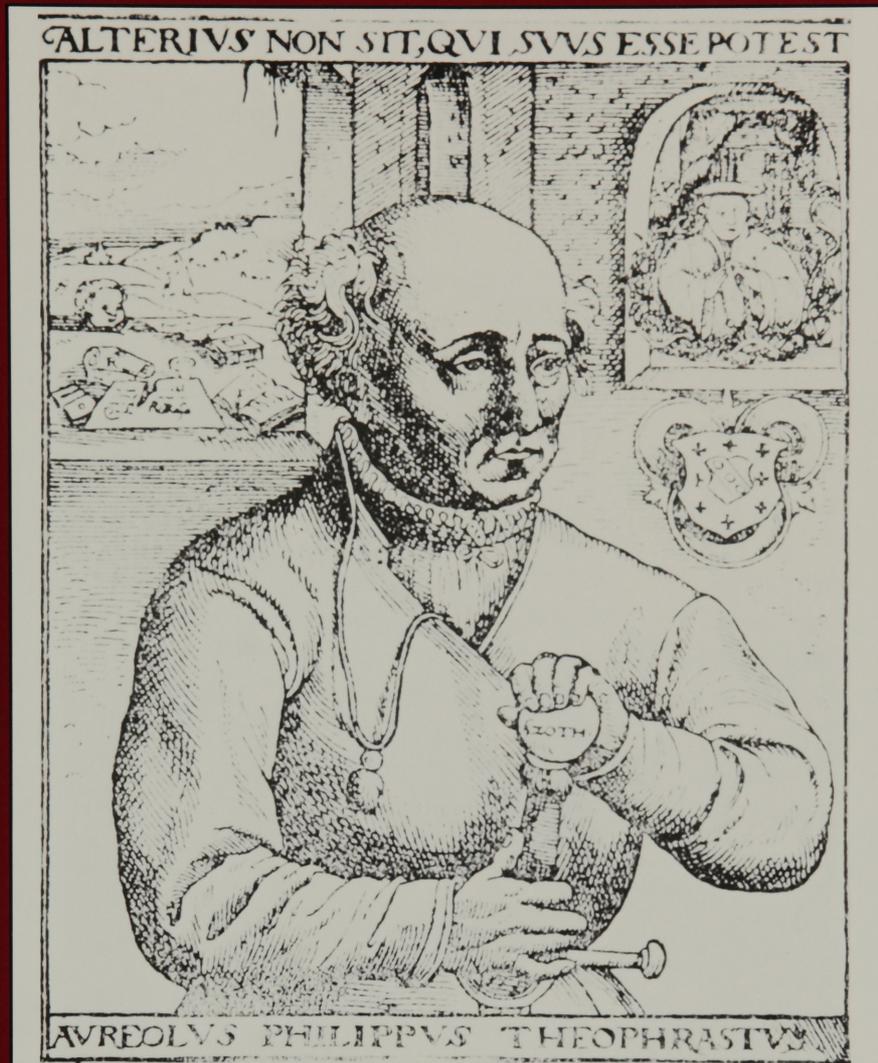


Paracelsus, Five Hundred Years

Three American Exhibits



Paracelsus 1493-1541

Bethesda, Md
National Library of Medicine
Building 38 Lobby
September - December, 1993



Philadelphia, Pa
Hahnemann University, The Library
October - December, 1993



St. Louis, Mo
Washington University
School of Medicine Library
March - July, 1994

PARACELSUS, Five Hundred Years: Three American Exhibits.

Bethesda, Maryland: Published by the Friends of the National Library of Medicine, Inc., for the Hahnemann University Library, The National Library of Medicine, and the Washington University School of Medicine (St. Louis), 1993.

Acknowledgements

Funding to publish this brochure was provided by the Hahnemann University Library and by the Washington University School of Medicine (St. Louis).

Other assistance in the preparation of the booklet and/or of the respective exhibits was provided as follows:

Hahnemann University Library:

Sandra L. Chaff (Consultant);
Judith Baker, Carol Fenichel,
Randall Lowe

National Library of Medicine:

Allen G. Debus (consultant);
Graphics: Joseph Fitzgerald
and Becky Cagle;
History of Medicine
Division: Stephen Greenberg
Margaret Kaiser, Lucy
Keister, Jan Lazarus,
Martha-Lucia Sierra,
Amanda Sprochi, David
Vecchioli, Monique Young,
James Cassedy

Washington University:

Susan Alon (Rare Book
Librarian);
Lilla Wechsler, Paul
Anderson, Susan Crawford,
Gerhild Scholz-Williams;
The Robert E. Schlueter
Collection—St. Louis
Metropolitan Medical
Society;
The Horncrest Foundation,
Department of Germanic
Languages and Literatures



Single copies of this brochure may be obtained without charge by writing to one of the sponsoring organizations.

