

Galen of Pergamon

A Sketch of an Original Eclectic and Integrative Practitioner, and His System of Medicine

by Peter Holmes, L.Ac., M.H., A.H.G.

The Greek doctor, philosopher and natural scientist Claudios Galenos (c. 129-199), also known as Galen of Pergamon, holds a unique position in the history of traditional Greek-Western medicine. An original thinker, researcher, writer and practitioner of extraordinary caliber, his life and work is characterized by an unbridled creative energy that has been compared to that of Alexander the Great (Lichtenthaeler 1982). Galen's influence in medicine, philosophy and the natural sciences was so widespread and long-lasting that his very name was given to the Greek-Western medical system that lasted right up to the nineteenth century, under the name of "Galenic medicine." His work in the area of herbal medicine was so influential that herbal medicine preparations in general came to be known as "galenicals." And yet, because none but an extremely small fraction of Galen's written works has ever been translated into English, very little is still generally known in the English-speaking world about this human phenomenon. Most of what is generally known of his work has come down to us second-hand through his successors.

Although Galen's life and work has been fairly well documented and translated by French, German and Italian historians and philologists over the centuries, there is no modern evaluation of his medical practice and theories from a perspective free of a modern positivistic bias. Certainly his paramount role in the early development of herbal medicine in the West has not been clearly recognized and defined. In this article we will explore Galen's output specifically in relation to Greek medicine in general and to herbal medicine in particular. Our method is to allow his ideas to speak for themselves rather than trying to rationalize them from the analytic-scientific perspective. In the same vein, we will also refrain from comparing them to other related vitalistic medical concepts from Chinese or Ayurvedic medicine, for example.

Our thesis is that Galen was an original Eclectic physician; a synthesist or integrative thinker without parallel in the history of the West; and a pioneering medical herbalist who laid the foundation for a holistic, vitalism-based system of Western herbal medicine. We believe that an exploration of his philosophy, pathology and herbal medicine theories is vital for understanding the numerous medical practitioners who succeeded him during the next sixteen centuries—many of whom are much better known to us today than is Galen. They are all children of Galen. More: we

believe that coming directly to grips with Galen's work without prejudice may hold a key that can help us integrate the various current types of herbal medicine into a powerful new synthesis.

Summarizing Galen's enormous contribution to Greek-Western medicine and scientific thought, and detailing his contemporary significance in a brief article is challenging and humbling. Equally challenging and humbling for us is having to come to terms with the very lack of transmission of our own traditional holistic medical system in modern times. The problem we now face is one of epistemology: given the scantiness and poor quality of available information on Galen and Greek medicine, especially in English, how can we truly understand and correctly interpret any information that does become available? To further that understanding and promote more accurate interpretations of Greek material, therefore, we should begin by first considering the context itself in which we hold Greek medicine today.

The Modern Resurgence

Since the 1960s there has been an amazing resurgence of interest in traditional and vitalistic systems of medicine. This includes extant classical medical systems such as Chinese medicine, Ayurvedic, Tibetan and Greek medicines. At the same time interest has also focused on herbal medicine rather than on drug-based medicine. It has included not only the herbal medicine backbone of these four classical systems, but also the various herbal medicine traditions indigenous to the West. The result can be seen in various key phenomena that are currently here to stay.

First, the advancement of traditional Chinese medicine (TCM) in the West. There is no doubt now that Chinese acupuncture and herbal medicine have made a successful implant on Western soil. The transmission has been successfully accomplished in terms of philosophy and principles, medical terminology and clinical practice—with more time essentially needed only to "fill out the details" of the Western context, as it were. Chinese medicine now meets an important need in Western health-care for the treatment of chronic disorders in particular, and generally by providing a preventive medicine context and a holistic life-enhancing human philosophy in a holistically-deprived West.

Second, a renewed interest in traditional Western medical theories, such as the "four-humour" theory, the



Peter Holmes

Peter Holmes is a medical herbalist and Chinese herbalist. He researches, writes and lectures extensively in the field of both Western and Oriental botanical medicine, and is a faculty member of the Southwest College of Naturopathic Medicine in Tempe, Arizona. He is author of three herbal medicine textbooks, and lives in Boulder, Colorado. He can be reached at peterholmes@estreet.com



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"doctrine of signatures" theory, the "specific symptomatology" theory, the "elimination treatment" theory, the Hippocratic "four-element constitutions," the "remedy potentiation" theory, and so on. These theories derive from various periods during the last 2,000 years, often propagated by certain individuals with whom they have now become tightly associated. Most of these theories are incongruent among each other, while at the same time they are often held to be a fundamental truth or principle by its adherents, to the detriment of all other theories. The diversity of theories is usually accompanied by an exclusive monistic belief in a particular theory.

Third, the development of various forms of "energy healing" modalities, now truly too numerous to catalogue, such as Reiki healing, chakra-balancing, polarity therapy, magnet therapies, color therapies, music and sonic therapies, and so on.

However, what seems to be missing from this larger picture of renewed interest in non-modern medical approaches is nothing less than the presence of traditional Greek medicine itself (see below for a definition of this classical system). Because of the relatively recent (from the historical perspective) interruption of the Western Greek medicine tradition, we seem unable here to engage a true historical perspective. We are probably too close to our own tradition (both spatially and temporally) to be able to view it from the impartial and complete perspective of a critical historical observer. For instance, it is still too early yet to say definitively whether Western-Greek medicine was cut off for good by the nineteenth-century modern science takeover, or whether the tradition was only temporarily interrupted by it (with complementary medicine now once again picking up that tradition). We believe that the jury of history is still out on that issue.

