The wealthy and powerful in the West most certainly kept a learned physician. What good it did them is impossible to ascertain. Much medical practice involved treating the wounds of war in which expert surgeons were technically pre-eminent though physicians often had the charge of clinical management and the convalescence. The rise of the merchant class in Chaucer's century saw the elevation of grocer–apothecary to druggist, from generalist to medical specialist. The gradual independence and separation of roles between physician and apothecary tended to the preference of the more luxury items which had come from afar. No doubt the preference of Galen for polypharmacy was good for business. With increasing wealth in the 12th & 13th Centuries came increased urbanisation with all its attendant sanitation and public health problems. For those who could not afford to pay the overheads of the apothecary, there was no shortage of itinerant healers, bone–setters and herb–sellers. In medicine, Galen and Avicenna, Aristotle and astronomy were the ruling notions (with the influence of secular Hippocrates spoken of but quite diminished in practice). [As we shall see in Section 7, an empirical understanding of the remedial aspects of plants had not been lost in Anglo–Saxon England and in Germany, and probably was never lost in rural parts but here we can only make inferences.]

The treatment of the poor tended to be religious; otherwise it was domestic and almost certainly will have been home-grown, and to a large extent herbal.

None of it provided any remedy against the devastations of the plague that returned to Europe from Asia in the 1320's and by the middle of the century a quarter of the population was killed. In some cities, the bubonic plague had reduced the population within a couple of years ***by sixty per cent.*** No corner, no community was left unscathed though isolated communities tended to be relatively spared. Public Health became as never before an issue for governments in a legal sense: it was a crisis requiring little short of martial law. Medicine and Doctors became quite irrelevant in a clinical sense, but for the first time the medical profession acquired legal status as public health advisors and part of the legal certification of death.

THE RENAISSANCE

In scholarship, the middle ages are characterised by the ***commentary***; the original texts were never seen; mistakes and absurdities abounded. Commentaries about commentaries proliferated, confused further by the chain of translation: Greek into Syriac into Arabic into Hebrew into Latin, and sometimes looping back again into retranslation. In the West, the frustration of meaning derived in most part from the centralised authority of the papacy.[65] As we have already seen, the habit of mind spread to all parts of life, including medicine: thus Galen and Aristotle became almost talismans of truth even though no–one ever read them in the original.

The rebirth of Classical ideas was a reforming instrument and depended upon looking at primary texts.[66] The rise of a powerful merchant class (in Northern Italy at first) sought independence of thought and action just as it had done in Ionian Greece. The rediscovery of the botanical works of Theophrastus 1800 years after they had been written sparked off a hunt through all the libraries of the world for original manuscripts. The Church, far from opposing this, was caught up in the excitement of the times. The Vatican library was one of the great repositories of works, whether previously banned or canonical. Popes like Nicholas V were in the vanguard of scholarly princes who put their wealth towards the restoration of texts and, it should be emphasised, their critical evaluation. The spirit of critical observation, of reliance on the senses for what truth they had to offer was affirmed. The development of printing ensured that dissemination of findings was more difficult to restrict. Trust in the eye led to an appreciation of relative values needed for the scientific enterprise. In 1450, Nicholas de Cusa—a Cardinal of the Church, no less—proposed experiments using quantitative methods (based upon the work of Archimedes) into the nutritional and medicinal values of plants relative to their habitat and climate of

65 In the East, which had always gone its own way (nor was it immune from interfactional disputes about ecclesiastical authority) the schism of 1054 removed them from papal control.

66 You are, of course, in the act of reading a commentary on mainly secondary texts. However, in contradistinction to the student in mediaeval times, you are allowed—indeed expected—to pass judgement on what you read and to offer your own version. Both author and student are bound only by rules of reasoned argument and an appeal to evidence. In the end, we may agree to differ, a position never countenanced in the papal middle ages.

origin. The student may obtain a direct impression of how rapid and dramatic this change shows itself in books by visiting, for example, the library at Chelsea Physic Garden. With the permission of the curator, you may view a mediaeval book in which the plants are emblematic: rather like the ***fleur de lys*** of heraldry, and are not an aid to identification but correspond, rather, to some platonic notion of the plant in question; you may compare it, side by side, with a book of plants made a mere 60 years later in which the coloured illustrations are detailed and unquestionably drawn from life. Arrival of a myriad of plants from the new found lands of the Americas fuelled a new sense of the richness and multiplicity of creation.

The invention and development of the microscope permitted an understanding of the details of inner structures in plants and animals, preparing the way for an interpretation of life where structural interrelationships tended to take precedence over functional integration. Whatever the shortcomings of Galenical anatomy, the notion of the essential whole provided by humoral theory made clinical observation in a qualitative sense more alive to the subtleties of the individual.

PARACELSUS 1493—1541

It is bizarre—and the subject is fraught with contradictions—that one isolated figure somehow summarises the counter-currents in medicine that operated through the Renaissance and formulated the reductionism that finally came to dominate the Modern Era. Aureolus Philippus Theophrastus Bombastus von Hohenheim is better known by the compendium name he gave himself: Bombastus by name Bombastic by nature, Paracelsus claimed superiority over Avicenna and Galen (whose books he burnt—leading to his abrupt removal from Basel University as Professor of Medicine); he put himself over and above (***Para***) the revered style of Celsus.

Born in Switzerland but an itinerant, if not fugitive, all his life, the contributions to Science and Medicine of this strange genius[67] are indirect: he championed the need to derive theory from observation and the right of anyone to rebut orthodox beliefs which failed in what we would now call the 'scientific method'. That he failed to observe his own precepts is the least of criticisms that may be levelled against him, but in all the profligacy of his writings one observes an intense energy resisting all

67 Well, at least in the original sense of ***ingenious*** if not quite in the modern.

opposition to get at the heart of things. He took ideas from the Greeks and later scholars, as well as from the occult; he took stylistic devices from the cabala and the Bible. He ridiculed most of the ideas he examined, reinterpreted them, then embraced something close to the ideas he had ridiculed. Rejecting humoralism, he introduced three notional forces that played upon the four elements: transmutation, refractoriness or stability and fluidity. He assigned three names to these "quintessential" properties: sulphur, salt and mercury, respectively. That they were also the names of substances may have directed alchemists away from the search for the philosopher's stone to materials in the natural world, as Paracelsus coupled most of his esoteric assertions with pharmaceutical indications. He disparaged the ***theriac*** of Galen for the good reason that such polypharmacy introduced too many elements that might conflict with one another; the mixture of herbs was just too complex to know what elements were influencing the body and that without simplicity and naturalness one could never claim to heal the patient.[68]

His alchemy probably still influences the theory of homoeopathy while his medical rebelliousness makes him more a subject proper to Section 6.

Apart from Paracelsus, the Renaissance saw not a rebellion against Galen and Avicenna but, on the contrary, sought to improve their standing by proper scholarship and reworking in the light of new information, especially the threat from new diseases, especially syphilis, against which Galenicals seemed ineffective. The move to chemical medicine, advocated by Paracelsus, favoured mercurial ointments to cauterise syphilitic sores.

The tendency towards individualism was accompanied by a fascination with the human form and its exaltation in the pictorial arts. The works of Leonardo da Vinci and Michelangelo, of Donatello and Brunelleschi, Bellini and Mantegna, of Boticelli and Fra Angelico, of Holbein and Dürer as well as the architectural masterpieces which housed them, are living testament to the birth of the more secular modern age. In medicine, the parallel study of the human form drove anatomy and surgery to the forefront. In pharmacy, the formulations tended slowly towards standardisation of sorts; but there was much identification to be done as new plants arrived both from East and West; this was the age of the Herbal (which we shall consider in Section 7). As for materia medica, minerals had always been added (along with

68 A sympathetic and very readable account of Paracelsus is given by Barbara Griggs in Chapter 4 of her ***Green Pharmacy.***

animal products) to Galenicals, but now, although inorganics did not replace herbs their repertoire was extended and occasionally used as alternatives to plants.

THE RISE OF SCIENCE

The Encyclopaedic naturalists of the 16th Century are well known to us as the authors of herbals and we shall look at them in more detail in Section 7. As on earth, so in heaven, but here it was a re description: the so–called 'Copernican Revolution' is an appellation conferred with hindsight: Nicolas Copernicus [1473–1543] was a conservative scholar who did little astronomical observation. While he proposed a heliocentric universe, he did not alter the notion of fixed spheres in which the heavenly bodies ran, the fixed stars occupying the 'seventh heaven' beyond Saturn. It was more an age of astrology[69] rather than astronomy: indeed, it is difficult to be certain if that Age is ended yet. Whatever our beliefs, relics abound in everyday speech of Copernican astrology: we still speak of "spheres of influence" (and ***influenza***) of someone's "star being in the ascendant" and even of "an evil star". The greater observer Tycho Brache [1546–1601] and the mathematician Kepler [1571–1630] partly concealed what they knew: it was dangerous to unseat Aristotle as Galileo found to his cost. Giordano Bruno was the first, at least in the West, to conceive of an infinite universe. After a trial and imprisonment lasting eight years, he was burned at the stake for his impudence.

The 17th Century saw great technological change and the application of the experimental method to concrete problems in mechanics and engineering. Most of the mathematical thinkers—Descartes, Pascal, Newton—had but an indirect influence upon the medicine of their time. Van Helmont pursued experimental chemistry and plant physiology; he tried Wolf's-bane ***(Aconitum vulparia)*** as a hallucinogen, recording the results with some reserve, as he did his science. It is difficult to know whether he was a mystic out of political concealment or whether he overdosed on the Wolf's-bane.[70]

The mathematics of René Descartes was revolutionary in allowing for the notion of points in any physical or notional space to be defined by coordinates (since called Cartesian). His mistaken ideas in physiology lie forgotten but not his replacement of life–as–soul of the ancients to mind–as–soul of the modern psyche, for which he will never, in certain quarters, be forgiven.

69 There is quite as much astrological reference in Shakespeare [1564–1616] as there is in Chaucer [c.1341–1400]

70 He invented the word ***gas*** which is ***chaos*** pronounced with his Flemish accent derived from [the alternative ghost+chaos is apocryphal].

There is no doubt that the physiology of William Harvey [1578–1657] and Thomas Willis [1621–1675] inaugurated the biomechanical approach to life that holds sway today but their temperaments were far from revolutionary. Harvey was deeply conservative and the neuro-anatomist Willis the most prosperous doctor of his day. Their findings in anatomy and physiology, however, meant that, given time, it would become difficult to think of the body in the old way.

Certainly after the work in chemistry and physics by both the Roberts—Hooke [d.1703] and Boyle [d.1691]—the stage was set for the confrontation in the 18th Century between the animism of Stahl and the biomechanical approach of Boerhaave and Von Haller. The chemist Georg Ernst Stahl [1660–1734] invented the phlogiston theory which obscured the development of an understanding of combustion but its absurdity perhaps stimulated Lavoisier to discover and describe oxygen, just in time, as he lost his head to the guillotine. Stahl's animism was superseded by vitalism which remains a countercurrent through the Enlightenment to the present day: not a few contemporary herbalists would describe themselves as vitalists and would see such a position as the only tenable opposition to the iatrochemical approach of our day. Vitalism was fermented in the era under discussion. One by-product of Stahl's animism was, to some commentators, the invention of the psychosomatic concept in the modern clinical sense. The German poet Johann von Goethe [1749–1832] is probably the best–known of the vitalists. Goethean science is, at the time of writing, studied as part of herbal medicine and promoted as an antidote to reductionist phytotherapy.