Front cover illustration:

In this portrait Paracelsus is shown surrounded by various philosophical symbols, including his famous sword. From Paracelsus: *Etliche Tractaten, zum ander Mal in Truck ausgangen. Vom Podagra und seinem Speciebus* (Coln, 1567). Washington University Collection.

Introduction

This booklet highlights the joint observance of the 500th anniversary of the birth of Paracelsus by three American medical libraries

special exhibits which, along with lectures and other programs, are being organized at these libraries. The intent of the various events is to celebrate as well as to explain the contributions of this major Renaissance figure, especially those in medicine, chemistry, and pharmacy. The brochure also serves to draw attention to the unique special collections and strong general holdings pertaining to Paracelsus that are held by the sponsoring institutions.

The theme essay in this brochure has been prepared by Dr. Allen G. Debus of the University of Chicago, who is the leading American authority on Paracelsus and his historical influence. Some few of Dr. Debus's publications are cited in the list of *Some Readings on Paracelsus*, which follows his essay. Also pertinent, however, is his recent book, *The French Paracelsians*, published in 1991.

Illustrations in the brochure are from the collections of the National Library of Medicine and Washington University.



— The Hahnemann University Library, The National Library of Medicine, and The Washington University Medical Library (St. Louis). It has been prepared to accompany the

PARACELSUS AND THE MEDICAL REVOLUTION OF THE RENAISSANCE

A 500th Anniversary Celebration

by

Allen G. Debus

Morris Fishbein Professor of the History of Science and Medicine
The University of Chicago

Paracelsus (1493-1541), more properly Theophrastus Phillippus Aureolus Bombastus von Hohenheim, was born in Einsiedeln, Switzerland in 1493, one year after Columbus' first voyage to the New World. He was a contemporary of Nicholas Copernicus, Martin Luther, Leonardo da Vinci and a host of other figures we associate with the shattering of medieval thought and the birth of the modern world.

In fact, Paracelsus played a part in this change no less than the others. During his lifetime he was called by some the "Luther of Medicine" and the scientific debates of the late sixteenth century were centered more frequently on the innovations of Paracelsus than they were on the heliocentric astronomy of Copernicus.

Renaissance Humanism

How may we characterize the intellectual world in which Paracelsus lived? Surely a major factor was Renaissance humanism--the fascination with antiquity in all of its aspects. Authors sought to write a stylistically pure Latin to replace the barbarous Latin of

the Middle Ages. They travelled in search of old manuscripts that might have survived in isolated monasteries . . . and they studied Greek so that they might translate these treasures of the ancient world. This search for the work of ancient authors was felt first in literature, rhetoric and history, but by the late fifteenth century there was an increasing interest in the sciences and medicine.

Astronomers and mathematicians sought an accurate text of Ptolemy's *Almagest* and both the observations and the mathematics of this text were to form the foundation for Copernicus' *De revolutionibus orbium* (1543). In medicine Galen, Hippocrates, and Dioscorides were newly translated from Greek. The recovery of the medical writings of Celsus was highly influential because they presented medical terminology in the elegant Latin of the first century

A.D. Indeed, for many humanists the discovery of new texts seemed as exciting as the discovery of the new lands being made by contemporary explorers. The result was a new reliance on the truths of antiquity and establishment medicine became increasingly dependent upon the writings of Galen, the "Prince of Physicians." In short, with the corrected translations of ancient



Numerous Renaissance physicians favored the teachings of Hippocrates over those of Galen. From Justi Cortnummii, *Di morbo attonito liber unus ad Hippocraticam* . . . (Lipsiae, 1677)

authors—and more important, the discovery of new manuscripts lost to scholars for a thousand years—it was thought possible to restore the real truths of both Aristotelian natural philosophy and Galenic medicine.

However, the recovery of ancient classics and their translation was not limited to the works of Aristotle, Galen, Ptolemy, and Dioscorides. In addition to the works of many lesser figures there were new areas of study made available to Renaissance scholars. Important among them was the recovery of the *Corpus Hermeticum*, a group of treatises supposedly written in Egypt by Hermes Trismegistus at about the time of Abraham although they had not been composed until late antiquity. Authors of these treatises felt that a magus, a true natural magician, would be able to understand man, the microcosm, through his study of the macrocosm since the former was a perfect representation of the latter. Some physicians were to find this a new key to their work. No less appealing was the fact that this call for new observations in nature could be seen as an act of devotion. Christians should study not only Holy Scripture, but also the book of nature, clearly a second book of divine revelation.