The Transmission of Greek-Western Medicine

What is needed at this point is for the Western tradition itself to be fully transmitted to us. Whether we believe that the Western tradition was entirely cut off or simply temporarily eclipsed by modern science, the fact is that we have forgotten and have no access to the whole and accurate body of its basic medical principles, diagnostics and therapeutics—herbal or otherwise. We certainly possess pieces of this tradition, as mentioned in the above examples. We may not realize though that these are but the small pieces of a gigantic medical jigsaw puzzle. It is a fact that we do not possess in the English language the complete, accurate and commented medical texts that constitute the core of Greek/Western medicine. In contrast, Ayurvedic and

Chinese medicine both still possess their entire medical canons in both their original language and in their modern-day language. The canonic works of Greek/Western medicine exist in original Greek (mainly the Hippocratic corpus and the works of later Greek and Alexandrian doctors); in original Arabic (mainly the key texts of Ibn Sina, Ar-Razi); in Hebrew (e.g. the works of Moses ben Maimon). Further important texts were written in medieval Latin (e.g. Boerhaave); in ancient/Renaissance German, French, English and Italian; and latterly in modern English, French and German if we allow the inclusion of eighteenth and nineteenth-century texts (which would include Thomsonian, Eclectic and Physiomedical texts of the nineteenth and twentieth century.) Unless a person is fluent in all these languages, it will be impossible for them to understand the Greek/Western medical tradition in its entirety.

The main reason we do not possess this Western body of medical knowledge in its entirety today is because of the recurring interruptions that occurred during its transmission from one Western culture to another (Diegpen 1925). Using anthropological methodology, we assume that for any medical system to develop coherently and thereby increase its overall average success rate, it will need to effectively transmit its knowledge and wisdom-base from one generation to another, while at the same time being able to grow and change, on the basis of this tradition, in response to ever-changing health-care needs. This is exactly the case with Chinese medicine, for example, which continues to be a viable medical system today—many millennia after its original conception. It is a historical fact that the enormous cultural and social class diversity in the West—unlike the greater homogeneity in China—worked consistently against an accurate and effective transmission of Greek medicine. The biggest example of this is how the transmission of the canonic Hippocratic medical theory to Central Europe was extremely corrupted and only poorly-existent until the Renaissance era (approximately the 16th century). Very few translations of those Greek canonic texts were available; those that were available were poorly translated into medieval Latin, full of inaccuracies and usually incomplete (see also the Four Fluids discussion below). In addition they were usually translated from other languages such as Hebrew and Arabic rather than from the source language. This was because only those two middle-eastern languages ever possessed accurate translations of the Greek originals. Yet paradoxically, despite the corruption in the transmission of Greek/Western medical theory, we believe that it is this very cultural diversity that caused the Greek, Hebraic, Arabic, Spanish, Italian, Central European, etc., cul-

tures to make significant contributions to the tradition, if only partly rooted in the original theories. It is the very diversity of Greek medicine that stirs our fascination and inspires our desire for exploration. It certainly goes to make up its uniqueness, complexity and, ultimately perhaps, its comprehensiveness.

If we believe that modern science effectively severed the Greek/Western tradition, it is clear that this tradition needs to be transmitted all over again in its original and complete form. This would allow us to develop a vitalistic, non-allopathic type of Western herbal medicine based on genuine and mutually-integrated concepts rather than a grab-bag of mutually-exclusive concepts. On the other hand, if we believe that Greek medicine simply went more-or-less underground for two centuries, then the tradition simply needs to be re-transmitted so that we can continue to build on a more secure foundation and develop a truly integrated herbal medicine. Either way, key medical texts still need to be identified, translated and understood; and the traditional concepts of pathology, diagnostics, herbal therapy, and so on, still need to be integrated into our current mindset and then put into clinical practice. This transmission process will take time and, to say the least, may at first seem like bad news in our instant world of today.

However, the good news is that this process can be greatly accelerated by two factors. First, our current fluency in another vitalistic medical system, such as Ayurvedic or Chinese medicine. The basic assumptions of these classic systems, in most of their aspects, tend to be largely the same. The medical terminology is also not that different between them. Even the herbal and physical treatment methods, as well as the actual herbs employed, are either similar or often identical. Major remedies such as rhubarb root (*Rheum spp.*) and Indian spikenard (*Nardostachys jatamansi*) are two among many that belong to the materia medica of all three classic medical systems. What differs mainly is the medical theories regarding pathology, diagnostics and therapeutics.

Second, we can accelerate the transmission process by learning from key herbal medicine practitioners of the past. In the case of the Greek/Western medicine tradition, a practitioner that may hold the key for many of our current failures and dilemmas is Galen of Pergamon.

It is generally acknowledged that Galen's writings form one of the twin pillars of Greek medicine—the other pillar being the Hippocratic *corpus*, texts written in the Greek island of Kos during the fourth century BCE. What we clearly cannot assume, however, is a full transmission and accurate interpretation of these

two Greek medical canons. Because we are currently in a situation of possessing incomplete, often inaccurate information—much as we were with respect to Chinese medicine about 100 years ago—it best to first clarify the key assumptions and terminologies made in this article that might cause concern.

Basic Assumptions and Terminologies Traditional Greek Medicine, or TGM

It is clear from all sources consulted (see References) that the medical system that originated in Greece with the Hippocratic texts survived in Europe into early modern times. It is a single continuous stream, even as it underwent at least six distinct stages by six different cultures in various countries, involving practitioners working in the languages of ancient Greek, Latin, Hebraic, Persian and Arabic, Ecclesiastical Latin, and modern Italian, Spanish, French, German and English. Likewise, Chinese medicine today is considered a single stream, despite the numerous schools, different philosophies, and so on, that it underwent (Unschuld 1985). Moreover, just as Chinese medicine was practiced in many different Asian countries, and is now practiced in communities worldwide, so traditional Greek medicine was practiced in all Mediterranean and European countries. Today it is practiced predominantly in the Middle East and India (where its clinics and hospitals serve about one-third of the continent's health-care needs). The diversity of a phenomenon does not preclude its unitary nature.

