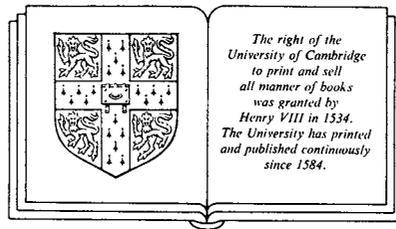


# THE FRENCH PARACELSIANS

*The Chemical Challenge to Medical and  
Scientific Tradition in Early Modern France*

ALLEN G. DEBUS



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## *Paracelsism and medical tradition*

### *The Galenic revival*

At the time, early in the sixteenth century, few people recognized that the medical and scientific communities were on the threshold of a fundamental change. Revered texts by ancient and medieval authorities were soon to be replaced by a wave of new translations as the spirit of fourteenth- and fifteenth-century humanism passed from literary texts to the sciences and to medicine.<sup>1</sup> In 1417, Poggio Bracciolini (1380–1459) found a copy of the *De rerum natura* of Lucretius (ca. 99–55 B.C.), a work that was eventually to spur a new interest in atomic explanations of natural phenomena. Georg von Peuerbach (1423–1461) and his disciple Johann Müller (Regiomontanus) (1436–1476) sought to reform astronomy in their quest for an accurate manuscript of Ptolemy's *Almagest* (second century A.D.). This quest led first to Peuerbach's textbook, the *Theoricæ novæ planetarum* (published ca. 1473) and then to Müller's *Epitome* of the *Almagest* (1496). The new emphasis on Ptolemy influenced the young Copernicus (1473–1543) whose own work was to be essentially a sun-centered restatement of Ptolemaic astronomy.

In 1428, Guarino da Verona (1370–1460) discovered the long lost encyclopedic treatise on medicine by Celsus (second century A.D.), and by the end of the fifteenth century, prominent medical humanists such as Thomas Linacre (ca. 1460–1524) were planning extensive new translations of ancient medical authors.<sup>2</sup> This intense activity emphasized the primacy of Galen as a medical authority, one of whose major works, *De usu partium*, appeared in several new translations by 1500. Linacre added his own translations, among them the important *De naturalibus facultatibus* (1523). The first edition of the collected works of Galen in Greek appeared in 1525, and the medical humanist, Jacques Du Bois (Iacobus Sylvius) (1478–1555), wrote that "After Apollo and Aesculapius they [Hippocrates and Galen] were the greatest powers in medicine, most

<sup>1</sup> On humanism in the sciences, see A. C. Crombie (1953), pp. 267–70; Lynn Thorndike (1941), vol. 4, passim; Allen G. Debus (1978), passim; and the papers by A. Buck (1973).

<sup>2</sup> The most valuable volume on Linacre is the collection of essays edited by Francis Maddison, Margaret Pelling, and Charles Webster (1977), which includes Walter Pagel's essential paper on "Medical Humanism – A Historical Necessity in the Era of the Renaissance," pp. 375–86.



The harmony of Galen, Hippocrates, Plato, and Aristotle. From Symphorien Champier, *Symphonia Platonis cum Aristotle, et Galeni cum Hippocrate* (1516). Courtesy of the National Library of Medicine, Bethesda.

perfect in every respect, and they had never written anything in physiology or other parts of medicine that was not entirely true."<sup>3</sup>

Even more important was the work of Johannes Guinter of Andernach

<sup>3</sup> Owsei Temkin (1973), p. 126, quote from "Vaesani cuiusdam calumniarum in Hippocratis Galenique rem anatomicam depulsio," *Opera medica* (1680), p. 135. The work of Sylvius has recently been discussed by G. Baader in Wear, French and Lonie (1985). The papers in this volume are an excellent source for studying the impact of the ancient classics on medicine in the sixteenth century.

(ca. 1497–1574),<sup>4</sup> who not only prepared new editions and translations of the medical works of Paul of Aegina (late seventh century), Caelius Aurelianus (seventh century), Oribasius (ca. 325–400), and Alexander of Tralles (sixth century), but also wrote new texts himself. Andernach translated much of Galen into Latin, including the work *De anatomicis administrationibus* (1531), which was strongly to influence his own *Institutionum anatomicarum secundum Galeni sententiam ad candidatos medicinae* (1536). Andernach's assistant during the preparation of this work was a young medical student, Andreas Vesalius (1514–1564). Vesalius's anatomical masterwork, the *De humani corporis fabrica* (1543), was to be as important to the development of anatomy as the *De revolutionibus* of Copernicus was to be for astronomy, and his debt to the new Galenic studies was as great as Copernicus's debt to the corrected Greek text of Ptolemy.