By the end of the 18th Century, both sides of any argument in the natural sciences, and more reluctantly in medicine, would look for some kind of experimental validation of their belief. Medicine was a reactionary profession and little pleased to acknowledge empirical common wisdom. Why study for all those years if an illiterate woman could give you a remedy for scurvy better and cheaper than all the dressed–up part–chemical exotics from the apothecary? A notable exception to this caricature of medical obscurantism is Sir Thomas Sydenham [1624–89], friend of Boyle and the empiric doctor and philosopher John Locke. Known as 'the English Hippocrates,' he championed the humane and attentive bedside manner, observant and free from preconceptions. He wrote much of epidemics and pathology (St Vitus' Dance was renamed Sydenham's chorea) and also was much interested in treatment with

plants. He did not share the mistrust of his colleagues about remedies known as specifics (like ***Cinchona*** bark); tincture of opium was named Sydenham's Laudanum. Empiricism also won over the Admiralty faced with the results of one of the first clinical trials in the modern sense. It was conducted by a navy surgeon James Lind [1716–94] to demonstrate that by far the most efficacious remedy for the scurvy that killed more sailors than the enemy lay in the administration of citrus fruits.

Another instance where an empiric approach triumphed over theory is given by the discovery of a drug derived from a medicinal plant by Dr William Withering [1741–99]. The story is well–known and well–told by Barbara Griggs (cited before). The trend in medication in less than a century from a plant extract such as laudanum (from ***Papaver somniferum***) to a drug purified from a plant such as digoxin (from ***Digitalis purpurea***) provides an indicator that parallel streams were flowing in pharmacy. The iatrochemical approach, heralded by Paracelsus, became slowly dominant to the almost complete exclusion of "crude botanical drugs", at least in Britain.[71]

71 Personal communications with several doctors trained in the 1930's reported a surprising amount of herbals in orthodox practice, ***Piper Cubebs*** being the remedy most often cited. This plant seems to have become neglected by herbalists. The British Pharmaceutical Codex of 1949 contains a number of herbal remedies and the author remembers the large wooden drawers in the local Chemist of that time inscribed with the Latin names of a few herbs, eg Senna.

THE IATROCHEMICAL APPROACH

The Age of Enlightenment was an intellectual movement in Europe that believed that human progress depended upon reason; it was for tolerance of religious belief and against superstition; it favoured the emancipation of the individual from despotic rule of Church and monarchy which was overthrown in the new United States of America and in France. The movement was dominated by philosophers, scientists and writers such as Descartes, Locke and Newton, by Leibnitz, Kant and Goethe in Germany, by Voltaire and Rousseau in France and David Hume and Adam Smith in Scotland. Not a doctor among them. If Galenical medicine favoured bleeding and cupping in therapeutics, the move in the 19th Century was away from the patient and towards the disease: away from individualised treatments towards standardised medicines.

The new sciences of chemistry and physics prepared the way, but this gradual tendency in medication was most influenced by the more precise understanding behind the age–old belief in "contagion": it is the birth of microbiology and immunology. It is common to mention here the observations of Edward Jenner (1749–1823) but they were actually the observations of country–folk: that people who worked with cattle and contracted cowpox developed some immunity against smallpox. What Jenner brought to bear on the observation was the scientific method of experimentation (he had trained with John Hunter in London). He was by no means the first to perform inoculations: Lady Mary Wortley Montagu (1689–1762), friend of the rich and famous, had promoted the practice which became one of the first to receive the attention of a new methodology: medical statistics (which duly confirmed the reduction in mortality from smallpox or ***variola*** derived from inoculation). Jenner's experiment was to inoculate a patient with the relatively mild cowpox or ***variola vaccinae*** (to which the response was a slight fever) then later inoculate that patient with smallpox from which he proved to be immune. Thus ***vaccination*** was born.

The rapid and dense urbanisation of the mid–19th Century gave rise to much medical misery and poverty. The rapacity of the industrialisation was gradually tempered by a rise in a sense of public conscience for the health of a nation. Novelists like Elizabeth Gaskell, George Eliot and Charles Dickens exposed the nature and scale of the problem, reformers of very different kinds, like William Wilberforce, John Howard and Jeremy Bentham urged social change (as did the philosopher Karl Marx

and his capitalist collaborator Friedrich Engels). Such a development did not take much hold with the authorities in Britain until Queen Victoria's consort was struck down by typhoid. Whereas the mediaeval epidemics had spread from afar, the cholera of the cities was home–grown and required Public Health measures to tackle them. Sanitary water supply and separate sewage disposal was the treatment for disease though these measures did not have an adequate influence upon poverty. The piecemeal social reforms of the 19th and 20th Centuries in Britain have been dogged by half–heartedness at best; at least the Public Health Act of 1875 ensured the enforcement of sanitary measures.

It is war that has introduced medicine into partnership with public health measures and social reform. The disastrous outcome for France of the Franco–Prussian war of 1871 led the third republic to invest in maternity benefits and health–care and other social benefits for pregnant and nursing mothers.[72] The professionalisation of nursing developed from the needs of wounded soldiers, not mill-workers. The experiences in Crimea and of the trenches in 1914-18 probably stimulated a better understanding and management of the infected wound. It could be called field research of a kind. Of course, bad health is expensive: it damages the collective as well as the individual economy. Not until the political powers wise up to this dilemma do public health measures receive legislative attention. The first National Health Service was formed in the USSR in 1918 a year after the revolution and at the end of hostilities. Britain needed the Great Depression and another world war to follow suit in 1948. Longevity, child mortality and the scourge of infectious disease have all improved in industrialised countries during the 20th Century. The influence of medicine upon these statistics is a highly controversial subject and upon which it is tempting to launch generalised judgements. Herbalists are deeply implicated in the discussion unless we consider our practices to be irrelevant: given that there are estimated to have been 15 million consultations involving complementary therapy in Britain in 1997, a large proportion of them with herbalists, and with the trend growing, it would not be a point of view easy to sustain.

The iatrochemical approach is derived partly from a shift in ideas

72 Professor David Barker (formerly epidemiologist at Southampton University) ascribes the longevity and lowered cardiovascular morbidity of contemporary France more to this measure more than the consumption of red wine and garlic.

that started in the Reformations of the 15/16th Centuries away from humoralism and towards the notion of disease as a specific pathological entity. Until the 19th Century such entities were treated more as metaphysical—***mal aria*** and ***miasms***—rather than biological, and certainly not caused by organisms. Studies of the cell, which first came from the botany of Matthias Schleiden (1804-1881) and the zoology of Theodore Schwann (1810–1882), directed the teaching and practice towards pathology at the cellular level.

THE GERM THEORY OF MEDICINE

We have seen—especially in the pre–Socratics of ancient Greece—that the drive behind systems of philosophy is the search for a unitary theory of the world: what is matter? what is consciousness? what relationship exists between the two? So in medicine: the better understanding that contagion was a biological process led to the study of micro-organisms and their place in human disease.[73] The catastrophic epidemics of cholera and yellow fever may have been largely as a result of urbanisation but the cities were not going to go away, so the study of transmission vectors and other circumstances received powerful economic and political stimuli. However, the industries that led to the growth of the huge unhealthy metropolis' depended on physics and chemistry: it was from the bias of this latter science that theories of putrefaction, fermentation and infection tended to be interpreted.

However, the new science of microbiology countered the purely chemical point of view by the brilliant and inventive experiments of Louis Pasteur (1822–1896), himself a chemist with no medical education. He became convinced that chemicals derived from living systems had a preferential influence upon the polarisation of light compared with racemic mixtures. This showed him the chemical bridge to biology. He demonstrated that the spoiling of milk and wine were caused by specific chemicals and that these chemicals were evolved by specific micro-organisms. He was also able to show the limits of their survival against stress, notably heat. By careful work, he devised heat processes for the protection of foodstuffs against deterioration by destroying the bacterial source of the chemical spoiling. He enshrined his name in the process: modern milk and wine continue to receive the treatment called "pasteurisation". He claimed that his experiments proved the validity of the germ theory of medicine. He went on to develop vaccination against anthrax and rabies. The Institut Pasteur remains a centre of medical research respected internationally.

Robert Koch (1843–1910), a Prussian army doctor, had shown by careful laboratory work that anthrax which infected humans but more especially cattle was caused by a bacillus which had the capacity to sur-

73 It was helped considerably by the notion that all of life is cellular, that cells cannot develop spontaneously but [as first demonstrated by Rudolf Virchov (1821–1902)] always develop from parent cells. Traditional humoral and essentialist views of life and matter sit uneasily with such ideas.

vive as heat–resistant spores. He demonstrated that these spores could remain indefinitely in fields thus explaining how cattle–free pasture still harboured the potential to re–infect. In his systematisation of bacteriology he did much to invent the procedures of the discipline (with some help from Richard Julius Petri, the inventor of the dish) and, despite the scandalous errors concerning tuberculosis towards the end of his life, is remembered for his axioms now known as Koch's Postulates. which frame the modern biomedical notion of the germ theory and reinforces the notion of a specific aetiology for all disease.

Specificity was not only sought in aetiology but also in therapeutics: the search by the alchemists for the 'philosopher's stone', by Paracelsus for a pure chemical antidote to a specific illness had as its modern equivalent the 'magic bullet'—a single specific ***chemical*** remedy to ***kill*** a specific disease. Ideas of specificity were not new: after all, ***Cinchona officinalis*** had been accepted as specific against malaria and not all phytotherapists discount the notion of a herb having specific indications if the British Herbal Pharmacopoeia is anything to go by. But the bellicose aggression of this ***chemotherapy*** is uniquely modern. Paul Ehrlich (1854–1915) is generally credited as its founder: he attempted to ally the developments in organic chemistry and pharmacology of his time with the germ theory. The pharmaceutical industry grew out of the industrial production of these chemicals. They were not without efficacy against the early stages of epidemics, especially of sexually transmitted disease, but it is difficult to assess their long–term efficacy. What is less doubtful is the harm and even death they caused.

The 19th Century completed the divergence between the humoral medicine of Galen and the ancients and the reductionist ideology initiated by Paracelsus and the alchemists. However, one great experimental biologist of the 19th Century managed to integrate the deficiencies inherent in those ideologies that are purely and naively vitalist on the one hand and materialist on the other. That Claude Bernard is not more celebrated as the founder of a holistic modern medical physiology is testament to narrow thinking on both sides.

CLAUDE BERNARD (1813–1878)

The study of morbid anatomy held pride of place in medical education at this time: it was a prerequisite for successful surgery and satisfied the urge for the concrete in an age dominated by growing mechanical mastery over the environment. The stethoscope had recently been invented and, with the new technique of percussion, a rigorous format of clinical examination, now commonplace, took the place of the leisurely history–taking alongside examination of facies and tongue. The urge to probe and understand the working of internal organs replaced the distant and reflective inferences physicians had been wont to make before this time. An interest in pathology seemed to replace an interest in the patient. Laboratory techniques and histology, developed especially in Germany, along with medical statistics supported the physician in his role as the director of a research effort as much as a compassionate carer of the sick. The strong element of progress in scientific enquiry acquired almost an impatience with sickness: so fast were new discoveries made that surely an answer to natural problems could not be far away; yet sick people continued to be sick and die. Their death would at least not be wasted: post–mortem examination with microscopy would reveal new insights and extend medical power. This new confidence was in part well–placed and in part a denial of reality.

Claude Bernard worked with François Magendie, who had co–discovered the separation of motor and sensory fibres emerging from the spinal cord, until he assumed the post of Professor of Experimental Physiology himself on Magendie's retirement. Along with Galen and Pasteur, Bernard was one of the great experimentalists of all time, but he was also a deep, careful and subtle thinker. So, in physiology, he elucidated much of the secretomotor function of the small intestine that we understand today as well as the chemistry of the exocrine pancreas; he discovered and named glycogen as well the functional dependence of other systems on hepatic function; he was the first to understand how comprehensive and interdependent neuroendocrine controls are to life and also developed the understanding of the sympathetic nervous system.