When Greek medicine migrated to Baghdad in the eighth century with the collapse of Graeco-Roman civilization, the medical system was called *tibb-e al-yunani*, "medicine from Ionia," meaning "medicine from Greece" (Ionia being its representative island). Its Hindi name, *tibb unani*, also means "Greek medicine." It seems semantically correct, therefore, to retain this universal name, "Greek medicine," in English, despite its occurrence in other countries and other languages—again like the term "Chinese medicine." We propose here the acronym "TGM" (traditional Greek medicine) as an accurate parallel concept to "TCM" (traditional Chinese medicine).

Traditional Greek medicine (TGM) is the third classic extant medical system, alongside traditional Chinese medicine (TCM) and Ayurvedic medicine.

The four fluids

Known as *tessara chymoi* in original Greek texts, they refer to the body's four nutritive "juices" in Greek medical physiology that keep the individual in physical and mental health. A temporal or bodily imbalance, i.e. a *dyskrasia*, of these fluids is the cause of disease. *Chymoi* is pronounced as in the German *hüten*.

Chymos is the Greek for "juice;" it is the source of our word "chyme" (Webster 1990). A literal translation of *tessara chymoi*, then, would be "the four juices." We propose the word "fluid" as a better translation today, in keeping with the modern physiological concept of "body fluids" and with the English translation of the equivalent Chinese medicine concept of *jin ye*.

The traditional English rendering of *chymos* is "humour." For better or worse, three factors render this term unsatisfactory as a modern translation of this Greek medical term. First, since its original fourteenth-century medical usage, the word "humour" in our language has acquired many associations and changes of meaning. Certainly its dominant current meaning is "something . . . comical, amusing." It has been argued that the combined vagueness and traditional cultural associations of this word can work in the favor of its being understood as a technical term in the context of TGM. However, to the Greeks who used this term in clinical practice, the word *chymoi* did not imply anything traditional, vague or even "energetic;" it simply denoted the physical fluids or juices that bathe our tissues, part of which we daily discharge through sweat, urine, saliva, tears and blood. There seems little point then in choosing any word other than one that denotes the body fluids in their very physical reality. The point is that Greek doctors diagnosed the body's discharges (mostly fluids) with great care and subtlety; when their diagnosis led them to conclude that an imbalance of the *chymoi* was present, this was not an abstract idea, but a clinical, hands-on reality. This is why urine diagnosis, for instance, became the cornerstone of Greek medical diagnosis (one that was important right into the nineteenth century). The danger today, living in a time often called the "New Age," is that speaking of "four humours" can lead to the mistaken idea that this fluid-based diagnosis is purely abstract, symbolic or somehow mystical—nothing could be further from the truth.

The second reason that renders the word "humour" unsatisfactory as a translation of *chymoi* is based on linguistic analysis. The etymology of the word "humour" is not *chymos*, as might be supposed, but *hygros*, denoting "moisture," "wetness," "damp" (Webster 1990). The two concepts of "juice" and "damp" are clearly different. As discussed, this is an example of poor early translation. The confusion that arose in translation is understandable, as during the late middle ages the English texts were unfortunately translations of secondary sources, which were either ecclesiastical Latin texts (in the *lingua franca* of the time) or medieval French texts. The source of the word "humor /humour" is the French *humeur* and the Latin

humiditas, which in turn has its source in the Greek word *hygros*—not *chymos*. Thus to translate *chymos* as "humour" literally makes it signify "moisture/damp." It mistakes the body's "juices" for "damp" as a constitutional quality, or for the body's "innate damp," which is another Greek medical concept entirely. From the medical point of view, mistaking the body's fluids for the quality of damp is a serious error. In TGM physiology, the body's fluids are the essential working substances that maintain day-to-day individual health. Damp is one of the four qualities that make up the individual constitution, along with dryness, warmth and cold. Fluids have to do with the balance of one's dynamic ongoing condition, while damp has to do with the balance of one's inborn constitution.

The third reason for not choosing "humour" to translate *chymoi* is circumstantial. German translations of Hippocratic and Galenic texts (e.g. Kühn 1831, Neuburger 1906, Meyerhof 1933, Diegpen 1955, Schöner 1964, Harig 1974) have consistently selected the word *Säfte*, meaning "juices," to translate *chymoi*. These important precedents command respect, especially considering that none of Galen's works has ever been directly translated into English—while in contrast, two complete translations in German and one complete one in French are available from source texts.

The effective qualities

Known as *dynamis* throughout Greek medicine texts, they generally refer to the natural qualities seen throughout nature. This concept is found throughout the Greek natural sciences and was widely used in all aspects of medicine. The four elements (*tessara stoicheia*) possess the basic four effective qualities (see below); the four nutritive fluids (*tessara chymoi*) possess effective qualities; and so do medicinal substances (*pharmakon*). In Galenic pharmacology the effective qualities of a remedy include its touch, taste, scent, warmth and moisture effects. Note that the effective qualities are not modern analytic-scientific concepts, but traditional vitalistic-scientific concepts; the two types should be carefully distinguished.

The word *dynamis* is the source of our word "dynamic," and denotes an innate quality or property that has an *energeia* or effective function, rather than simply being a passive quality. The various *dynamis* thus possess an energy-altering and potentially therapeutic effect on human physiology. As we have no single equivalent word for this concept today, the word "effective" can serve to describe the active therapeutic potency of these qualities.

Warmth and moisture

Like his mentor Aristotle, Galen considered heat, cold,

dryness and moisture the primary four qualities that characterize all of life. All other qualities are derived from these fundamental four. The element of Air, for instance, possesses the primary qualities of heat and damp; the fluid phlegm, for instance, possesses the primary qualities of cold and damp. In Greek pharmacology the warmth quality of a remedy is known as *taxis* or *apostasis*; it refers to a remedy's ability to warm up cold conditions or conversely cool down hot conditions through the principle of contraries. Note that warmth is different from temperature, which is a modern scientific measurement, not a vitalistic quality description.

Moisture, *hygros*, refers to a remedy's ability to treat dry or damp conditions by respectively either moistening dryness or drying out damp.