Hermes was known not only to the Church Fathers, but also as one of the great figures of alchemy. Even today we

speak of a hermetic seal in chemistry. Traditional alchemy did include a belief in the transmutation of the base metals to gold, but more important was the separation by chemical means of the pure essence of a substance from its impurities. Through such processes (frequently through distillation) the true divine signatures impressed on earthly things by the Creator for their proper use (and then lost at the time of the Fall) might be rediscovered. In this fashion we would learn more of our Creator while recovering His gifts through our labor. Surely we could expect to find substances of medicinal value in this way.

In short, by 1500 the impact of the newly recovered texts was leading in two directions. On the one hand the natural philosophers and physicians of the schools had developed an increased respect for Aristotle, Galen and other ancient authorities. On the other hand, the recovery of the *Corpus Hermeticum* and other more mystical texts placed an emphasis on natural magic, the relationship of man to the macrocosm, and sought divine truths in the study of nature. The first path led to truth through traditional medicine and a reliance on mathematics and the physics of motion for our understanding of nature: the second led to a more mystical and religious basis of knowledge and turned to chemistry as a key to man and nature alike.

Paracelsus

While still a youth Paracelsus became aware of many of the conflicting currents of his age. His father was a physician in Einsiedeln and he practiced in a number of mining towns. The boy surely learned some practical medicine at home through observing his father. It is likely that he learned some folk medicine as well. He also picked up some alchemy from his father who had an interest in the subject. And in mining towns he would have observed metallurgical practices as well as the diseases that afflicted the men who worked the mines. Traditionally it has been said that Paracelsus was taught by several bishops and the occultist abbot of Sponheim, Johannes Trithemius. At the age of fourteen the boy left home to begin a long period of wandering. He apparently visited a number of universities, but there is no proof that he ever took a medical degree. As an adult, however, he picked up practical medical knowledge by working as a surgeon in a number of the mercenary armies that ravaged Europe in the seemingly endless wars of the period. He wrote that he visited most of the countries of Central, Northern, and Eastern Europe.

It is only in the final fifteen years of his life that the records of his travels become clearer. In 1527 he was called to Basel to treat a leg ailment of the famed publisher of humanist



Camp scene showing Renaissance period troops. From Paracelsus, *Grosse Wundartzney*, Erster Theil (Frankfurt am Main, 1565)

classics, Johannes Frobenius. In Basel Paracelsus also gave medical advice to the Dutch scholar Erasmus and came in contact with some of the more prominent scholars of the religious Reformation. He was appointed city physician and professor of medicine. But although he was permitted to lecture at the University of Basel, he had no official appointment with the medical faculty there.

Almost immediately Paracelsus became a figure of contention. He heaped scorn on the conservative physicians of the University, and, at the St. John's Day bonfire, threw

Avicenna's revered *Canon* of medicine to the blaze. Then, his patient, Frobenius, died. This was followed by a disastrous lawsuit and he left Basel in haste, even leaving behind his manuscripts.

The final years of his life find Paracelsus moving from town to town, and again, he often left his manuscripts behind as he had in Basel. He comes across as an angry man who antagonized many of those he met—even those who tried to help him. In the end he was called to Salzburg to treat the suffragan bishop, Ernest of Wittelsbach. There he died at the early age of forty-eight.

The Chemical Philosophy

At the time of his death Paracelsus seems to have been well known as a physician, but not as an author. He had published several almanacs and a few medical works, but only one major text, the *Grosse Wundartzney* (1536) which had gone into a second edition the following year. Here he appeared as a medical practitioner discussing wounds, ulcers, and their cure with salves and balms. A particularly interesting section treats the wounds caused by gunpowder—clearly a reflection of a growing problem in sixteenth-century warfare.