His greatest contribution to the understanding of the working of the human being lies in his notion of ***internal milieu.***[74] he understood and demonstrated experimentally that the body and mind requires a con-

74 This is how the concept he invented ***le milieu intérieure*** is usually translated.

stant environment, that cells flourish within narrow chemicophysical limits and that the organism ***constantly*** modulates its responses using chemicophysical controls to effect homoeostasis. While the insight may be as old as Hippocrates, Bernard was the first to document and explain how the physiology of healthy human was paramount to understanding sickness which mostly derived from a failure of homoeostasis. In this he was truly Hippocratic and previsedthe great American physiologist Walter Cannon (1871–1945) who developed the modern understanding of the autonomic nervous system and actually coined the word homoeostasis.[75]

Claude Bernard made medicine biological and philosophical (rather than metaphysical) but his was a biology led by health rather than pathology. The concept of the ***internal milieu*** formulated the Hippocratic insights in terms of modern experimental science. This is not intended to be the grotesque patronisation of ancient wisdom that science is wont to commit: but rather to trace the constant theme of illumination that human thought has offered to aid human suffering. Bernard's concept ***in all its detail*** can therefore be transposed directly into a therapeutic vision: one that looks for a positive outcome not the therapeutic nihilism of morbid anatomy coupled with medical specialism. Whatever triumphs modern orthodox medicine may claim, it seems to forget, at least in its practice, that the life of human beings is led through consciousness, and that this consciousness is ineluctably holistic. Any therapy that respects the indivisible wholeness of a person is starting from as good a philosophical position as may be taken. The right Hippocratic method tries to take into account all the facts and the entirety of the patient's environment; it seeks a therapy that corresponds closely with nature and tries, in the spirit of partnership, to facilitate the restoration of balance and the prevention of further trouble. Above all, it urges the practitioner ***at least to do no harm.***

Intervention with herbal preparations with the least reliance on drug plants go a long way to meet these criteria. There are many cultural and demographic reasons for the continuity of indigenous herbal medicine in France, but by putting physiology to the centre of healthcare, Claude Bernard certainly contributed to a scientific and holistic phytotherapy.

75 He died of cancer brought on by his research method: he used X-rays to study gut motility using swallowed barium. It is tempting to speculate that, had X-rays been available to Bernard he would have eschewed them for a more holistic method.

However, as we have discussed in Section 4 and shall address again in Section 6, a system of thought, even if apparently superior to the prevailing ethos of a society has to persuade vested interests to relinquish power. Practitioners of medicine have not always enjoyed status and respect and, like any group, once obtained is held tenaciously. It must be emphasised that in European states, modern medicine acquired a legal hold over birth and death which in previous times had been exercised by the Church and State. Now medicine is a legal agent of the State it hardly needs to address itself to the subtler issues of life and health between birth and death except to expedite the former and to attempt to defer the latter.

THE AGE OF ANTIBIOTICS (c.1940—)

The fact that many individual lives have been saved (including possibly that of the present author) by the administration of antibiotic medicines is indisputable. A good many acute infections that were invariably fatal are now routinely managed in a number of days. Epidemics of sexually transmitted bacterial disease are to some extent curbed.[76]

Much of modern surgery could not hope for a positive outcome without the use of antibiotics. Some lives may be saved or extended by aggressive chemotherapy, though here the debate is more complex and qualitative.

It is also beyond dispute that many organisms have developed resistance to antibiotics. It is also most probable that new infections are arising from inside our environment by the industrialisation of animal husbandry and equally probable that old infections are crossing the species barrier into humans by the physical destruction of ancient stable environments, especially forest, and so causing new human diseases like SARS and AIDS by liberating agents from their secluded habitats.

A holistic approach is always more complete when the sphere is meaningfully enlarged: thus to treat a fellow human, one must take account not only of her or his ***milieu intérieure*** but also of her or his ***milieu extérieure***. This extends beyond family and friends to the social, political, economic and physical environments. Ancient philosophers related the macrocosm to the microcosm with infinitely less understanding of the former. Yet today, when we have direct knowledge of worlds unimaginable to the ancient astrologers, we are remarkably local and parochial in our medical concerns. It ***is*** most difficult to assess the comparative risk to one's own individual child from infection on the one hand and vaccination on the other. Yet the notion of a world free of infectious disease with not only reservoirs of the vector destroyed, but all immunity annulled as well, should be as frightening as the scourge of disease itself. The world itself has its ecology, its proper homoeostasis, its equilibrium.

76 The noseless newspaper–seller at Piccadilly Circus in the 1950's is not seen today, nor is his like.

THE FUTURE

It is not easy for individual therapists to convince themselves or their patients of the need to reach equilibrium: all of us have only one life to lead, none of us is immortal. Herbalists have to make a living and they do so by the news spreading of their successful outcomes. Nor is it easy for the humility required for good practice to transform itself into the ***chutzpah*** expected for political dialogue with those currently possessed of greater status.

Nonetheless, medicine in the modern post–industrial nations. in order to serve the health of both the present and of the future, needs (if we may insert a strongly held opinion) to be:

- pluralist and non–hierarchical: the discussion and practice needs to be between equals
- Holistic and complex
- Homoeostatic and minimal in intervention and noxious effects

Herbal medicine is well placed to take part because it has the capability for homoeostasis and biological complexity; as for holistic, that rests with the philosophical stance taken by the practitioners of the art. The rest is not history but our daily lives and the future.

It may be fair to think of the early part of the millennium as one of great change in the political and social status of phytotherapy, but the seeds of change were sown in the 1970's, germinated in the 1980's and were brought into the light following the political challenge to our profession in 1994, as I hope to show in the latter part of Section 7.

Medicine and politics have existed since people were ill and societies wrestled with power relations; likewise, all peoples have had philosophical thoughts and expressions, but the Greeks were the first to develop a theory of medicine, politics and even of philosophy. This is the tradition of which we are heirs, even if the awareness of the tradition is subliminal. There is nothing subliminal about the influence of the Classic tradition of Greece and Rome on orthodox power in Europe: it certainly informs medical thinking and teaching. Perhaps much dissent, be it a reinvention of paganism or a multirelativist pluralism, is directed against the burden of history and the Classic tradition. As practitioners of medicine, we have to understand both tendencies because our patients may express either. The next Section is devoted to the separation of beliefs, and the notion of belief in dissent almost for its own sake.

6 HETERODOX AND ORTHODOX BELIEF & PRACTICE

> *To doubt everything or to believe everything are two equally convenient solutions; both dispense with the necessity of reflection.*
>
> *Henri Poincaré*[77]

One reason for the organisation of this text into parallel sections which chop the historical from the philosophical, the discussion from the description, is to avoid the construction of a neat orthodoxy, however modest. It seems a good reason in that you should not invite a reader to think independently about a problem if you then indicate how they should think. Human thinking, I shall try to argue in this section, is ***collectivist*** in that an idea congregates around a small number of principles or nodes, to which secondary ideas accrete and attract members of a group. The idea reaches a critical mass in the combined consciousness' of its adherents. At some point opposition appears to arise. In human history, the opposition can often be analysed in terms of a conflict of interest, a perception of resources being misappropriated by one group against the interests of another. Whether the more abstract reasons for opposition like 'truth' or 'justice' are rationalisations for the political reality or precede reality—are wired into our psyche, in other words—is a perennial human debate.

We have discussed the nature of belief in Section 4. We have seen in other historical sections that beliefs ***develop and change*** in the course of history but it is problematic to assume that they ***evolve*** because that would imply that human consciousness evolved from primitive to sophisticated. Well, that is an assumption usually made by a linear view of history which this text, it must be confessed, has been unexceptional in following: sequentiality is so much part of the familiar narrative. The problem of the dichotomy between primitive and developed is that a fundamental truth is ignored. For the Neolithic revolution to have happened at all—and from it flowed agriculture, trade, division of labour and industrialisation—"primitive" humans must have been ***scientific***, yet we talk of the Rise of Science (as we did in Section 5) as not happening till the 16th Century, and only in Europe. Apart from its absurd ethnocentrism, this purely sequential view proposes in almost a teleological way that there is a development in levels and types of consciousness that is fixed and yet, needs a prior state of that same consciousness to set it in train.

There is a circularity to the problem that human development depended upon the science of the stone⇒copper⇒bronze⇒iron ages which is itself subverted by the technology of the society so reformulated. The recruitment by technology of the scientific impulse and the appropriation of the spirit of reflection largely by religion is, no doubt, a function of the cohesive nature of belief and its relations with political power which we will discuss in a moment. Neurophysiologists seem still a long way off from any reasonable classification of human consciousness and even those that have seen possible associations between genes, neural circuitry of the central nervous system and thought (and therefore behaviour) have evoked passionate opposition. Any such attempt to associate behaviour and thought, in what seems a deterministic way, is seen as reprehensible and rejected as unethical on political grounds. On the Right, determinism is rejected because it might diminish responsibility, and therefore the scope for punishment, while on the Left, determinism is feared because it implies a hierarchy of difference which might tend to diminish the egalitarian ideal.

As seen in Section 4, modern social anthropologists (notably of the English schools [see especially Goody]) have rejected notions of the evolution from 'primitive' to 'advanced' (a dichotomy which persists in the French schools [see especially Lévi–Strauss] though the question is answered differently by the Postmodernists[78]). It should be stressed that neither side is naive enough to confer inferior/superior qualities respectively on the evolution of these patterns of human ideation: the charge of neo–colonialism is a position to which no thinker wants to own up.

The question centres on the process of transformation. If an oral culture becomes literate, or adopts a more complex set of technologies, what social changes occur and what happens to ***the modes of perception***[79] (and, presumably) valuation. The question is important for the understanding of perception and the interpretation of communication.

77 One of the great mathematicians of all time; towards the end of his life he wrote at length on the philosophy of science and the scientific method.

78 Largely a French–inspired discipline: eg Derrida and Foucault.

79 This is the thesis of Marshall McLuhan who is discussed elsewhere in this text.

All human relationships depend upon perception and communication, not least is it vital for practitioners of medicine to understand the ***experience*** of their patients. If there really is a dichotomy between 'primitive' and 'advanced' modes of ideation, that difference must persist in the genes and therefore must be scattered about any population; not only are the revolutions in technology genetically very recent, they are still going on in remote parts of the world. Accordingly, the different modes of expression must be present in all persons in all populations. Does it not follow, therefore, that differences in modes of perception and self–representation (and the corresponding internal manifestations) will inevitably react differently to the medical encounter. How, then, will these show itself amongst your patients? How will you recognise them, and how respond to them?

As medicine has become institutionalised in the West, the interface between patient and the system becomes normalised and completely obscures these perceptual differentials. Additionally, the institution of medicine has legal powers over life and death and possesses, and is associated in the patient's mind, with authority. Responding to authority is a crucial part of the development of the child's will, the adolescent's independence and the adult's maturity.[80] The lack of socio–legal status amongst practitioners of alternative medicine is part of its attraction to those who respond with difficulty to authoritarian structures. These are by no means the dominant motives for consultations; nevertheless, the nature of the relationship between the public and practitioners of phytotherapy will change after statutory self–regulation. In case the reader has a strong urge at this point to exclude her or himself from any political debate, as if the style of practice that she or he will adopt will be personal and caring and untroubled by intellectualism, it is important for us all to appreciate that medicine is always, however patient–centred the approach may be, a power relation.[81] All power carries with it the

80 When Freud evolved his theory of the Oedipus complex, he had in mind not only competitive sexual tensions between father and offspring but also the potential for lethal conflict between the emerging Self and Authority.

81 There is also excellent modern research which demonstrates that personal health depends upon social status in the sense that control over our lives and esteem in the eyes of our peers confers good health beyond many other indicators over which we do have control (exercise, diet etc); powerlessness to exert any control over our lives and the absence of esteem are conversely bad for our personal health and can even exceed such factors as smoking and poor diet.

potential for abuse. The flow of any current requires a charge separation and it may be that the flow of healing depends upon some differential between the parties involved. It may be that a perception of other–ness, in terms of knowledge, understanding and skills, is a requisite perception in the mind of the patient even if it occasionally merits a suspension of disbelief, as in the theatrical experience. We speak of the art of medicine, so let us remember that art means artifice: the therapeutic relationship is artificial in that it is constructed and separate from everyday modes of interaction.

Social scientists are extremely wary of accepting explanations from biology and physiology. These problems that beset social anthropologists—of the expression of difference in modes of thought, which so intimately concern the evolution of the human mind and the modulation of inner perceptual maps—is most probably going to find its solution in other disciplines, though the influences will be gradual and resistance stiff, especially to neurophysiology. The objections are ones that perhaps we would make, that a holistic explanation involves taking account of all components. In the new science of Complexity Theory (sometimes known as Chaos Theory, there is much useful corroboration for the section that follows.