Galen the Original Researcher

Growing up in Pergamon, a cultured, affluent Greek town in the Eastern reaches of the Roman Empire, Galen's education in the basic Greek schools of philosophy and mathematics was ensured. At age 17, motivated it seems by a dream interpretation of his father's, Galen decided to concentrate on medical studies. After studying medicine in his hometown for four years, with a proclivity for performing anatomical experimentation, he left for Smyrna and Korinth, and later Alexandria. Galen's drive to explore new remedies as well as different schools of medicine took him on endless travels: to Palestine and Lycia to research the medicinal nature of bitumen and *gagate*; to Lemnos to research Lemnia clay; and to Cyprus to obtain various metals used in medicine (Berendes 1891). It was Galen's endless thirst for knowledge that makes his biography so extraordinary, with layers within layers of activity unfolding throughout his life. If only he had remained a simple herbalist like his Alexandrian colleagues. No, Galen the herbalist must be understood within his work as a physician. His work as a physician in turn can only properly be understood in the context of his work as a philosopher, which in turn is closely linked to his work in philology, in historical and comparative linguistics.

Galen's anatomical and physiological discoveries have thankfully been well documented (Meyer-Steineg 1912, Prendergast 1929, Singer 1962). He assumes that organ functions, for example, depend on an organ's outer form and inner structure. Because of his Aristotelian training, Galen always ends up questioning the functional purpose served by a particular organ, bone, muscle, and so on—much like Goethe's enquiries seventeen centuries later. Although naturally at times his thinking becomes purely speculative, his

discoveries add up to make him the greatest anatomist until Vesalius. Especially path breaking is Galen's research on the nervous system, part of which involved spinal dissection, and his experimental proof that the brain is very much the seat of the mind and spirit. Galen also showed, among other things, that the arteries circulate blood, not air; that the fallopian tubes lead to the uterus, not the bladder; that urine is formed in the kidneys, not the intestines.

In his youth Galen also advanced medicine during his position as chief doctor and surgeon to the Pergamon gladiators, when he developed new first-aid and trauma medicine techniques. His noteworthy later discoveries include the difference between congenital and acquired disease, between primary fevers and accidental (secondary) fevers, between the seat of disease and the manifestation of disease; the concept of latent disease, and the relationship between breathing and the pulse. His system of pulse diagnosis was especially refined and, to nineteenth-century observers, unnecessarily complex. Certainly his 27 basic pulse qualities rivaled those of the famous Chinese doctor, Li Shi-jen, in subtlety, fifteen centuries before the latter's lifetime!

Whereas today medicine emphasizes the psychological basis of psychosomatic disease conditions, Greek practitioners emphasized their physiological foundation. Galen was no exception in this. Taking Hippocrates' *tessara kraseis*, four-temperament, theory for his basis, he developed four psychological character types that are still widely known and caricatured in Europe today. Each temperament is based on one of the four elements (*tessara stoicheia*) and qualified by two of the four basic natural qualities. The Water type, for instance, is based on the nature of water and is characterized by damp and cold. Eventually the Water type was also named the Phlegmatic type, as the fluid associated with this element was phlegm (*phlegma*). Knowing a patient's constitutional *krasis* was important in Galenic medicine. First, it showed the severity of a particular condition by noting whether the disease qualities were similar to or different from those of the inborn temperament, i.e., by helping determine whether the disease was more superficial or more constitutional. Second, it was helpful in prognosing and treating the condition by selecting remedies that balanced the particular excessive qualities present.

Galen wrote prolifically, and this reflects his varied interests as well as his boundless energy and endurance. His output is estimated at 300 to 600 tracts of various lengths. The majority of these were housed in his clinic library on the Via Sacra in Rome, which—

miserabile dictu—burnt down when the neighboring temple of peace caught fire. The cause of the fire is unclear. Less than 200 of his works survive today—although some scholars estimate that uncatalogued works of his in Arabic translation are still gathering dust at this very time in certain Islamic mosques. Only one other Western medical author rivals the scope and quantity of Galen's work: Rudolf Virchow, the nineteenth-century developer of cell pathology, who also doubled as a political activist and wrote over 2,000 essays and books.

Galen's contribution to the field of herbal medicine will be discussed in detail below. As if all this were not enough, we should simply mention in passing that, in addition to his medical activities, Galen also researched and wrote on Euklidian mathematics, linguistics, philosophy and theology.

Galen the Eclectic and Integrative Practitioner

At the time Galen was practicing, four centuries had already elapsed since the demise of the last medical school, the Hippocratic practitioners on the island of Kos. The intervening period had seen medicine's fulcrum move to Alexandria, where the Hellenistic (Alexandrian) period was to last for another 600 years. Although Galen has been slotted as an Alexandrian physician—he completed his medical training in that Egyptian Mecca of learning at age 28—his contribution far outstrips the characteristics of this second phase of Greek medicine. It is true that Galen was Alexandrian in the sense that his interests ranged widely, and Eclectic in particular in that he took ideas from numerous sources; that he enlarged the *materia medica* and almost always utilized herbal remedies in treatment; that he furthered diagnostic techniques such as pulse and urine diagnosis; that he conducted innovative anatomical experiments and physiological research; and that he prolifically wrote philological critiques on medical texts going back five centuries (Lichtenthaler 1982).

But here the common ground ends. The Hellenistic period essentially was a period of decadence: it saw a dispersal of the unitary Hippocratic medicine into numerous medical factions. The wonderful holism that the practitioners on Kos had spent many centuries empirically polishing and perfecting was simply abandoned—astonishingly to us. The Alexandrian sects fell back to particular ideologies and/or techniques, and to idle speculation and empty contention, while often delighting in ongoing ideological altercations. The better known sects included the Herophilists, pupils of Herophiles, who greatly advanced pulse diagnosis; the

Empiricists, whose chief espoused methodology was *empeiria*, empirical clinical experience unsullied by any conceptualization; the Methodicists, who methodically organized a highly effective clinical system of diagnosis and therapeutics; the Pneumaticists, whose theory and practice revolved around *pneuma*, the “breath” that vitalizes and quickens the physical tissues; and finally the Eclectics, the “selectivists” (to whom Rufus of Ephesos also belonged), well-known for their incorporation of various different ideas and techniques.