Andernach had a second assistant among his students, Michael Servetus (ca. 1511–1553), who was to be the first author to describe the lesser circulation of the blood from the right ventricle through the lungs to the left ventricle. His interest in the passage of the blood stemmed from a religious concern, the assimilation of the Heavenly Spirit in the body through respiration; he published these thoughts in his *Christianismi Restitutio* (1553). But Servetus was also a Galenist. In his discussion of syrups (1536) he openly praised the work of the Greek physician as the basis of true medicine in contrast to the outmoded works of the Arabs and the medical translators:

In our happy age [Galen] once shamefully misunderstood is reborn and reestablishes himself to shine in his former lustre; so that like one returning home he has delivered the citadel which had been held by the forces of the Arabs, and he has cleansed those things which had been bespattered by the sordid corruptions of the barbarians.<sup>5</sup>

The medical humanists of the early decades of the sixteenth century presented physicians with a flood of new translations of texts, some unknown earlier and others known imperfectly. It was a labor performed by recognized scholars. In the case of Linacre we recognize the founder of the London College of Physicians (1518) whereas with Sylvius and Guinter we are in the presence of leading figures of the Parisian medical establishment. These men accepted Galen as the "Prince of Physicians" and sought medical truth through accurate translations of the best manuscripts they could locate. It was a period when scholars in all fields were judged through the now traditional academic disputation; in the case of medical texts, this meant that specific theses were discussed and defended by the author before a panel of medical experts.

<sup>4</sup> For Guinter as a medical humanist, see C. D. O'Malley (1964); for Guinter as a proponent of chemical medicine, see Allen G. Debus (1972), vol. 1. See also Georges Schaff (1976).

<sup>5</sup> Michael Servetus (1953), p. 60.



A sixteenth-century academic disputation from Ludovico Panizza, *De venae sectione in inflammationibus quibuscunque fluxione genitis, per sanguinis missionem curandis . . . disputatio ac decisio* (Venice: Ex Officina Farrea, 1544). Courtesy of the National Library of Medicine, Bethesda.

The touchstone of truth was to be found in the work of the ancient and medieval authorities whose work their texts reflected. Tradition rather than innovation was emphasized. When these medical humanists disagreed with the ancients, they followed in the steps of their literary

forebears; corrections were welcomed, but the original was not to be discarded.

With little controversy these new translations and texts gradually superseded the Arabic medical texts and the "barbarous" translations made during the twelfth and thirteenth centuries. In essence this medical reform was accomplished through an extension of the spirit of literary humanism to the sciences, an early, but essential, phase of the scientific revolution, which was welcomed by most members of the medical community. The stamp of Galen shone brightly on this "new" establishment medicine of the sixteenth century, both in medical education and among the growing number of associations of prominent physicians.<sup>6</sup>

### *Hermeticism and natural magic*

The Galenic revival was only one of the medical results of humanism. The search for ancient texts had also yielded the Greek text of the *Corpus Hermeticum* (ca. 1460). Cosimo d'Medici (1389–1464) had instructed Marsilio Ficino (1433–1499) to turn from his translation of Plato to these treatises, which were ascribed to Hermes, a legendary figure who was thought to have lived at the time of Moses or Abraham. The *Corpus Hermeticum* had been known to St. Augustine and other Fathers of the Church, and these tracts seemed to offer Renaissance scholars a gentile revelation contemporary with the books of Moses.<sup>7</sup> In the *Pymander* was a description of the creation and the fall of man that paralleled the account in Genesis. However, the *Pymander* account left man with the power to act in nature on his own. Had not the Creator concealed treasures in the earth for the health and wealth of mankind? He had identified these with signs, which the seeker – when informed by Grace – might discover and learn to use for the benefit of his fellow man. This was the proper role of the physician, but at the same time it was a doctrine similar to the role of the natural magician in the Hermetic tradition. Man could be a natural magician capable of learning of the wonders of the Lord while examining His Book of Nature. In this sense magic was seen as a religious quest.

For these Hermeticists, these natural magicians, the universe was a unified whole, interconnected in all of its parts. This unity was ex-

<sup>6</sup> Dr. John Geynes, a member of the London College of Physicians, was forced to recant after suggesting that Galen was not infallible (1559). W. S. C. Copeman (1960), p. 36.