It is the contention of this author that all socially constructed beliefs leads to a system that bifurcates. Binary representations of the world are ancient and constitute most 'primitive' belief systems that have been recorded and have been preserved in historical forms. One could say that such a construct is "natural", in that our experience of life is composed of binary symmetries: day and night, hot and cold, moist and dry, male and female; certainly these opposing pairs are embedded in ancient medicine. As we have seen in some of the Greek models, a tiny portion of its opposite is contained within each quality, as is beautifully expressed in the symbol for yin and yang. These metaphorical notions of the nature of the world are among the most pervasive in human culture and we should now examine the implications for our beliefs and for those of our patients.

THE BIFURCATION OF BELIEF

Turbulence in complex dynamical systems has long been a problem for engineers and also for weather forecasters: you just cannot predict the weather far ahead yet you can predict that there will be weather of a certain type because the weather ***emerges*** from a system that is ***not*** random.[82] Unhelpful. Mitchell Feigenbaum derived equations for the mixing of the elements air, fire and water in our complex biosphere and showed that they always bifurcate periodically so that one branch will always contain an aspect of its opposite, just like yin and yang. Biological forms also bifurcate in this fractal way (the branching of the tree or of the arteries are obvious examples), as do the non-living matrices that support them, like rocks, soil and water-systems.

All human social institutions develop over time by bifurcation. The most obvious political manifestation is into the Left and the Right (and, of course, the left of the Right and the right of the Left). In the dominant belief-system of a society—its religion—the bifurcation is very obvious and a locus of the most contentious debate. Thus, the Church of England has its liberal and conservative wings with ritual forms expressed as High and Low. In a sub-group of the population which is created by an association by ideas, function or belief—grocers, builders, pastry-chefs or herbalists—when ideas rise to surface above function, separating tendencies appear; when the association is large and stable, the separations are barely visible and do not interfere with the binding function of the basic function because a critical mass has been reached. When the association is small, the separations are highly visible and may even stress to the point of rupture the binding capacity of its basic function. When a bifurcation drifts too far, schism[83] becomes inevitable.[84]

When a group becomes marginalised, separation within the group accelerates and is particularly discernible in religious cults. What defines a cult is usually a 'return' to an ideal from which the majority is seen to

82 That weather will oscillate between multiple states and still retain a certain character is because the system is said to have a certain phase state which is created and held in place by an attractor. The details of the theory need not concern us here, but we should be literate in them if we are to study complex systems like human behaviour.

83 After the schism of the 11th Century which split Rome from the Greek Orthodoxy, the later Reformation therefore, was the split of the split.

84 It is clear from the brief survey of herbal medicine in Britain and America since the 18th Century made by Barbara Griggs and others that, as the separation from the mainstream widened, the movement became beset by bifurcation and schism.

have drifted, but as the 'purity' of the ideal becomes distilled, fewer and fewer can attain it and the striving for perfect purity isolates the few and leaves them fewer and fewer people to whom they feel able to converse, if conversing remains a proper thing to undertake at all. The momentum of any group can be ***towards*** a positive good (such as the prescription of medicinal plants) or away from a perceived evil (such as the prescription of inorganic medicines) or it can have the confidence to oscillate comfortably within a pluralist milieu.

The history of medicine which incorporates a deep social exchange as well as technical prowess and includes also the belief systems of its participants has followed, as we should expect, a path of oscillation. One of the most potent separations is between that of holders of the prevailing paradigm on the one hand and protesters and reformers on the other. There is often something incestuous, if not œdipal about the relationship between protesters and reformers and the tradition they disparage.

It was Paracelsus who reiterated the distinction for his time between the Law of Contraries and the Law of Analogy so clearly stated in the Hippocratic corpus and redefined by Galen. In the former, the remedial act attempts to ***oppose*** the symptoms of the sick person: thus, cooling the brow of the fevered subject or—and this is the extension that has occupied herbalists—using a cooling herb against conditions of heat. By contrast, the Law of Analogy invokes a similarity between the general appearance of the condition and the therapeutic agent. It thus echoes the humoral notions of Hippocrates and Galen that, in health, the macrocosm is in balance with the microcosm whereas, in disease, the signs and symptoms indicate the nature of the imbalance and calls upon a material analogous to those signs to correct them. The Doctrine of Signatures, in which the Creator is said to have signed Nature with an analogy of human disease is an example of a cure following the Law of Analogy. The Classical Homoeopathy of Samuel Hahnemann (1755–1843) is exclusively analogic as are most systems and curative modalities of sympathetic magic. Hahnemann shared with Paracelsus an obsession with the ***purity*** of a medicine and a belief in monopharmacy—in great contrast with Galen.

What Paracelsus and Galen have in common is an overweening sense of their own pre–eminence not only for their day but for the history of medicine. Both men stated that they were greater than all that had gone on before. It follows from this pathopsychology that they are unable to

concede importance to their philosophical forebears. The fact that the totalitarianism implicit in the temperament of such thinkers had such a profound influence upon succeeding generations—at least in the case of Galen—should be a reminder for us to be wary about the adulation of great authorities especially when they will brook with no opposition. Totalitarian regimes always feel threatened by collectivism. While collaboration and consensus in thought is not entirely a modern phenomenon, so far as written culture is concerned, one of the great strengths of modern science is the notion that the corpus of beliefs is dependent upon the works of antecedents rather than a single individual and that it is fully expected to evolve by modifying rather than disparaging the work of the innovative thinker who does mark milestones in the development of thought. Thus Einstein's theories—their incompleteness acknowledged— is the focus of constant reappraisal with the possibility of its replacement an expectation rather than a fear.[85]

The attraction to heterodoxy is seen in one of Avicenna's four types: the choleric especially that variety that takes upon itself the injustice of the world and, furthermore, finds that all dealings with the world are tinged with unsatisfactoriness at best, harsh unfairness more normally. What is consistent about protesters and reformers is their ***anger***. This quality is seen in patients whose constant drive is to protest, even rage against the nature of the world. Hot, dry conditions may then present though often also with the moisture of emotion. [By contrast, timidity and passivity are cool, constricted expressions; medical conditions cannot be diagnosed this way but the relationship between the appearance of the person and their condition is essential]. Unlike Dr Edward Bach who sees emotional and spiritual states as essentially separate and unitary, I would propose that all emotions may be understood as dichotomous positions along a continuum, the position established by repeated bifurcations. As for the anger of protest, it is essential to understand that such patients take a heterodox position on ***any*** question. It is the corner of the ring they inhabit exclusively. The justifications for the rage (of which there are always plenty in an imperfect world) should concern the clinician less than the quality of the protest.

Paracelsus would have made such a patient. Let us now cite some more modern examples, other champions of benign rebellion who are

85 This is not to deny that egocentricity is alive and well in any scientific discipline, but to point out that at least the system has inbuilt buffers against coerecive megalomania.

likewise paradoxical. Dr Alex Comfort wrote ***The Anxiety Makers*** in 1963 which is a cogent analysis of the efforts by priests, advertisers and medical practitioners to preserve their power over their congregations, customers and patients by raising rather than lowering their levels of anxiety. Later, he co–authored ***The Joy of Sex*** and spent much of his professional life in promoting sex therapy and campaigning against the prevailing puritan ethos of medicine. He was no vapid populariser nor solely a hedonist, but a medical researcher of considerable talent and character. He was politically an anarchist who wrote a number of constructive pamphlets on education, delinquency and racism; he was a committed pacifist who, records his son wryly, was the most pugilistic person one could come across: highly combative in his promotion of free love and peace. Paradox should be valued in human character and accommodated within the clinical assessment of the angry patient; it is when the protest lacks all modulation that it becomes difficult to treat. One could describe the psychotic as someone whose internal logic is intact but incapable of modulation and sealed off from the contradictions involved in finding consensus. We have not even touched upon the dichotomy between purity versus impurity. The thresholds a people have towards contamination is often a means of the exclusion of others. In compulsive and obsessional patients, a sense of purity is highly literal and a bid, always painfully thwarted, for control, loss of which is their deepest fear. Paracelsus exhibits the paradox seen in some schizophrenics: they have an undue requirement for purity, fear contamination and yet are careless of daily appearance and hygiene. Much the same could be said for Socrates. Herbal medicine is by nature impure (mixed); purity is a construct of the human mind and not found elsewhere in nature.

In discussing rebellious anger, we must not forget that herbal medicine was constructed, from a socio–political point of view, as part of alternative medicine which is to say that it is heterodox. This is not necessarily to imply that all its adherents and patients are opponents to orthodox medicine, but some degree of separateness could be expected. The coining of the term complementary is to narrow the difference and implies, by its courtesy, a degree of convergence with a corresponding rise in status. With the neologism complementary, an observer could expect a bifurcation in the alternative camp into those who welcome convergence and those who reject it. Anger is not needed for those who seek some convergence in order to assert greater pluralism in medicine.

A more Paracelsian case than Alex Comfort is Dr Wilhem Reich, a brilliant pupil of Freud with whom he later came to blows, pathologising Freud and aggrandising himself. Like Comfort, he was a writer on sex and authority. The younger Reich wrote fine analyses of the psychology of totalitarianism yet became incapable in later life of tolerating opposition to his view: he became fixated and inflexible about his theories of the orgasmic personality and consumed with paranoiac rage against critics and opponents.[86] He died in prison, a victim of the conflict between his beliefs and the law.

The last example of an angry paradox is taken from literature where the conflict between orthodox and heterodox expression is as lively as that in medicine and science, and usually more bitter. Ezra Pound is considered by some to be with, WB Yeats, one of the greatest poets of the early 20th Century. TS Eliot dedicated 'The Waste Land,' one of his greatest poems to Pound in which he honoured him with the title '*il miglior frabbo,*' (the better maker). Yet Eliot is better known than Pound, became a pillar of the literary establishment and occupies a pivotal position in our understanding of our times in that his works feature as set texts in the syllabus of our secondary schools. Pound's life was one of feverish energy and expression though he wrote, analogously with Picasso, in many contrasting styles and is the founder of Imagism and Vorticism. Hugely erudite,[87] he absorbed Classical Chinese poetry as well as that of Greece, Rome and the troubadours into his idiosyncratic styles. He lived the high bohemian life and suffered for his art. His lyrical voice is exquisite, but his political obsessions burst out of later poems with an anger that the verse could hardly contain. He was a pacifist and anti–capitalist and naively associated his theories on taxation with those of Mussolini during the war, for which he was imprisoned. He was spared execution and obtained eventual release, following a campaign by fellow poets, by a declaration of insanity and incarceration for years in a mental hospital. He was the founder of modernism in poetry yet is less known than poets who were his followers This failure is often blamed on his vitriolic anti–semitism, yet TS Eliot and DH Lawrence

86 This is a conventional appraisal of Reich's later development which a study of his later work tends to justify, but is confirmed anecdotally (and stories are always best) by Gerda Geddes who worked with him during his flight from Hitler to Norway. Without rancour, she details conversations which reveal that his egomania and totalitarianism were already evident in 1944. [Gerda Geddes extended personal communications with the author.]

87 Though this view is challenged by the poet and classicist Robert Graves.

were clearly so (if not so rabid) but are neither remembered nor denigrated for it. It is, I contend, the attractor of heterodoxy, a total belief in opposition for its own sake that accounts not for the poetry of Ezra Pound but for the relentlessness expressed in his fate.

Contemporary herbal medicine can, for reasons that have nothing to do with plants, attract both patients and practitioners who live life by opposition. However, it is possible to live on both sides of the river of life by a nimble crossing of the water, an oscillation. Remember, there is a little yin in yang and vice versa. ***It is only when there is no admixture of the modulating quality of the opposite, that a person, a system or a creed can become entombed in their belief.***

A CASE HISTORY

The device of the case history is a favourite illustration of a medical syndrome. I would like to take a case history from Shakespeare to illustrate a number of the dichotomies that oscillate through the history of medical thought. An appreciation of these can surely only contribute to a holistic view of diagnosis and treatment.