Galen, on the other hand, while an Eclectic practitioner, was not content to remain with any of these medical cliques. Still restless and searching (figuratively and literally), at age 34 he moved to the Roman capital, where his most productive period then unfolded under imperial patronage. It was here that Galen was able to digest and systematize the many approaches to medicine he had experienced first hand. Galen liked to start from broad principles and then go on to particular facts, with the aim of organizing them comprehensively. Balancing his analytical Aristotelian background with a phenomenological approach acquired from the Empiricists, he also managed to strike a judicious harmony between the two extremes of analysis and empiricism in his approach to medicine.

Working steadfastly in this way, Galen essentially ended up blazing a trail from eclecticism to synthesisism (Diegpen 1955). He selected the best of what was available to him at the time, based on his impeccable judgment, and molded this to create a larger synthesis. Like the musician J.S. Bach, he borrowed themes freely and widely in creating new works directed by his own genius (a practice that in the past was held to complement the source, not cheapen the borrower). Galen thus subsumed his eclectic mannerism to serve a higher purpose: namely to create order out of the divisive chaos that typified Hellenistic medicine. By so doing he ended up virtually re-creating a Greek medicine system that was both ideally watertight in theory and highly effective in clinical practice. In this sense Galen embodies and represents both the apotheosis of Hippocratic-Greek medicine and the birth of Galenic-Greek medicine. The music history analogy here would be L. van Beethoven who, while consolidating and completing one music period, the Classical period, also initiated another, the Romantic period.

Although Galen's interests in the natural sciences ranged widely, as far as medicine was concerned his true master was Hippocrates (Siegel 1968). His medical synthesis reposes fairly and squarely on Hippocratic medicine. Unlike his Alexandrian colleagues, Galen saw Hippocratic medicine not as a final statement but as a timeless living truth to be explored

and developed. His famous saying comes to mind: "Hippocrates has pointed the way for us; everything else we need to do." True to his word, Galen single-handedly revitalized Hippocratic medicine by putting the master's broad vitalistic concepts consistently into clinical practice. Galen also wrote the first and only reliable commentaries on Hippocratic medicine (Lichtenthaler 1982). These five-volume *Commentaries on Hippocrates* are uniquely significant in that to this day they represent the best in-depth introduction to the source of Greek medicine—written as they are by a master theorist and clinician combined. Moreover, Galen is able, predictably, to articulate and refine Hippocratic theory. A master of dialectic reasoning schooled in Stoic and Aristotelian thought, he always critically asks the "why" and the "how" of a particular concept. He then proceeds to give his in-depth explanations, commentaries and digressions, based partly on his clinical experiences and partly on his fine erudition that spans five centuries.

The cornerstone of Greek medicine for describing health and disease is the four-constitution (*tessara kra-seis*) theory, which is based on the four natural qualities of cold/hot, dry/damp. The old physician Alkmaion of Kroton had stated, "health is the even mixture (*synmetros krasis*) or balance (*isonomia*) of the effective qualities (*dynameis*)," while disease is a "predominance of one of the four qualities (*mon-archia*)." However, to achieve a balance of the four qualities in physiology, i.e. to treat a quality's imbalance, usually meant going to the four nutritive fluids (*tessara chymoi*), since they are the vehicles of the four qualities. The Hippocratic doctors therefore eventually developed a specific four-fluid (*tessara chymoi*) physiopathology and treatment whose ultimate aim was to re-establish a balance of the four qualities based on the individual constitution (*physis*).

A fluid (*chymoi*) is a nutrient found in the blood that results from food and drink intake, whose function is to maintain internal homeostasis and to nourish and vitalize the body. Galen's usage of this theory in practice provides a key example of how he elaborates and fine-tunes the basic Hippocratic concepts. For instance, while blood (*haima*) in Hippokratean theory is strictly one of the four fluids that maintains internal homeostasis, in Galen's view blood is special in that it represents a "balanced mixture (*eukrasia*) of the other three fluids." In pathology therefore, the blood itself can become injured mainly by a poor mixture of the fluids (*kakochymia*, originally called *dyskrasia* by Hippocrates), in which one or more of the fluids becomes dominant, and the others deficient. The blood

can thus suffer an excess (*plethora*) or deficiency (*kenos*) of phlegm (*phlegma*), yellow bile (*xanthe chole*) or black bile (melan chole). In itself, the blood fluid can suffer primarily from an excess or deficiency, which is often secondary to a blood *kakochymia* (fluid imbalance) (Dezeimeris 1828). So a condition of excessive *xanthe chole* (yellow bile) in the blood, for instance, would be described as a *xanthe chole diathesis*, a yellow bile syndrome (diathesis, pattern). A *kakochymia* can be simple (with one fluid dominating), or mixed (with two or more fluids dominating); it can be equal (affecting all organs or body parts equally) or unequal (affecting these differently). In addition, the excessive quality (of cold, heat, dry or damp) created by any particular fluid is termed *acrimonia*, an acrimony. Note that the four-fluid syndromes described in Hippocratic and Galenic medicine are different from diseases; they are to be understood as a primary functional disturbance seen through the symptoms-signs presenting, and in that sense are similar to the TCM *zangfu* syndromes.