<sup>7</sup> Dame Frances A. Yates was largely responsible for the current interest in the Hermetic revival and its relation to the scientific revolution. She developed this theme in *Giordano Bruno and the Hermetic Tradition* (1964) and in a number of volumes over the next seventeen years. A conference on Renaissance Hermeticism at The Folger Shakespeare Library in 1982 permitted scholars to reassess this influence in many areas: Ingrid Merkel and Allen G. Debus, eds. (1988). See also Allen G. Debus (1977), vol. 1, pp. 30–4 on "The Hermetic Revival and the Study of Nature."

pressed in the duality of the macrocosm and the microcosm: All things in the great world were also to be found in the small world of man. These two worlds were connected by astral influences and the Holy Spirit, though much on the motion and action we perceive was explained in terms of sympathetic or antipathetic influences. Because of the role that man could play in this view of the cosmos, Hermeticism and natural magic were to have a profound effect on medicine and the sciences.

### *Paracelsus*

Perhaps the chief beneficiaries of this more mystical hermetic view of the world in the sixteenth century were Philippus Aureolus Theophrastus Bombastus von Hohenheim, called Paracelsus (1493–1541), and his followers.<sup>8</sup> A lifelong rebel, Paracelsus was exposed as a boy to practical medicine by his father, who served as a country doctor in several Swiss towns, among them Einsiedeln where Paracelsus was born. His father also carried out alchemical experiments at the hearth whenever he had time. Tradition has it that Paracelsus was taught by the Abbott Johannes Trithemius of Sponheim, also known for his esoteric interests, including alchemy. The family moved to the mining town of Villach in 1502 where the boy worked as an apprentice in the mines owned by the wealthy Fugger family. Here he surely became acquainted with mining lore and metallurgical practices and with the diseases associated with this profession, which were to become the subject of one of his books.

In 1507, at the age of fourteen, Paracelsus left home as a wandering scholar, visiting many universities and taking employment of various kinds. Whether or not he took a medicine degree is in doubt, but he did work as a surgeon in the mercenary armies of the period. Although he referred to many towns and countries in writing of these years of travel, we cannot be certain that he actually went to all of them. We can only speak with confidence of his travels in the last fifteen years of his life when he confined himself to the cities and villages of Switzerland and southern Germany. We need not recount his well-known difficulties in Basel in 1527 or his final call to Salzburg in 1541. It suffices to say that he died at the rather early age of forty-eight after more than thirty years of almost constant travel and conflict with local authorities. At the time of his death, few of his more important works had been published, but this was to change in the decades afterward.

Paracelsus became famous after his death, primarily because he was thought to have accomplished wondrous cures. As a result, his manuscripts – many had been left behind as he moved from town to town –

<sup>8</sup> Of the numerous studies of Paracelsus, I have relied primarily on those of Walter Pagel, particularly Pagel (1982, 1962). See also Debus (1977), vol. 1, pp. 45–61.

were sought out, published, and commented on by physicians who may never have heard of him during his lifetime. Beginning about 1550 a trickle of Paracelsian publications grew into a flood in the closing decades of the century. Paracelsians called for a new medicine – their own medicine – to supersede that of the schools. It is not hard to understand why most Galenists demanded the suppression of this medical heresy, though some were more open minded, such as the long-lived medical humanist Guinter von Andernach who recommended (1571) that physicians take whatever they found useful from the works of either camp. In his own case, Guinter meant by this the theoretical medicine of the ancients plus the revolutionary metal-based remedies of the Paracelsians.

By the early years of the seventeenth century, the Paracelsian–Galenist debate had reached a fever pitch, not only among physicians but among everyone concerned with the question of a new philosophy. John Cotta (ca. 1575–ca. 1650), a Northampton physician, wrote in 1612 that

The innumerable dissensions amongst the learned concerning the Arabicke and Chymicke remedies at this day infinitely, with opposite and contradictorie writings, and inuectives, burthen the whole world. Some learned Phisitions and writers extoll and magnifie them as of incomparable vse and diuine efficacie. Some with execration accuse and curse them as damned and hellish poysons. Some because they find not these remedies in the common & vulgar readings of the Antients (the famous and learned Grecians) with feare and horror endure their very mention, farre therein vnlike and differing from that ingenuous spirit of the thrise worthy and renowned Pergamene Claudius Galen who . . . did . . . with humble and daigning desire search & entertaine from any sort of people, yea from the most unlearned Empiricke himselfe, any their particular remedies or medicines, which after by his purer and more eminent iudgement, and clearer light of understanding, refining, he reduced to more proper worth, and thereby gave admired presidents of their wondered ods in his learned prescription and accomodation. Some contrarily contemning the learning and knowledge of the Grecian, and with horrid superstition, deifying an absolute sufficiencie in Chymicke remedies, reiect the care or respect of discreet and prudent dispensation. A third and more commendable sort differeth from both these, and leaving in the one his learned morositie and disdainfull impatience of different hearing, and in the other his ignorant and peruerse Hermeticall monopoly, with impartiall and ingenuous desire free from sectarie affectation, doth from both draw whatsoeuer may in either seem good or profitable vnto health or physicke vse: from the Grecian deriving the sound & ancient truth, & from both Greeke, Chymicke, or Arabian, borrowing with thankfull diligence any helpfull good to needfull vse.<sup>9</sup>

<sup>9</sup> John Cotta of Northampton, *Doctor in Phisicke* (1612), pp. 82–3.