The patient is Lady Macbeth who is having trouble sleeping. Her husband in The Scottish Play (as actors superstitiously like to call it) summons an English Doctor of Physic. The patient is seen (Act 5, Sc 1[88]) to be walking and talking in her sleep and reveals intimate secrets which remind the doctor of his oath of confidentiality.

When he is asked how the patient is doing, he replies (5.3):

"not so sick … as troubled"

What dichotomy is Shakespeare operating? Was being troubled not sick in 16th Century England? Or did mental illness constitute some moral sphere in which medicine was not thought apt to operate. Shakespeare may have been slipping in a contempt for medicine commonly expressed in literature[89] but we may also guess that he thought of mental illness as a sphere of suffering impervious to treatment, to judge from King Lear's[90] lines:

> *we are not ourselves*
> *When nature, being oppos'd, commands the mind*
> *To suffer with the body.*

88 William Shakespeare ***Complete Works*** Clarendon Press, Oxford 1988

89 cf. Proust, Moliere, Shaw, Flaubert, Dostoevsky

90 Act 2, Scene 4

just the opposite to Oscar Wilde's prayer: "Lord, preserve me from physical pain and I will look after anguish of the soul".

Macbeth then asks the doctor if physic is not capable of removing the hurt:

DOCTOR not so sick, my lord,
As she is troubled with thick–coming fancies
That keep her from her rest.
MACBETH Cure her of that.
Canst thou not minister to a mid diseased,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And with some sweet oblivious antidote,
Cleanse the fraught bosom of that perilous stuff
Which weighs upon the heart?
DOCTOR Therin the patient must minister to himself.
MACBETH
Throw physic to the dogs; I'll none of it.
If thou couldst, doctor, cast
The water of my land, find her disease,
And purge it to a sound and pristine health,
... [***he switches back to his military troubles but remains with the medical metaphor***]
What rhubarb, cyme, or what purgative drug
would scour these English hence?
DOCTOR
Were I ... away and clear
Profit [***ie his fee***] should hardly draw me here.

When observing the patient herself[91], the doctor sums up what is effectively his diagnosis thus:

"More needs she the divine than the physician."

What kind of demarcation existed between priests and doctors and in what way does he see religion and medicine excluding each other? Of course, whatever ironies Shakespeare may have intended, in this play he is presenting a darker more sinister religion: that of black magic represented by the three witches from which forces the timid physician is forced to run scared.

91 Act 5, Sc 1

On the left of the bifurcation, the divine is asked to fight it out with the demonic and on the right we have the quite unhelpful doctor. The divine and the demonic themselves may have opposing polarities, which show up as historical oscillations:

demonic	rational
divine	analytical

Are these polarities expressive of a real dichotomy between medicine and religion? And am I showing a bias by putting the rational/analytical on the right side of the equation when right is always cognate with lawful while left [***sinister*** in Latin] expresses something of an opposition to correctness? In the Greek tradition to which Europe is heir, we can detect common roots and practices in religion, drama and medicine.[92] We must also appreciate that the Greek was an aristocratic society and that its state religion was opposed to paganism in forms of ***personal*** immanence, just as (according to some anthropological thought) Homer is a rationalisation by aristocratic Greek society of more primitive modes of thought.[93] Medicine itself has shown oscillations throughout the historical period between the following polarities:

local	cosmic
empirical	inductive
analytic	synthetic
technical	philosophical
pragmatic	taxonomic & hierarchical
demotic	aristocratic

An example on the left bifurcation is that practised by some of the hunter–gatherer societies whose medical practices have been studied and, in modern times, in a casualty or intensive care unit.

An example on the right is that practised by most homoeopaths and, in a rather less essentialist sense, most humoral systems such as Ayurveda, and in traditional Chinese medicine and that found in England in the days of Chaucer and still subsisting till Shakespeare's time.

It is an oscillation of tendency, not a strict bifurcation. It is ironic that science (born in Babylonian and Vedic times and in the deductive and

92 cf. Kitto 1961 in Bibliography.

93 Bertrand Russell History of Western Philosophy George Allan & Unwin 1961 p31

inductive innovations of Greece), started as one of triplets with religion and philosophy (which has more of the right side of the dichotomy), became attached to the practice of medicine of the left side. This was a curious oscillation because in the Greek tradition to which the culture of Europe is heir, the original elaboration of the scientific method was largely non–experimental because experimentation was associated with labour from which their class required them to abstain. It may be that the swing of the oscillation occurred in the time between Descartes (died 1650) and Boerhaave (born 1668); it may have been driven by another bifurcation which grew in momentum in Shakespeare's time but is a tension endemic to religious expression which I have expressed as follows:

dionysian	apollonian
ecstasy & transcendence	control
rapture	restraint
idolatrous	abstract

Until well after the renaissance, priests still had the advantage over doctors because of their alignment with political power and cultural status. In 16th Century England, a more severe version of the mode of Apollo is referred to as Puritanism. In Greece, drama expressed social fears and gave a platform for the dominant religion; the tragic plays were moral warnings of the destructive effects of primitive religion and yet were full of schadenfreude which gave a piquancy to their purgative force.

Though Greek medicine of the Hippocratic corpus—with its interest in the process of change in the world and its impact upon the human body—was mostly to the right side of the antinomial pair, it also contained remnants of the instinctive characterisation of the left side. Also the birth of ***profession*** and its differentiation from trade and priesthood can be traced to the later Hippocratic school and contained an element of compassion for the sick ***individual*** in his own experience and not bound up with an aetiology which was outside his physical quotidian being. A responsibility arrived with this personal, rational compassion: the profession involved a sense of duty of care in a particular sense, the person became a case; some cases were more difficult than others and were more demanding of the doctor. From this came the notion that not every manoeuvre was directly for profit: sometimes a duty was involved that actually cost the practitioner (eg the writing of case notes, reading

and research into a difficult case). However, the notion that reputation and status so acquired made up for the temporary pecuniary loss is still an important mark of professionalism today. In this respect the doctor attending Lady Macbeth doesn't come out so well. Another aspect of the professional treatment of the individual involved the recognition of the intimacy enjoyed by the medical practitioner and the corresponding requirement for discretion and confidentiality as expressed in the Hippocratic Oath and so we may ascribe the development of professional ethics and deportment to the physicians of Cos. Pier Paolo Pasolini in an interview at the time of the release of a controversial film on Caligula, said: "power cannot be expressed ethically, only erotically"; to which we might add "or therapeutically"

It is the bid for economic and political power that bends the oscillations of history, that tends to force open or to close the bifurcations that characterise cultural life.

The harnessing and controlling of erotic power for the ends of social cohesion has been at the heart of religious and political manifestos in most parts of the world with dionysiac rites and eleusinian mysteries forced into cultdom. Today charismatic Christianity and born-again baptismal rites constitute a powerful minority. The rapture is not necessarily erotic unless it be in a sublimated form which brings me to an element of medicine that is close to the divine prescribed by Macbeth's Doctor. Human beings have a need for ecstasy and transcendence.[94] Idolatry and polymorphous expression (for which I have coined the term theatrism) is an irrepressible urge and has frustrated puritans since the time Moses dropped the stone in anger. The perennial social tension can reverberate in one time, even in one man—St Augustine being surely the archetypal example. It is largely a male problem, most of the rapture being devoutly but unconventionally experienced by women such as St Theresa and the great musician, poet and herbalist Hildegard of Bingen.

theatrism	Puritanism
the search for immanence	the search for truth free of distortions

Excess of either mode may produce:

corruption	spite, meanness of spirit
romance, pretence	psychological naiveté, pedantry

94 see Marghanita Laski in Bibliography.

Aeculapius belongs with immanence and Hippocrates with the search for truth free of distortions and so belongs with Puritanism which, like all human impulses has a light and a dark side. The perennial battle of St Augustine came in for a skirmish with venality in Shakespeare's day: closing the theatres was not just a loss of public enjoyment, for him and his actors it was the loss of a living. Paradoxically, the Puritan reformation of the period coincided with the renaissance of science, art and free thought (but controlled expression). Where does medical belief figure in this dichotomy? Well, plagues apart, a long slow rise in average life expectancy occurred in Shakespeare's lifetime. This most probably had much to do with the enormous increase in the availability of Vitamin C from citrus fruits and the 'new' plants, especially potatoes and tomatoes, brought from the Americas. It almost certainly had nothing to do with the practice of medicine. But in terms of rational grasp of the world, Culpeper and Gerard make very sore comparison with Milton and with the great English botanist John Ray, both staunch Puritans.

Going back to the beginning, (of the discussion, if not of history) if herbal medicine has its roots in empirical observation and was largely concerned with the treatment of trauma and recovery from acute illness, what use had it for philosophical rationalisations? Ethnographies of those societies which have neither agriculture nor domesticated animals cannot answer the question simply because we all operate at more than one level all the time and move from one sphere of concern to another as the need arises. The need for food, for comfort, shelter, love, sex, sleep, freedom from pain are needs which may preoccupy the moment but their separateness from the rest of life is temporary and illusional. This is the problem facing not only the anthropologist in the field, but the practitioner facing the patient: how is the present concern sewn into the social fabric of a society, of an individual? It may be that empiricism is fundamental to anyone's present needs: it is problem solving in the world of concrete reality. But for every 'how-state' (how do we fix this?) is soon followed by a 'why-state' (why did it happen to me?).

So, it should come as no surprise that in nomadic, non-industrialised societies, the countervailing influences of shamanism opposed 'primitive' empiricism.[95] Modern medicine seems to provide something of a contrast: the surgical, aseptic techniques that characterise could be said to be born out of warfare. Certainly, the establishment of the modern

95 see Mircea Eliade in Bibliography.

British hospital owes much to the campaigning work of Florence Nightingale and she might not have had the mission nor the influence were it not for the Crimean War. As Roy Porter says, "the Great War necessitated close study of traumatic shock".[96] Where is the need greater for speedy, effective action and leave the thinking till later? The thinking that precedes military medicine resides in the medical research that is one of the products of an industrial complex. Industrialisation, by its nature, is involved with ***process***, and a process is often complicated rather than facilitated by people, even though people are the instigators and supposed beneficiaries of the enterprise. Of course, it is now obvious to us that the mechanisation of human life requires an ***externalisation*** from what Aristotle would have called the psyche. Mechanisation requires an ***objectification*** of human behaviour and needs objective goals to be satisfied. Mechanisation did not start with the Industrial Revolution but with civilisation itself: with its construction of outer and inner walls came hierarchies, the linear alphabet and literature. The compartmentalisation of the Self originates in the agricultural impulse: with the conservation of foods in storage houses, walls separating both functions and people.

Modern medicine, with its claims (perhaps exaggerated) to a scientific validation of its procedures, concerns itself with the maintenance of vital functions in which, if the Intensive Care Unit is a fair measure, it excels. Investment, both material and inspirational, in this success has been so great that perhaps medicine feels justified in resting upon its laurels: 'we give you life, what more do you want?' Given the history of epidemics, disease and pestilence that have afflicted humankind, it is a reasonable pride. But there is more to life than a heart-lung machine and the plague of infectious disease is associated with the very urbanisation that agriculture made possible in the first place. We are back at the beginning: the small human group seeking a life for itself. Research has shown that however large the metropolis an individual lives in, the number of social relations that any of us maintains is close to the limiting number found in hunter-gatherer societies. The philosophical questions of identity (who am I?) and affinity (who am I with?) and purpose (what am I doing?) are questions which remain universal but which in earlier human societies were answered collectively. Still they are answered collectively, but in a pluralist individualised consumerist world, the collec-

96 p571 in *The Greatest Benefit to Mankind*.

tive may, to the patient, sound like a babble coming from all directions rather than clear quiet speech from a single source. Health is bound up with a sense of Self: 'how am I?' is part of the daily internal monologue. When our replies to this daily question seems not quite satisfactory and when that unsatisfactoriness develops into a sense of unease, humans tend to seek a co–respondent to the question. When anxieties somatise and set up cycles which likewise become embedded in our bodies, the co–respondent is likely to have been a priest in the past and more likely a physician today.[97] Often the anxieties we suffer derive from those questions of identity, affinity and purpose just mentioned; the doctor (even during the necessary process of eliminating pathology) who takes the somatisation at face value, fails his patient, who was seeking an ally.