Key to diagnosing four-fluid syndromes are the *semeia*, the signs, which "follow disease like a shadow." Great attention is paid to any fluid discharges, including the urine and stool, as well to accompanying (and possibly secondary) signs and symptoms. Care is taken to differentiate between symptoms of elimination, symptoms of retention and symptoms of injured action. Treatment of the fluid syndromes runs along the principles of either *kata physis* or *kata diathesis*. Treatment *kata physis*, literally "through the constitution," means supporting nature and conserving constitutional strength. It is employed mainly in *kenos*, deficiency conditions, in which the aim is *plerosis*, supplementation or replenishment. Treatment *kata diathesis*, literally "through the syndrome," on the other hand, implies dispelling the *mochtheros chymos*, the toxic fluid, or the *hyle blabetike*, the noxious substance, with the use of contrary remedies (remedies whose *dynameis*, effective qualities, are opposite to that of the disease condition). It is used mainly in *pleros*, or full, conditions in which the aim is *kenosis*, draining or elimination. Here Galen fleshes out in full detail the principles of therapeutics that his predecessor had outlined, along pure vitalistic lines.

Treatment of the four-fluid syndromes aims essentially to correct the particular fluid *dyskrasia/kakochymia* presenting. It consists primarily of dietary measures and herbal treatment. Focusing on the latter, the basic theory for herb selection is the four-quality (*tessara dynameis*) theory. Among Galen's three major herb classes, Eliminants, Alterants and Restoratives, it is the Alterants that can directly change the balance of the

four fluids (note that “alterants” are different from today’s “alteratives”). The specific aim is to balance any excessive qualities or *akrimonia* caused by a fluid *dyskrasia* with the opposite qualities of the herbal remedies. For instance, in the patient presenting the yellow-bile excess syndrome, the excessive qualities present are heat and dryness—those being the primary qualities of that particular fluid. Treatment will therefore aim to reduce injurious heat and dryness with the use of herbs possessing the opposite qualities of coldness and moisture. Decoctions of cold, moist-natured remedies and foods are then prescribed, such as marsh mallow root, Solomon’s seal root, purslane, chickweed and endive. Other influences—social, climatic and geographic—that can increase the cold, moist qualities in the patient’s life are also encouraged, as the individual’s internal condition will, from the Platonic “energetic” point of view, resonate in sympathy with the external environment. Galen in his practice would literally order his wealthy patients to make prolonged stays in far-flung outposts of the Roman Empire, including North Africa (to promote heat and dryness), the Italian Alps (to promote cold and dryness), as well as to locations closer to home, such as the North Italian lakes (to promote cold and damp) and the Southern coastal resorts (to promote heat and damp). And all his admonitions were carefully thought out in relation to the patient’s age, sex and four-element constitution (*krasis*).

Using Hippocratic medicine as the foundation, Galen the eclectic incorporated numerous other strands into his medicine. Key among them is Aristotle’s tissue histology, Plato’s widely accepted teaching on *pneuma*, and the Methodicists’ system of physiotherapy. Aristotle’s differentiation of organs and tissues had important consequences for the Methodicists, who differentiated between a *status strictus* and a *status laxus* of tissues—a “tightness” and “weakness” of tissue tension or tone. Galen’s adoption of this essential tissue pathology meant nothing less than its survival to the modern era among Eclectic and Physiomedical physicians, via numerous practitioners in between (as in Robert Brown’s irritability theory). Certainly this tissue pathology has survived longer into modern times than the four-fluid pathology, which in the early 1800s was jettisoned by French clinicians, and then soon by the rest of the West. It is thus a mistake to think that Greek medical pathology and treatment is entirely based on fluid pathology. This one-sided view was inadvertently fostered by the many popular writers on health and domestic medicine between about 1500 and 1700. With limited access to Galen’s work, they nevertheless compensated for their lack of reliable sources by a particularly infectious enthusiasm. This again points to the perennial problem with Galen’s work:

without having access to, and comprehension of, his complete work (or a good condensation thereof—a “portable Galen,” no less)—it is extremely difficult not to present a one-sided picture of the medical system. The same problem existed with texts on Chinese medicine written before the 1950s, most of which just portrayed selected aspects of the whole system, such as acupuncture, for example.

Galen’s breath (*pneuma*) model of vitalistic physiology also survived up to the nineteenth century, albeit in corrupted form. As with the four-fluid theory, linguistic-cultural problems hindered its effective transmission into modern times, in addition to the fact that the concept is possibly by nature the most difficult of all of Galen’s concepts to understand. Ibn Sina (Avicenna), the foremost developer of Galenic medicine in the eleventh century, for instance, spent an inordinate amount of ink and paper explaining what breath is and what it is not (Ibn Sina 1930). The Persian physician makes it clear that *pneuma* is not “soul,” “spirit,” or even “vitality,” while being at the source of all of those particular faculties. Galen’s three-breath concept originated with Plato’s *tri pneumata* (three breaths), in which the original breath passes through different body-centers to generate three distinct breaths:

- 1 *Pneuma physikos*, the “natural breath,” housed in the Liver, which governs growth and digestion, and is linked to the innate moisture.
- 2 *Pneuma zotikos*, the “vital breath,” housed in the Heart, which governs warmth and circulation.
- 3 *Pneuma psychikos*, the “soul breath,” housed in the Brain, which governs thinking.

The three-breath and the four-fluid theory are complementary and form the basis for Galen’s physiopathology system.

Galen’s Pharmacy

Galen utilized a large number of remedies, *pharmakon*, in his practice. In keeping with Greek medicine in general, these were obtained from plants, minerals and animal parts (as in the other classical medical systems). The remedies were sourced mainly from the Mediterranean basin, which was also the essential extent of the Roman Empire, and included what is now modern Greece, Turkey, the Middle Eastern countries bordering the Eastern Mediterranean, Egypt and all other North African countries to Spain.

Galen stresses the importance of determining the authenticity of the herbs and minerals in light of commercial substitutions and falsifications—especially those from distant lands. Examination should be done



Martin Wall

Rosa rugosa (rosehips)

through visual inspection, tasting and water maceration (the latter process shows whether the herb remains compact or dissolves, thereby proving a falsification). For instance, Myrrh resin and Costus root to be genuine possess particular visual characteristics. Crocus stamens should be bright yellow and should possess a pleasant, tenacious scent; this remedy should be stored with particular care in a cool shadowy place to preserve its color and fragrance. Cinnamon bark should have a pleasant, ineffable (*arretos*) fragrance and a warming but not biting taste.