### *The chemical philosophy*

This passage by Cotta is testimony of the intensity of the medical debate in the early years of the seventeenth century.<sup>10</sup> But what had the Paracelsians proposed that was so objectionable to the Galenists? Certainly the Paracelsians were opposed to the educational establishment, believing that Aristotle, Galen, and their followers and commentators must be discarded as the ultimate authorities in philosophy and medicine. They had been heathens. Galen had attacked the Christians in his works, and the philosophy of Aristotle had been condemned by the Church time and time again.<sup>11</sup> In short, the Galenic medical humanists sought to magnify the authority of the ancients whereas the Paracelsians, whom we might call "Hermetic humanists," sought to destroy the authority of the ancients and replace it with a more Christian system of learning.

Paracelsian medicine and philosophy were to be based on the two books of divine revelation, Holy Scripture and God's Book of Creation. It was quite clear to Thomas Tymme (1605): "The Almighty Creatour of the Heavens and the Earth, (Christian Reader), hath set before our eyes two most principall Bookes: the one of Nature, the other of his written Word . . ." <sup>12</sup> Clearly the biblical books were incontrovertible, but nature was no less so if read correctly. Finding the myriad treasures that God had hidden in the earth and heavens for the benefit of man was hopeless for those who thought the answer was to be found in reading the books of the ancients or studying at the universities. In 1571 Peter Severinus (1540–1602) encouraged seekers of truth to

sell your lands, your houses, your clothes and your jewelry; burn up your books. On the other hand, buy yourselves stout shoes, travel to the mountains, search the valleys, the deserts, the shores of the sea, and the deepest depressions of the earth; note with care the distinctions between animals, the differences of plants, the various kinds of minerals, the properties and mode of origin of everything that exists. Be not ashamed to study diligently the astronomy and terrestrial philosophy of the peasantry. Lastly, purchase coal, build furnaces, watch and operate with the fire without wearying. In this way and no other, you will arrive at a knowledge of things and their properties.<sup>13</sup>

<sup>10</sup> See my chapter on "The Paracelsian Debates" in Debus (1977), vol. 1, pp. 127–204.

<sup>11</sup> Much of the work of Pierre Duhem and subsequent writers on the history of physics in the Middle Ages has dealt with the significance of the condemnation of Aristotelian philosophy by Church councils in the thirteenth century. For a discussion of Galen's references to the Christians, see R. Walzer (1949). The attack on Aristotle and Galen as heathens by the Paracelsians is a common theme. R. Bostocke (1585) refers to Galen as "that heathen and professed enemy of Christ" (sig. Hv<sup>r</sup>) and "The heathnish Phisicke of Galen doth depend upon that heathnish Philosophie of Aristotle" (sig. Av<sup>v</sup>).

<sup>12</sup> Thomas Tymme (1612), sig. A3.      <sup>13</sup> Petrus Severinus (1660), p. 39.

Like Severinus, Joseph Duchesne (ca. 1544–1609) wrote of the need of the physician to travel in order to learn of local diseases that had not yet reached his own country. He wrote of the strange sweating sickness in England, scorbitum (scurvy) in Germany, colic in Alsatia, a new fever in Hungary, and a disease called plica in Poland. None of these were known to the ancients.<sup>14</sup> Paracelsus himself had traveled constantly and believed that the physicians should “learn of old Women, Egyptians, and such-like persons; for they have greater experiences in such things than all the Academians.”<sup>15</sup>

The Paracelsians called for a new study of nature that went far beyond the debate over the use of chemical medicines referred to by John Cotta. Man as the microcosm contained within him all things that were to be found in the great world surrounding him. Paracelsus, in one of his earliest works, the *Volumen medicinae paramirum* (ca. 1520), had written that all things in heaven and earth exist in man.

