sixth part of a congius or pint.

Adams, F. *The Genuine Works of Hippocrates*. London: Sydenham Society, 1849. Vol. 1, p.77.
Adams, F. *The Extant Works of Aretaeus, the Cappadocian*. London: The Sydenham Society, 1856. p103.

Celsus. *De Medicina*. London: Heinemann, Loeb Classical Library, 1961. Vol. II. V 25 1. *ibid.* 2-4. The full prescription reads: saxifrage, sweet flag, wild rue seed, G4 each, castory and cinnamon G8, poppy tears, panax root, dried mandrake apples, flowers of the round rush, G9 each and 56 peppercorns.

10. Celsus. *De Medicina*. Vol 1. III 18 1-12.
11. Theophrastus. *Enquiry into Plants*. London: Heinemann, Loeb Classical Library. 1959. Vol II, IX VIII 8.
12. *ibid.* IX IX 1.
13. *Herbarium Apuleius Platonicus* cited by Arber, Agnes. *Herbals. Their origin and evolution*. 2nd edition (facsimile of 1938 ed.). pp 39, 40.
This wort ...is mickle and illustrious of aspect, and it is beneficial. Thou shalt in this manner take it, when thou comest to it, then thou understandest it by this, that it shineth at night, altogether like a lamp. When first thou seest its head, then inscribe thou it instantly with iron, lest it fly from thee; its virtue is so mickle and so famous, that it will immediately flee from an unclean man, when he cometh to it: hence as we before said, do thou inscribe it with iron, and so shalt thou delve about it, as that thou touch it not with the iron, but thou shalt earnestly with an ivory staff delve the earth. And when thou seest its hands and its feet, then tie thou it up. Then take the other end and tie it to a dog's neck, so that the hound be hungry; next cast meat

Figure 10. Mandrake apples photographed in the Chelsea Physic Garden.



before him, so that he may not reach it, except he jerk up the wort with him. Of this wort it is said, that it hath so mickle might, that what thing soever tuggeth it up, that it shall soon in the same manner be deceived. Therefore, as soon as thou see that it be jerked up, and have possession of it, take it immediately in hand, and twist it, and wring the ooze out of its leaves into a glass ampulla.'

14. St Hildegard. *Physica* i. 56, in Migne *Patrologia Lat.*, vol. cxcvii, col. 1151. Cited by Bonser, W. *The Mediaeval Background of Anglo-Saxon England*, London: 1963. pp 250-251.
15. *The grete herball*. Printed by Peter Treveris in 1526 and 1529. Cited by Arber, Agnes. *op. cit.* p.123.
16. Fuller descriptions of these herbals may be found in Arber, Agnes. *Herbals their origin and evolution*. A chapter in the history of botany 1470-1670. Darien, Conn: Hafner Publishing Co. 1970 (facsimile of 1938 edition) & Blunt, Wilfrid. *The Art of Botanical Illustration*. London: New Naturalist Collins. 1950.
17. Mandragora was preferred by some to hemlock and opium because it was not, like these, 'cold in the fourth degree', but in the third. Garrison refers to recipes for the soporific sponge which contain mandragora in Jensen's *Antidotarium* of Nicholas of Salerno, Venice, 1471, f.32 v; also in

Bamberg's *Antidotarium* and Monte Cassino *Codex* of the ninth century
Cataplasms containing mandragora are to be found in the *Antidotarium* of Nicholas (oleum mandragoratum f. 22v), *Practica* of Coppo, Gaddesden, and Varignana. For these and other references see Garrison, F. H. *An Introduction to the History of Medicine*, Philadelphia & London: W.B.Saunders Company. 4th edition 1919. p. 153 (reprint 1967).

18. Turner,.....Cited by Arber, Agnes, *op. cit.* p.123.
19. Richardson, B. W. *Brit For Med Chir Rev.* January 1873 pp241-243. See also *ibid* Jan 1874 pp242-244.

Biography

John Cule MA MD FRCGP FSA is the Worshipful Society of Apothecaries Lecturer in the History of Medicine at the University of Wales College of Medicine and Joint Editor of Vesalius. He is Past President of The International Society for the History of Medicine, The History of Medicine Society of Wales, The British Society for the History of Medicine, and The Osier Club of London. He is an Honorary Fellow of the Royal Society of Medicine, The Faculty of the History of Medicine of the Worshipful Society of Apothecaries of London, The Scottish Society of the History of Medicine and an Emeritus Member of the American Osier Society.