In his texts Galen also describes the careful preparation of remedies to preserve their qualities, as well as the preparation of compound remedies, or formulas. A practical herbalist as well as a theorist, he preferred to prepare his own formulas into decoctions, fluid extracts, syrups, plasters, etc. Galen stored his simple and compound remedies in closed wooden boxes (*aggeia psylin*) in a special room in his clinic, which he called the *apothēke*. Pragmatic also, in one text he gives an alphabetical list of remedies and their possible substitutes, in case one should run out of a particular remedy. The substitution is made on the basis of both remedies having identical qualities.

Galen's pharmacy thus included both single remedies (*eilikrinos echon*) and compound remedies or formulas. Single remedies are prescribed for specific conditions on an empirical basis with respect to their inner nature and specific actions. Proving or experimentations of the single remedies are carried out first on individuals in good health, second on those with illness and third on those with debility. Here Galen's exposure to the Empirical doctors of Alexandria has clearly left its mark.

Those remedies designed solely for internal use and for dispelling pathogens he calls *antidotoi* or antidotes. These are in contrast to the *trophe* or nutritive remedies used for supplementation (tonification) in deficiency conditions. Antidotal and nutritive remedies

should be understood as relative, dynamic concepts, however. It is the human condition that ultimately determines whether a remedy will act as an antidote or a nutritional remedy, or possibly as both.

Galen's groups of similar-acting herbs he possibly created for memorisation purposes. These were handed down in materia medicas and formularies right down to the eighteenth century. Examples of these are (uncertain modern plant names have been left in the original):

- The five greater opening roots ("Opening" implies "opening obstructions," especially of the kidneys): fennel, celery, asparagus, parsley, butcher's broom
- The five minor opening roots: Capparis, eryngium, couch grass, *Omonis*, madder
- The five emmollient herbs: marsh mallow, mallow, *Mercurialis vel Beta*, *Parietaria*, *Violaria vel Mercurialis*
- The four major warm seeds: aniseed, coriander, cumin, fennel
- The four minor warm seeds: cretan ammy, cardamom, celery, carrot
- The four major cold seeds: cold and moist watermelon seed, cucumber seed, squash seed, melon seed
- The four minor cold seeds: cool and moist chicory, endive, lettuce, purslane
- The four cordial flowers: rose, violet, borage, bugloss

Galen's Vitalistic Pharmacology

Galen classifies his remedies in a number of different ways, some more practical, some more theoretical and based on Aristotelian principles. They can all help us today understand the way he would use them in clinical practice. His fundamental classification for clinical practice is the three remedy classes, which are organized as follows:

- 1 Eliminants, which promote an elimination of toxic fluids (including diaphoretics, diuretics, purgatives, emmenagogues, expectorants)
- 2 Alterants, which alter the balance of the four nutritive fluids
- 3 Restoratives, which supplement in deficiency or exhaustion conditions

These particular categories were preserved in the materia medicas and formularies of Galen's Islamic successors and then in the Central European phase of Greek medicine well into the eighteenth century. They can thus be considered the backbone categories for traditional herbal medicine practitioners.

The fundamental concept for describing remedy actions in terms of treating quality or fluid imbalances is the effective quality (*dynamis*). Each remedy possesses primary, secondary and tertiary qualities, the balance of which makes up its unique actions and indications.

- Primary effective qualities: hot/cold (the warmth grades), dry/moist (the moisture)
- Secondary effective qualities: relaxing, astringing, softening, hardening, thinning, thickening, etc.
- Tertiary effective qualities: sweat-causing, urination-causing, purging, detoxifying, tissue-repairing, etc.

The primary and secondary effective qualities are used to treat conditions opposed to that of the qualities. The tertiary qualities are the remedy's specific actions on organs or tissues, such as diuresis, diaphoresis, purgation, tissue-healing, which are not derived (i.e. independent) from the primary and secondary qualities. Note that in some remedies the primary qualities can already produce a specific action like that of the tertiary qualities.

The primary qualities possess the following secondary qualities:

- Hot: thinning, resolving, detoxifying, opening, softening, etc.
- Cold: repelling, thickening, rendering crude
- Dry: astringing
- Moist: smoothening

The warmth-grades (*taxis*) belonging to the primary qualities are:

- hot — balanced — cold

Both the heat and cold grades were in theory subdivided into four grades, resulting in a total of eight possible warmth grades (this was multiplied by two in Ibn Sina's later system). Likewise, dry and moist were also divided into four grades each. A later example of this grading system is seen in William Cole's 1656 *The Art of Simpling*, for instance which sticks closely to Galen's original grading system and herb examples.

Some examples to illustrate how the primary qualities of herbal remedies are described. Fenugreek is hot in the first degree and moist in the second; holy thistle is hot and dry in the second degree; angelica is hot in the second and dry in the third degree; thyme, hyssop and marjoram are all hot and dry in the third degree; leek, cress and garlic are all hot and dry in the fourth degree; myrtle is cold and dry in the first degree; rose is cold and moist in the first degree; shepherd's purse is cold in the first degree and dry in the second; chickweed is

cold and moist in the second degree; henbane, hemlock and poppy are cold in the fourth degree; horsetail is dry in the second degree. Juniper berry is warm in the third degree, aromatic and drying; its tertiary quality would be urination-causing and detoxifying.

The balanced or temperate remedies that neither cool nor warm are called *mesa pharmaka*, middle remedies; they are a yardstick by which warming and cooling remedies can be evaluated. This warmth-grade system derives from the Dogmatic and Pneumatic medical schools in Alexandria.