All this you should know exists in man and realize that the firmament is within man, the firmament with its great movements of bodily planets and stars which result in exaltations, conjunctions, oppositions and the like, as you call these phenomena as you understand them. Everything which astronomical theory has searched deeply and gravely by aspects, astronomical tables and so forth, – this self-same knowledge should be a lesson and teaching to you concerning the bodily firmament. For, none among you who is devoid of astronomical knowledge may be filled with medical knowledge.<sup>16</sup>

The Paracelsians certainly wanted a new understanding of nature, but their concept of science was quite different from ours. Not only did they insist on the validity of the macrocosm–microcosm analogy, they also found little value in mathematics as an interpreter of natural phenomena. Mathematics was thought to be a form of logic (as exemplified by geometry), a link with the Greek past and the establishment educational system, which they rejected. Peter Severinus wrote that the source of Galen’s failure had been his fascination with the beauty of mathematical proofs and his desire to base medicine on a foundation as firm as geometry is.<sup>17</sup> Galenic medicine had failed in the treatment of the diseases that were the scourge of sixteenth-century Europe. The mathematics of Paracelsus was a cosmic “sidereal” mathematics, more

<sup>14</sup> Joseph Duchesne (1618), pp. 151–4. “Plica polonica” was a disease endemic in sixteenth-century Poland. It was a disorder of the hair in which it became twisted, matted, and crusted as a result of filth, neglect, and infestation by vermin.

<sup>15</sup> Paracelsus (1656), p. 88. For the original text, see Paracelsus, *Sämtliche Werke*, ed. Karl Sudhoff and Wilhelm Mathiessen, 15 vols. (Munich: R. Oldenbourg [vols. 6–9: O. W. Barth], 1922–33), vol. 14, p. 541.

<sup>16</sup> Paracelsus (1949), p. 36. <sup>17</sup> Severinus (1660), pp. 2, 3, 21.

akin to Pythagorean and Cabalistic number mysticism than to logic.<sup>18</sup> Other practitioners with more practical needs turned to Wisdom 11:17 (Douay version 11:21) to show that God had created "all things in number, weight and measure." This statement fitted the experience of the chemist, the pharmacist, and even the alchemist, all of whom weighed and measured their reagents in the laboratory.

This new philosophy of nature was to be founded on chemistry rather than mathematical abstraction and the study of motion. Although the Creation had been a mathematical process, it had been no less a chemical separation. In his *Phisophiae* [sic] *ad Athenienses* (published 1564), Paracelsus had written of a chemical unfolding of nature; and Thomas Tymme (1605) described the Creation as a divine "Halchymicall Extraction, Seperation, Sublimation, and Coniunction" of the "original indigested Chaos or masse."<sup>19</sup> Gerhard Dorn prepared a Paracelsian commentary on the six days of Creation in which he insisted that the division of the waters (second day) was the familiar alchemical separation of pure essence – or spirit – from the impure residue, the *caput mortuum*.<sup>20</sup>

Surely this emphasis on the Creation led to the problem of the elements, which were a necessary first product of the process. Paracelsus himself frequently used the four Aristotelian elements (earth, water, air, and fire) in his work, as he had in his *Philosophy to the Athenians*. But he also used a second set of elementary substances, the *tria prima* or three principles: mercury, sulfur, and salt. These were clearly derived from and were an extension of the traditional alchemical mercury and sulfur, which had been introduced in the eighth or ninth centuries by Arabic chemists to account for the metals. It was understood that the three principles were not the common substances met in the laboratory but were their essences, or even "souls," and were frequently termed "the sulfur and mercury of the philosophers."

The relationship of the material elements to their principles was not clear to Paracelsus because any tangible substance might be composed of material elements that could be made of the spiritual principles, or the reverse.<sup>21</sup> Whatever his real thought might have been, element theory was thrown into confusion until well into the eighteenth century. This confusion had far-flung consequences because the cosmology, the physics, and the medicine of the European universities were all based on the

<sup>18</sup> I have written at greater length on the mathematics of the Paracelsians in my "Mathematics and Nature in the Chemical Texts of the Renaissance," Debus (1968). The subject is discussed by Paracelsus in his *Astronomia magna*.

<sup>19</sup> From the dedication to Sir Charles Blunt in Joseph Duchesne (Quercitanus) (1605), sig. A<sup>3r</sup>.

<sup>20</sup> Dorn's *Liber de natura luce physica, ex Genesi desumpta* (1583) was assured a wide audience by being included in the first volume of the *Theatrum Chemicum* published by Lazarus Zetzner, which went through three editions between 1602 and 1659–61.

<sup>21</sup> Walter Pagel discussed the relationship of the elements and the principles in the Paracelsian texts in his *Paracelsus*, (1958), pp. 100–4.