So, most functional disorders can be ascribed to crises in the individual's sense of identity, affinity and purpose for which the priest was formerly the representative and did not have to do much beyond the rituals, admonitions and prescriptions of the sect. The modern herbalist is in a good position to combine the role of physician-priest in the empathetic role. In case we are thought to be creating a false dichotomy here, let us remind ourselves that at least some pathology is precipitated by chronic functional crises. We have already mentioned the need human beings have for ecstasy. Another perennial source of illness concerns the failure of an individual to experience and integrate the sense of the numinous and the release of the multitude of differentiations within her or his life: the bifurcations, the polarities, the oscillations. In a religious society, the priest had much control over the very experience that seeks to be released from control (hence the bifurcation into orthodox & heterodox). The best priest, like the best physician, is a facilitator of the need for the dissolving of the margins of the ego and its reintegration into normal social life. It is the doctor's function to be an ally in the process of resolution, a function more difficult for a priest with dogmatic persuasion. Here the doctor has to suspend literalness, hence: the physician has to employ the mimesis & empathy which belongs to an actor in the theatre: this reading of the truth is sometimes a prerequisite for resolving unendurable hardship.

97 With the modern delusion that Health is a consumer durable and with poor technical facilities in the hands of the priest, the position is overwhelmingly reversed and doctors have considerable social power, though their personal experience of that power may have become tarnished in recent years. Refer to the critiques made by Ivan Illich (himself an ex–priest and ex–radical theologian); see Bibliography.

If the patient is one of our choleric protesters, it is likely that illness will coincide with a crisis with authority; here an authoritarian medical system may help them fight, but it is risky, it may force them into being a victim. Of the four characteristic responses to severe illness

- The fighter
- The denier
- The martyr
- The victim

the first two have been shown by research to be equally propitious while the latter pair are associated with a poor outcome.

As psychoanalysis has shown, the relationships the patient makes with the practitioner is revealing about the mode in which s/he operates, but of course the relationships that the practitioner makes with the patient is also as revealing about the mode in which she or he operates. It is incumbent upon us as practitioners to keep our own autobiography under review, for both professional and therapeutic reasons because the consciousness that the practice of medicine is a power is absolutely necessary for it to remain ethical. Evidence should be the corrective to indulgent and loose thinking and to loosen the constipation of prejudice but not a means to prosecute a particular point of view or protect a vested interest.

It is difficult to assess how well the Doctor comes out of it in the Scottish play:

1 He recognises the limits of his competence
2 He proposes a referral though does nothing about making it happen
3 He formulates a diagnosis and delivers it to the spouse
4 as for treatment, suggests the patient take responsibility for herself
5 when the going looks terminal he retreats even if he were to forfeit his fee

Herbalists should be the divine as well as the physician

7 THE BELIEFS AND PRACTICE OF PHYTOTHERAPY

from a Historical Perspective

I hope that it is clear to the reader that the practice of medicine depends upon a relationship between the physician and the seeker of help. The social ideas of both protagonists and their perceptions of each other are of course inescapable factors that may colour the perception of the outcome as well as the rationalisations by either party of the medical events. There is always an agent of change. For healers, this may be what they call 'the universal energy' that they channel; for a surgeon, it will be the knife; for the psychotherapist the change may be described as coming from the patient, but the agency is the therapeutic situation convened by the participants. With herbal medicine, the agency is that of the ingestion and application of plant material.

What is peculiar to medicinal interventions, as apart from physical and surgical therapies, is that the agent can have a life of its own outside the therapeutic setting: the agent becomes a commodity. This commodity can therefore be available outside the therapeutic relationship. A medicinal plant is in the public domain, and therefore may be sought in the wild, or in the market place. A purveyor of medicinal plants will have an indeterminate range of relationships with his commodity: she or he may or may not have special knowledge or may rely on the knowledge of others (a merchant), may or may not 'profess' such knowledge with an oath or belong to a guild. The apothecary (from αποθεκε, apotheke, a storehouse) was originally a grocer who specialised in spices and gradually became a pharmacist (from φαρμακον, pharmakon, a drug) when medicine, following the chemical elucidation of medicaments, became more formalised and regulated. It is clear both from household accounts in Britain and from our literature,[98] that knowledge of medicinal plants was attributed to individual women and men. Such knowledge invites responsibility and expectations and is not lightly attributed nor accepted.[99]

Here, sadly and unjustly, we have to acknowledge in a mere paragraph the human resource of the folk plantswoman or man, the collector, the supplier, the administrator of herbal remedies both to markets and to friend and family. The tradition is oral, informal and often fragmented. Ironically, that very tradition found in exotic societies is very well known and recorded by European anthropologists, but the ethnography of Britain is largely inferred from written records. It is peculiarly scanty in England because of our early urbanisation and the loss, associated with industrialisation and imperialism, of a true peasant economy. Anyone wishing to remedy this state of affairs and record contemporary usage of folk remedies by recent generations should contact ***Ethnograpica*** which is supported by the Royal Botanic Gardens at Kew, the National Institute of Medical Herbalists and the Chelsea Physic Garden. In Wales, the home of the great tradition of the Physicians of Myddfai and in Scotland, the testimony is much richer.[100] It is worth repeating and emphasising here, that "learned, written" sources relied on empirical reports of plants—priests from slaves, philosophers from artisans, lords of the manor from agricultural workers—and we must not fall into the trap of idealising the originator against the disseminator, nor vice–versa. It may take an original mind to pick up a homely piece of intellectual property and integrate it into a larger scheme. The earliest written compilations of medicinal plants—the ***Herbals***[101] of the ancient world—are lost but are the subject of constant references by later writers. Theophrastus names and describes the plants gathered by the root–diggers (*rhizotomoki*) and, in passing, makes scornful mention of the superstitions associated with their collection: paeony root to be dug at night or else one risked one's eyes to a woodpecker, or the loss of one's life to an eagle if a hel-

98 one needs hardly go farther than Chaucer or Shakespeare.

99 Of course, the situation described here post–dates the rise of agriculture. Hunter–gatherer societies are intimately acquainted with the natural histories of the plants in their world in an experimental, scientific manner. Although they were absorbed, along with animals, into totemic beliefs, superstition (in the sense of belief without action) motivates against survival and is the luxury of a divided, leisured society.

100 In 1977, the present author was able to interview a herbalist from the Cambrian Mountains who could name her antecedents back to the 17th Century and was clearly part of an even more ancient tradition. Coincidentally, she bore the same name as the herbalist who offered William Withering the herbal remedies for dropsy in 1775.

101 we shall come to the printed Herbal later in this section.

lebore is cut without special precautions. It is assumed that these were literal beliefs, but it may just be that such a corpus of deterrents was evolved to preserve livelihoods and to warn off the amateur opportunist.[102] Modern book–druids who thirst for an ancient magical sense of the world may be inventing a completely new set of 'beliefs' by taking these ominous warnings at face value. We just do not know. However, it is fair to say that herbal medicine may not be just about the plant but about the ***idea*** of the plant as inhabiting a vitalist, animist world.[103]

Before the invention of agriculture, if we may extrapolate from studies of contemporary hunter-gatherer societies, the use of medicinal plants was socially organised and played a central role in therapeutic practice. Once plants became stored in a separate place and became a commodity along with time, those with the greater command of them both began to systematise what was known. Before written records, paintings and decorative motifs are invariably of economically important or medicinally interesting plants.[104] There are Assyrian and Egyptian plant lists, many of them pictographic which separate out those species used for food, medicine and fodder as well as textiles, dyestuffs, timber and cordage. The cultivation of gardens in Persia, Egypt and Mesopotamia as attested by wall paintings and grave inscriptions indicate how valued a resource they were: the Persian word for garden (paradise) entering various languages as the image of the divine realm or, as in the case of Eden, as perfectibility on earth. In China, the first plant book was written before 500 BCE and is largely therapeutic. Unfortunately not extant, it did survive till at least 500 AD at the dawn of the Golden Age of Chinese civilisation when much of it entered the pharmacopoeias which date from that time, a consistent tradition which survived until modern times. The more ancient Vedic tradition of India was mostly oral but a compendium of medical and surgical texts survive from about the time of Gautama Buddha (560–480 BCE): it exhibits comprehensive knowledge of some 700 plants arranged according to medicinal usage. In Central America, the libraries containing the herbals of the Maya and Toltec were well attested though, with one or two exceptions, not documented before

102 As Agnes Arber points out, collection myths would have had protective benefits to the environment: by warning off the casual collector, the plants would have been preserved from over-exploitation.

103 I have touched upon animism in Sections 4 and 6, but the subject is vast [see Eliade in Bibliography].

104 eg frescos found at the Minoan King's palace dated to c. 1800 BCE

they were put to the fire by the Christian authorities as full of "superstition and the lies of the Devil". Two surviving late Aztec herbals provide an insight into the richness of their herbal tradition and the sophistication of their botany. Francisco Hernandez, physician to Philip II of Spain in the 1570's, wrote a detailed account of over 1200 medicinal plants in the botanical gardens of Huaxtepec, thus preserving some idea of what has been lost.

The Herbal is a list of medicinal plants with descriptions of their uses. Notably, Hippocrates did not compile one. This did not mean that plants were not used as medicine but that they were subsumed into the holistic approach that the physician took to his patient. There are probably (but we have no way of knowing) two other important reasons:

1) The collection of medicinal plants was itself considered a manual occupation, artisanal at best but certainly not a profession, and
2) many herbs were inextricably linked with religion, and the Hippocratic doctors were expressly committed to severing the connection between medicine and the supernatural.

It may be also that herbal lore was such common knowledge that it would have been subsidiary to the practice of medicine not considered worthy of a specialised treatise. Whatever the reason, there is no extant herbal nor any mention elsewhere of any such texts until the classical period of the 4th Century BCE when the gap between the oral and written tradition tends to part, or, to put it more accurately, when the oral teaching tradition began to be recorded in writing. The most important herbal that survives by reference is by a contemporary of Theophrastus who regarded him as the expert on medicinal plants and may, it has been suggested, have been his friend. He is Diocles, a celebrated physician from Carystos who practised in Athens. Although so few fragments of his work survive, he was clearly the authority of the age and is mentioned by Pliny, and no doubt survived, unacknowledged in Dioscorides.[105]

The first professional physician who clearly sees himself as a herbal specialist emerges in the 1st Century BCE: he is Creteuas (c.120—60), doctor to King Mithridates Eupator[106] VI of Pontus (who also fancied himself as a herbalist) and poisoned himself after the third of his wars with the Roman Empire which wished to subdue his kingdom on the Black Sea. According to Pliny, but corroborated from several other

105 see Bibliography.

106 Herbalists and botanists should spot his appearance as the name of a genus and the specific epithet of a medicinal plant.

sources, Creteuas is considered to be the originator of the botanical illustrations which were collected in a companion volume to his herbal which bore the same title as that of Diocles, namely ***Rhizotomikon.***[107] The work of these writers was much copied, especially by Roman writers who considered them both as classical authorities.

We owe a debt to Pliny for having commented at length on these writers whose work is now lost. The lesson provided by the lack of critical thinking in his voluminous works [refer back to Section 5] is that while it may be temperamentally attractive to be non-judgmental, relativist and 'all things to all men', it leads, nonetheless, in medical matters, to bad practice.[108]

PEDANIUS DIOSCORIDES[109] (c. 40—C. 90 AD)

It is not difficult to find, in introductions to modern herb–books and historical glosses, the idea that Dioscorides represents the beginning of the written record in herbals whereas his book, translated from the Greek as ***De Materia Medica libri quinque,***[110] is in fact the culmination of the remnants of classical writing on plants. We know little about him except that he was born in Anazarb, Cilicia which is where the Mediterranean coastline takes a turn of 90° (from Turkey to Syria in our terms). He was a younger contemporary of St Paul of Tarsus which is also in Cilicia; Dioscorides lived, then, in turbulent times and was almost certainly an army doctor.