Galen also rates each remedy's warmth grade on an intensity scale of weak, medium or strong, as follows:

- Weak intensity: remedies that possess a mild amount of heat or cold; e.g. rose ointment has a weak intensity.
- Medium intensity: remedies that possess a moderate amount of warmth, etc.; e.g. rose is moderately cold (i.e. cold of medium intensity).
- Strong intensity: remedies that possess a powerful amount of warmth, etc.; *Rhus*, *Alumen*, *Galla*.

While Galen considers the various remedy qualities extremely important, curiously enough, of the 475 remedies mentioned in his extant texts, only 161 actually have warmth-grade indications. Harig's conclusion (1974) is that perhaps the grade system was less important in practice than in theory. He speculates that in actual practice the remedy's intensity was perhaps an even more important consideration than its warmth. Certainly Galen always considers the basic warming or cooling effect of remedies when discussing the treatment of hot or cold disorders; but he rarely mentions the particular grade of warmth or coolness required to counteract the intensity of a heat or cold condition.

Galen considers the remedy's taste mainly as a confirmation of its primary qualities rather than independent secondary qualities. The resulting correlations are as follows:

- Sweet: warm, moist
- Bitter: warm, dry
- Pungent: hot
- Sour: cold, dry, earthy
- Acid: somewhat cool, moist, dissolving
- Astringent: cool, dry, thickening
- Salty: warming, detoxifying, corroding
- Insipid: cold, moist
- Oily: warming

Aromatic or fragrant remedies are always considered "of thin substance and therefore warming," while non-fragrant remedies tend to be more earthy, dense and

thus cold. Herb color can also indicate various qualities in general:

- Pale or white: moist
- Yellow: hot
- Red or scarlet: hot, dry
- Green: moist

Ultimately, it is the human response to the remedies that determines their qualities. Despite Galen's fine analytical thinking, he acknowledges pragmatically that "it is unimportant whether a substance is innately warm, cold, moist or dry; rather what is important is whether it acts warming, cooling, etc. in the human body." He gives the example of sea water, which is wetter than the body but has a drying and warming effect. Because of this, he stresses that remedies can exert different actions according to a person's age, sex, habits, diet and do on. Galen clearly defines a vitalistic pharmacology system that is not fixed or linear, but rather dynamic and dialectic—despite its solid analytical underpinnings. This fact, which is borne out in his clinical practice, should be kept in mind when reviewing the finely differentiated analysis of remedy actions to follow.

When discussing remedies in terms of their effective qualities and the *dyskrasias* they address, Galen defines three pharmacological categories of remedies:

- 1 Remedies that convey the primary effective qualities (*dynameis*). Predominantly warming, cooling, moistening or drying by nature, the remedies in this category have the sole function of altering the individual's balance of the qualities of heat, cold, damp and dryness. They are thus used only to treat particular *dyskrasias*.
- 2 Remedies that convey both primary and secondary qualities. For instance, some herbs are primarily warm and secondarily bitter, sweet or pungent. Other herbs are primarily cool and secondarily sour or salty; and so on.
- 3 Specific remedies which work "through their entire substance" to create a physiological response, such as purging, sweating, vomiting, etc.

Galen further differentiates between three different types of balance of remedy effective qualities:

- 1 Remedies that possess an "absolute" or single quality (*haplostherma*); e.g. solely cold, hot, dry or moist in quality
- 2 Remedies that possess a predominant quality and other secondary qualities (*kat epikratedin*); e.g. mainly warm and secondarily dry
- 3 Remedies that possess an even mix of qualities (*pros to symmetron homogenes*). These remedies



possess a moderate action and are to be used halfway between the onset and the resolution of a disease condition.

In another text Galen discusses what we would call pharmacodynamics, and defines the following four mechanisms of remedy actions:

- 1 Remedies that are not altered after ingestion, but that alter the body.
 - 2 Remedies that are stimulated by the body and become altered, and thus alter the body.
- These first two remedy types are called *deleteria* or toxic remedies, and should not be used; they include mercury, belladonna, aconite, etc.
- 3 Remedies that produce an effect on the body without injuring it. These include most generally used remedies.
 - 4 Remedies that produce an effect on the body as well as becoming altered themselves, i.e. becoming completely assimilated. These are nutritive/trophic remedies and foods.

Only remedies with the last two types of effects should be used therapeutically.

In addition, a remedy can have one of four types of effects, natural or accidental, and actual or potential.

- 1 Remedies that possess a natural effect are those whose effects result from their own nature. A natural effect can be sensed by the immediate cooling or warming sensation on the skin or tongue; it tends to increase after ingestion.
- 2 Remedies that possess an accidental effect are those whose effects result from an accidentally acquired quality. Water, for instance, although cooling by innate quality, can produce warmth by accidental reaction; plantain is primarily cool and accidentally drying, as coolness can also astringe; peppermint is innately warm and accidentally cool by the accidental reaction of sweating. These types of remedies tend to weaken in potency after ingestion.
- 3 Remedies that possess an actual effect are those that possess a dominant quality. These remedies are directly warm, cool, dry or moist to the touch.
- 4 Remedies that possess a potential effect are those whose effect is capable of becoming an effective quality only upon body contact, when it becomes an actual effect. This includes a large number of herbs. A remedy's potential effect can only be determined retrospectively by deductive conclusion.

In addition, Galen notes that a remedy's effect can be judged by four different mechanisms of action:

- 1 By the absolute action of the four effective qualities
- 2 By the actual action of the primary effective quality where one or two qualities predominate
- 3 When the remedy action is judged by the mean effect, e.g. on both children and old people
- 4 When the remedy action is judged by accidental comparison, e.g. in two different people

While this survey of Galen's herbal medicine is far from complete, it will give some idea of its fully articulated yet dialectical complexity. It will hopefully also convey a sense of its deeply vitalistic nature, which is highly "user-friendly" for the practitioner.

It is hoped that this brief sketch of an original thinker and herbal medicine practitioner will clear the path for further explorations of Galen the man and the medical system he helped develop. Greek medicine is our Western heritage of therapeutic wisdom—one that may hold a key for herbal medicine today.

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