As might be expected from the title, he wrote a reference work, in five books, of all the medicinal substances available to him or those he presumably found useful. It is considered that he probably incorporated the works of Creteuas and Diocles. As with those authors, no contemporary copy of Dioscorides survives: we have to rely on a copy made in the early 6th Century commissioned by a Byzantine noblewoman which did not surface until a thousand years later, battered but intact.

From his own account, Dioscorides was a practical man who believed in direct acquaintance with the plants he describes or, when that is not possible, searches for reliable information from those who have that

107 unfortunately all originals are now lost.

108 although his works are compilations (doing for Natural History what Mrs Grieve did for herbal remedies in our time), and made no claim to originality, yet we should remember Pliny as the first—in his description of a Lily—to use the botanical term 'stamen.'

109 written as Pedanios Dioskurides in other European countries.

110 usually rendered in Greek as περι υλησ ιατρικησ

experience. His botanical descriptions are sketchy, unlike the systematic detail found in the books of Theophrastus. The 1000 entries include medicinal clays, minerals, and some animal products; the rest are products obtained from plants with well over half the monographs devoted to particular medicinal plants.

The principal reason for the success of ***De Materia Medica*** was its fulsome endorsement by Galen. Because Galen came to dominate medicine of the Middle Ages, he took his pharmacognocist with him. Although the Arabic tradition had access to Theophrastus which was translated from Greek into Syriac, thence to Arabic, they nonetheless also embraced Dioscorides who was translated into Arabic by a pupil of the physician Hunayn ibn Ishaq (†873) and was absorbed (along with many plant additions) by Avicenna into his ***Canon***. ***De Materia Medica*** provided synonyms for his plant names in most of the languages of the Mediterranean world and that of West Asia which was something of a marketing advantage. Besides, Dioscorides and Galen were both medical doctors rather than natural scientists and so made a useful partnership for the clinician.

In the centuries that followed, the West of Europe was content to copy Dioscorides or to make compilations and digests; the wonderful Islamic botanical illustrations were never matched. If manuscript herbals were made, they have not survived. Eventually, centres like Salerno received and retranslated classical works from the Arabic (as we saw in Section 5). An empirical understanding of the remedial aspects of plants had not been lost in Anglo–Saxon England nor in Germany.[111] One of the finer reminders of this tradition is the ***Leechbook of Bald***. ***Leech*** is vernacular for herb just as ***Liber herbalis*** (shortened to ***herbalis*** then herbal) meant herb–book. Bald was a Galenist but he had a belief in using local plants,[112] and was Hippocratic in temperament, thus favouring a dietary approach. It should be said that the term 'diet' extended beyond food to include exercise, sleep, seasonal observations and an ordered moderated way of life.

A number of medical books designed to be accessible also to the educated laymen emerged from the Medical School of Salerno in the 12th

111 and probably was never lost in rural parts but here we can only make inferences.

112 Anglo–Saxon writers mentioned herbs that were unknown to classical authors. For the best appreciation of the herbal knowledge of this time, see Cockayne, O. ***Leechdoms, Wortcunning and Starcraft of Early England*** which was published at the time the National Institute of Medical Herbalists was founded.

Century. Among them was a new herbal which updated the pharmacology of Dioscorides with new, more detailed findings. Written in about 1150, it is called ***Circa Instans*** from the first two words of its text.

HILDEGARD OF BINGEN (1098–1179)

Musicians and herbalists claim her for their own, but it is scarcely conceivable that Hildegard would have thought of herself as either. She was a visionary who, nonetheless, through a voluminous correspondence, argued with bishops, prelates and monarchs about political matters. Advice from the "Sibyl of the Rhine" was sought from far afield and she used her reputation fearlessly to promulgate a feminist spirituality. [She could be seen to parallel the feminism of her younger contemporary Eleanor of Aquitaine who was imprisoned for her politics while Hildegard secluded herself within monastery walls]. The German abbess was also highborn but was sent to live with a religious recluse at the age of eight. In her youth, she experienced apocalyptic visions, twenty-six of which she collected in a work called ***Scivias***. Later visions prompted two books ***Liber vitae meritorum*** and ***Liber divinorum operum***. She set her own poetry—of wonderfully fecund imagination—to music of passionate intensity which she collected in ***Symphonie harmoniae celestium revelationum***; they were intended to cover the whole liturgy to be sung by the sisters over whom she had been made abbess. The music is ecstatic[113] while at the same time the poetry betrays a shrewd understanding of earthly considerations. It is this combination of seer and naturalist that drew people to her. Her works on herbs and medicine do not discover anything new botanically or therapeutically, but it is difficult not to be drawn to a sense of rightness in natural medicine by virtue of the intensity of her vision. There are analogies between her role as go-between from heaven to earth as those of the ecstatic trances in the shamanic tradition.

ALBERTUS MAGNUS OR ALBERT THE GREAT (1206–80)

The 13th Century is the age of Scholasticism which is characterised by a renewed and concerted appropriation of Aristotelian thought as part of

113 There are excellent contemporary recordings, notably ***A feather on the breath of God*** Emma Kirkby & Gothic Voices on hyperion and ***canticles of ecstasy*** by sequentia on deutsche harmonia mundi [For the sake of completing the theme, you might try ***Music from the time of Eleanor of Aquitaine*** by Sinfonye on hyperion]

the means to codify and strengthen the Christian faith. Sharper definitions were now ascribed by the scholars to heresy as well as to faith and sharper remedies were applied against deviation; thus the Albigensian critique was extirpated by sword and torture. The work was conducted by the Dominicans who liked to call themselves "the hounds of the Lord" and the gentler Franciscans.

Of the former, the most celebrated, from an intellectual point of view, are Roger Bacon (the only Franciscan), St Thomas Aquinas and Albert of Bollstädt who came to be called Albertus Magnus in his own lifetime, so revered were his works. Of interest to us is his ***De Vegetabilibus*** in seven volumes, or at least the more practical last two which deal with medicinal plants and agriculture respectively. He shows a keener botanical eye than any other writer since (or even including) Theophrastus. He was especially detailed in his appreciation of the differences in floral morphology between groups of plants and advanced a classification which (using modern terms) was as follows:

- actinomorphic
- zygomorphic
- campanulate
- intermediate between these.

It may be something of a philosphical footnote, but there is an extraordinary paradox here: the Aristotelian philosophy of Albert's first five volumes, which is highly remote and abstract, is called ***Realism,***[114] in their sense that the ***Real*** belonged to the other world; yet Albert was able to describe a borage flower as realistically as any observer who did not challenge the reality offered by the senses as Albert purported to. He provides us with an example of the gulf that may appear between the espoused philosophy of a person or a movement and their actual strengths and working methods. Thus, the term ***holistic*** in modern phytotherapy may be espoused as an intention, but the outcome in practice should better be judged by our peers and our patients.

Although the Franciscan Roger Bacon did not contribute anything on plants, his work on optics influenced medicine. He clearly anticipated the wearing of spectacles.

114 The opposing philosophy was called Nominalism which culminated in the work of William of Ockham (in Surrey). His works on logic survive into the modern curriculum while those of Realism do not. Ockham's razor—that any argument should be bared down to its minimum essentials: ie that a theory should not multiply notions superfluous to the explanation of the theory—can still cut mustard today.

THE PRINTED HERBAL 1470–1670[115]

The invention of printing towards the end of the 15th Century coincided with a revival of classical scholarship and a curiosity in the natural world that accompanied the development of the scientific spirit. Thus, at least in the early decades, the technology could be Janus–faced with a forward wing and a medieval nostalgia and fixity in past beliefs. The initial enthusiasm was to make works available to a wider circle of readers than had ever been possible before. At a time of reformation, immense political forces could be recruited to print or to ban certain texts, notably the Bible in vernacular tongues. Printing did not invent democracy but rendered its coming inevitable.

For the most part, herbals did not at all attract the attention of political authorities: the scholarly delight lay in recovering Dioscorides, the mercantile side–effect was the provision of reference books to the apothecary. Above all, herbals were an integral part of a mass instinct towards what we understand as naturalism: an interest in the reality of the natural world accompanied by a ***delight*** in plants after the utilitarianism of the vegetable and herb garden of the monastery and their symbolic, almost heraldic, medieval depiction. This enthusiasm was not separate—how could it be?—from the great artistic movements of the Renaissance [cf. Section 5]; indeed these movements of the human spirit were grounded in new techniques of which the woodcut and tints, which embellished the early herbals, were amongst the forerunners.

With notable exceptions such as Hortus Sanitatis, the earlier herbals were only tangentially involved with medicine. The most accessible history, ***Herbals*** by Agnes Arber [see Bibliography], is emphatically a history of botany, not medicine, nor folk–lore. However, the choice of plants had been derived from the therapeutic repository—for their 'virtues'—so this new interest in the plants for their own sakes was not dissociated from their usefulness; indeed, beautiful plants were postulated as candidates for inclusion in the medical canon, often on loose analogic grounds.

115 These dates are lifted sttaight out of ***Herbals*** by Agnes Arber, but they could hardly be otherwise.

[These remarks require such abundant qualification as almost to merit another book; I would tentatively advance the point that the Herbal represents a stream of thought relatively unaffected by the scientific developments that gradually became incorporated into mainstream medicine, and was characterised by popular ideas and empiric knowledge with an ethos of conserving medieval knowledge. However, several of the authors were Protestant reformers and, though conservative in temperament, showed the opposite tendency to doubt anything endorsed by the Catholic Church of the past.]

There follows a précis (taken from Arber who gives a large amount of space to direct quotations) of some of the better-known herbals and their authors. One of the quainter illustrations of the secularisation of learning is the adoption by scholars of a Latin nom–de–plume so as to leap-frog, as it were, way back in time over the heads of clerical dominance to a mythic classical republican time of learning and free-thought. I have given these monikers alongside the birth–names of the authors.

Major publications	
Date	Author & notes
1475	Konrad von Megenberg (or Conrat) Though not strictly a herbal, his is the earliest printed book to include botanical woodcuts and plant lore.
1478	Dioscorides The earliest printed edition of ***De materia medica*** in Latin; the earliest in Greek was printed in 1499.
1483	Theophrastus Latin and Greek editions of ***De causis plantarum*** and περι φυυτων in print.
c. 1481	Apuleius Platonicus This was a rediscovered text, probably from the 5th Century AD, that somewhat garbled Dioscorides and Pliny

1484-5	The Latin Herbarius
1491	The German Herbarius
	Hortus or Ortus Sanitatis ('The Garden of Health') These 3 works, printed in Mainz and Paris, constitute the founding texts of the comprehensive treatise on health and natural history from which the herbal, narrower in scope. derived.
Hieronymus Braunschweig / Jerome of Brunswick	
1500	Liber di arte distillandi (de Simplicibus)
1527	trans. ***The boke of Distyllacyon***
Johannes Ruellius / Jean Ruel	
1516	French Physician, Botanist, University Professor; translated and edited Dioscorides.
c.1525	Grand Herbier ***Le grand Herbier en Francoys contenant les qualitez, les vertus et les proprietez des herbes, arbres, gommes*** The Great Herball ***The grete herball which geveth parfyt knowlege and understandyng of all maner of herbes and there gracyous vertues*** The mythological sits alongside religious belief with a great deal of general health advice that would seem rather arbitrary to us, with quite robust herbal treatments advocated as well as narcotics like opium and the powerful solanaceous remedies; however, there are also plenty of herbs such as liquorice, white horehound for coughs, and wild lettuce as a soporific that most herbalists would use or consider today.
1530	Otho Brunfelsius / Otto von Brunfels A monk who fled the cloister and converted to Luther, ending his life as a doctor; the herbal is not remarkable at all for its bookish text but for its beautiful naturalistic illustrations by Hans Weiditz after whom, in justice the work should be named.
1539	Hieronymus Tragus / Jerome Bock The result of acute observation in the field, his work is written in colloquial German and exhibits an independent mind attempting to debunk superstitions about plants.
1542	Leonhardus Fuchsius / Leonhart Fuchs A successful physician, Fuchs (indebted to the magnificent illustrations of Gesner) produced a herbal masterpiece ***De historia stirpium*** which greatly enlarged the number of plants treated and brought scholarship to bear upon their nomenclature. He communicated an intense, almost poetic delight in plant–hunting in the field; his recommendation that the herbalist bring an "intense gaze" to bear upon the floral object of his study anticipates Goethe. He gave the name ***Digitalis*** to Foxglove. ***Fuchsia*** has been named after him.
1561	Valerius Cordus Son of a physician and botanist, Cordus was even more avid a plant hunter than Fuchs: he travelled widely so as to experience as many medicinal plants in their native habitat as he could, but died young following an accident with a horse complicated by malaria, his ***Historia stirpium*** being published posthumously.
The above four writers came to be known as the 'Fathers of German Botany'	
1541	Conradus Gesnerus / Konrad Gesner Swiss natural historian, teacher and encyclopaedist (somewhat in the manner of Pliny) his contribution to the herbal and to the science of botany rests with the 1500 drawings and woodcuts that he prepared from living material; he was the first to separate out floral parts and draw them in accurate detail.

Three great botanists, horticulturists and physicians from Flanders did much to stimulate and develop plant science. The plant genera ***Lobelia*** and ***Dodonaea*** were subsequently named in the honour of two of them:

1554 Rembertus Dodonaeus / Rembert Dodoens

1571 Mathias Lobelius / Mathias de l'Obel or de Lobel

1576 Carolus Clusius / Charles de L'Écluse

The three botanists from the Low Countries were Protestant refugees from Catholic persecution. Their work was much pirated, especially by William Turner. l'Obel settled in England as botanist to James I.

1538 William Turner

As a Protestant, he spent some years in exile in Italy studying botany with Luca Ghini. Even as a reforming clergyman, he was nonconformist and too extreme for the newly founded Church of England which had made him Dean of Wells.

Turner published two small works (one a list of the names of herbs in 5 languages) but is best known for his ***A newe Herball.***

1570 Paracelsus

As we saw in Section 5, he was not known for his botany, which was meagre; his influence on herbal medicine was to prefer simplicity over the complexity of Galenic polypharmacy; he poured scorn on the therapeutic dilution necessarily derived from a huge number of ingredients and championed the use of ***simples***.

He was particularly critical, with justification, of the arcane process and ritual attendant upon the elaboration of Galen's principle medicine known as ***theriac***.

1592 Fabius Columna / Fabio Colonna

Unusually, was a botanist without medical training; was probably the first to use a hand–lens in the field; the first to suggest the use of the term petal which was taken up by the great English botanist John Ray in 1686 and so passed into many languages.

It is difficult to conceive of Linnaeus' accomplishments without Ray who wrote the first local flora (of Cambridgeshire), laid the foundations for a British flora and the framework for a World flora. Ray was the first to declare that pollen is equivalent to the sperm of animals.

1544 Petrus Andreas Matthiolus / Pierandrea Mattioli

The Italian botanists had the advantage over their North European colleagues in that the plants described in the rediscovered classics were natives for them. Botanical and medical sciences were first developed in Italy and the Italian herbals were more integrated with orthodox thought and did not develop the speculative (even whimsical character that crept into some Northern herbals.

Mattioli had enormous success in his lifetime with his one work ***Commentarii in sex libros Pedacii Dioscoridis*** which added a great number of plants into medical usage from the countryside of Piedmont and Tuscany as well as from correspondents around the Mediterranean and Middle East. Like Gesner, he died of the plague.

1596 Casparus Bauhinus / Gaspard Bauhin

Medicine was practised by members of the Bauhin family for six generations without a break. Gaspard's elder brother Jean had embarked on the description of 5000 plants (published posthumously as Histoire universelle des plantes); the younger Bauhin tried to systematise the current botanical knowledge and succeeded in determining the nomenclature in his chief work entitled Pinax which was carried by Ray, Linnaeus and others into modern botany.

1597	John Gerard / Gerarde Gerard, a barber–surgeon, finds an affectionate place in the heart of English herbalism, though he was an impatient dabbler and unprincipled in his dealings; plagiarism was an accepted convention at the time, but Gerard's untruths about the work he stole does him little credit. His original work was improved out of all recognition by the apothecary Thomas Johnson (a pioneer in field botany in his own right) and published as ***the Herball or general history of plants.*** For a generous forgiveness and appreciation, read Grigson's introduction to ***An Englishman's Flora.***
1629	John Parkinson Like Gerard, he was a horticulturist and had good eye for plants in a decorative sense, but to read him alongside the scientific plant studies of his time reveals a disparity between a progressive herbal medicine and more than a hint of medievalism in Gerard, Parkinson and Culpeper. This is not to say that his works ***Paradisi in Sole Paradisius Terrestris*** and ***Theatrum botanicum*** are not entertaining or without charm.
1649	Nicholas Culpeper In our culture of celebrity, it should not perhaps surprise us that Culpeper has never been out of print; it may be that astrology is the true opium of the people; it may be that, as a social rebel against the luxury of an incompetent medical class he has attained the mythic status of a Robin Hood; whatever the case, his position as folk hero seems unassailable even though he was as arrogant in his opinions as Galen and Paracelsus, but without their erudition, and certainly with less botany.

Theoretical developments in physics and astronomy in the 17th Century had little parallel in biology though the founding ideas of botanists and the new study of geology[116] found their way into the systematic enquiries which culminated in the field studies of Linnaeus[117] and the first theories to be overtly evolutionary developed by Buffon and de la Mettrie.[118] Their work as well as that of the philosopher Diderot[119] marked a sharp break with the past: the rise of the bourgeoisie in France and the more active socio-political role played by the intellectuals paved the way for the French Revolution. Theoretical developments were, crucially, accompanied by a wider study of comparative morphology in both plants and animals. A great advantage for French biologists derived from the enormous resources devoted to their National Botanic Garden (***Jardin du Roi***) since its foundation by Louis XIV and which continued undiminished through Post–Revolutionary times; this financial support and administrative continuity was fortified by the strong professional ties between the Garden and the ***Académie des Sciences***. It resulted in a culture of research that was neither amateur nor piecemeal. Inspired by the works of Ray,[120] Magnol[121] and Tournefort, the order beds at the

116 Fossils were well–known to the ancients and, even though they found marine shells atop mountains, neither Platonic nor Aristotelian teleological thought was able to accomodate fully evolutionary ideas, even though they considered species to be transmutable, and the Neoplatonist Boethius could go so far as to say (in Chaucer's translation) 'It is certain and established… that no–thing that is engendered is stedefaste ne stable.' The great English botanist John Ray was one of the first to recognise that the fossil record must reinterpret the Biblical timescale; his integration of the new geology with biological development and his natural classification of plants profoundly influenced not only Pierre Magnol (1638–1715) but all of the great French botanists of the Enlightenment, and well beyond.

117 A doctor who was "fonder of meddling with plants than with patients", Linnaeus is justifiably celebrated as a plant–hunter and explorer and encyclopaedist of the natural world; he brought to bear the enormous energy that he demonstrated in the field upon the huge mass of information by the ***standardisation*** of examination, description and nomenclature; his taxonomy, however, was backward–looking and arbitrary and was counter to the proto–evolutionary thought of the Age of Enlightenment

118 G–L. Leclerq, Compte de Buffon (1707–88) became Director of the Jardin du Roi in 1739; Julien Offray de la Mettrie (1709–51) applies the inductive method to biological phenomena and explicitly rebuts teleological explantations—ie that things are the result of preordained purpose and their form is contained in some pretemporal germ.

119 Denis Diderot (1713–1784); his ***Pensées philosophiques*** was burned by the Paris authorities in 1746 and he was imprisoned more than once for his views

120 Effectively, he is more honoured in France than his native country, but at least the Ray Society was founded in Britain in 1844.

121 whom we have already mentioned; he was Professor of Medicine and director of the botanic garden at Montpellier

Botanic Garden enabled a classification built on kinship to be developed, notably by Michel Adanson and Antoine de Jussieu (along with other members of his family).

In spite of the centralised and metropolitan political control that Napoleon foisted upon France and that has continued into modern times.[122] the reality of provincial life centres upon the weekly market: fresh produce and herb stalls remind one of the continuity of a peasant culture. Away from large cities, herbal medicine is not a sub–culture but part of daily life. Pharmaceutical remedies as commodities exist, of course, but in parallel with herbal remedies which may be administered in the home or in the dispensary at school or even by a herbalist or a herb–seller at the local market. The trained herbalist is, literally, a dying breed: until 1941, there was, in France, a National Diploma in Herbal Medicine. Those graduates from the National School could practice freely, mostly from ***herboristeries*** or within pharmacies. The author has met with two such ***diplomées*** or qualified herbalists, the last in 1977 in Milly–le–Forêt near Fontainebleau (where, it so happens you may find the world's largest herb–grower); she was then aged 83. Since the Vichy government (following pressure from the pharmacists) banned the training and practice of the professional herbalist, she and her colleagues have never been replaced.

Returning to the time of the Enlightenment, the fragmentation of what had been the Holy Roman Empire (which had never been any of those 3 things) into the many tiny states of Germany was accompanied by very small–scale meticulous laboratory research, especially on plants. Socially, the period was marked by somewhat introverted philosophies of life and health that were characterised by self–reliance, physical fitness and closeness to nature. The philosophies show a common line from Goethe via the Romantic movement in literature and music to Rudolf Steiner (who happened to be Austrian) with elements of nature–philosophy turning up in Schiller and Nietzsche. The medical part of self–reliance (where the power of the State is too feeble to help the individual, or considered corrupt) looked to Hippocratic notions of moderation in diet with plenty of exercise and fresh air. Hydrotherapy saw its ascendancy in Germany as well as hiking for pleasure and relaxation, and camping out-

122 It was certainly evident and complained of in 1965 when the author was, like all teachers in French State Schools, technically a civil servant; the riots by students and workers of 1968 may have modified this tendency.

doors to undo the stresses of city life. Naturopathy and homœopathy not only tried to remove the corruptions of modernity but also to provide alternatives to the harsh and toxic treatments of orthodox medicine, which were, in any case, considered of little value.

Naturopathic ideas had an obvious market in America where, like Germany (who sent many waves of emigrants across the Atlantic) there was a belief in individual freedom and a mistrust of centralised authority. As for closeness to nature, the Americans had direct access to people that qualified for the epithet coined by the Romantic movement: "the noble savage"—a backhanded compliment that failed to conceal its racist meaning. Native Americans had a highly developed herbal materia medica, as might be expected from hunters and gatherers (with some agriculture in the Southwest), and a way of life in partnership with plants and animals. White trappers and frontier traders had long absorbed elements of Native American herbal medicine.

Samuel A. Thompson (1769–1843) devised a system of therapeutics which was based upon the notion that all illness came from the penetration of the body by cold. Healing could thus only be accomplished by heating (using hot water and steam) together with the removal of toxins from the body by sweating, emesis and purging, using at first a small number of native plants to which he gradually added more exotic and ancient remedies (like myrrh from species of ***Commiphora***). The treatments were harsh and heroic in an age when infectious disease was harsh and ubiquitous. It is ironic for us that these measures were seen as a gentler alternative to the orthodox medicine of the day which used bleeding and violent toxic medicines with heavy metals as their base. Thompson's primary and favourite medicinal plant ***Lobelia inflata*** was an emetic, thus the emesis at least protected the patient from a lethal dose; the same could not be said for lethal Calomel, the favoured mercurial medicine of the era. Thompson sold franchises of his medical system which he had patented to families so that they might be spared the attention of "regular" doctors. The story of Dr Wooster Beech—a would-be ally of Thompson—is well told by Barbara Griggs [see Bibliography]; in seeking to temper the harshness and sophisticate the simplicity of Thompsonian medicine, he developed a system based at first upon Native American therapeutics and indigenous plant remedies which came to be known as Eclectic medicine. The story of American herbal medicine now crosses the Atlantic back to Europe in the shape of Albert