It was well over a decade after his death before physicians began to look for his manuscripts and to publish them—frequently with commentaries of their own. By 1570 many of his works were in print along with treatises written by a growing number of disciples. In these works we find a strong



Erasmus of Rotterdam 1469-1536. Print of engraving, NLM collection



Renaissance surgical scene. From Paracelsus, *Opus chyrurgicum . . . und Artzney Buch* (Franckfurt am Mayn, 1565)

challenge to the educational establishment and its reliance on ancient authorities. Some Paracelsians took pride in the fact that they had not gone to the universities at all, thus avoiding the useless knowledge they would have been subjected to. Those who did not go to the universities turned instead to the two-book theory—reliance on Holy Scripture and on personal observations and experience. Here they found chemistry particularly valuable since it separated pure from impure. Beyond this, chemistry became a basis for explaining both macrocosmic and microcosmic phenomena. Even the Creator was pictured as a divine alchemist in commentaries on the first chapter of Genesis.

The Paracelsians differed sharply from the ancients in their discussion of mathematics. In his summary of Paracelsian medicine, Peter Severinus argued that Aristotle's work as

well as Galen's was flawed by its overemphasis on mathematical logic (1571). The use of weights and measures was acceptable for the physician—and even the mystical use of numbers as one might find in the hermetic texts—but not the logical-geometrical use of mathematics. Far more acceptable was the analogy of the great world and man which might be used as a guide to truth. Paracelsus had written that “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.”

Another object of the Paracelsians' attack was the ancient system of elements: Earth, Air, Water and Fire with their attendant qualities and humors. This was a complex system, but a potentially fragile one, since a rejection of even one might result in a collapse of the whole. The Paracelsians argued that nowhere in Holy Scripture is there reference to the creation of fire and therefore it cannot be considered an element. Still, the four elements were not categorically denied by all, and in the course of the seventeenth century a five element/principle system evolved in the works of the chemists and the chemical physicians.

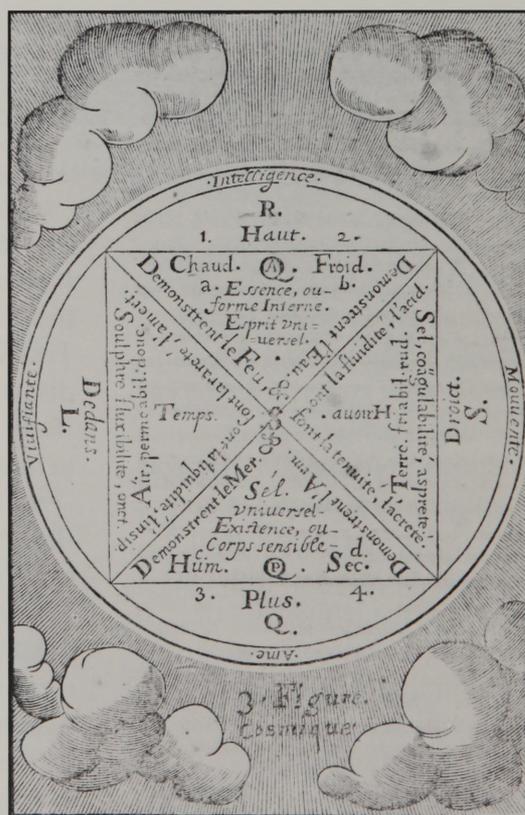


Diagram illustrating the convergence of elements, humors, and geocosmic factors in the thinking of Paracelsian chemical physicians. From Annibal Barlet, *Le Vray et methodique Cours de . . . Chymie* (Paris, 1653)

Element theory was only one aspect of macrocosmic interest. If the Creation was to be understood primarily as an alchemical separation from an initial chaos, then it seemed appropriate to use this analogy in geocosmic explanations. Distillation was the model employed for rain, volcanic eruptions, and the origin of mountain streams. Indeed, the earth itself was viewed as a large distillation flask with a fiery center which heated underground reservoirs and lava both of which might erupt at the surface.

But if the Paracelsians rejected much of the ancient legacy, they remained wedded to the ancient vitalistic world view. Metals originated in the earth from a union of an astral seed with a proper matrix. The resultant ore matured in the earth much as a fetus in the mother. And indeed, there is a life spirit that is essential for both the organic and the inorganic worlds. By the final decade of the sixteenth century this spirit was identified as an aerial niter or saltpeter.

The Medical Chemistry of the Paracelsians

As a replacement for the works of the ancients, Paracelsus and his followers consciously sought a new world system based upon the macrocosm-microcosm analogy. Chemistry was to be a key to this new philosophy which man was to uncover through new observations and the search

for the divine signatures. This was unavoidable since a knowledge of the macrocosm led directly to hitherto unknown secrets of man.

There was clearly a practical side to all of this. The *Grosse Wundartzney* was a book dealing with specific medical problems as well as the preparation of balms and plasters that were widely heralded—even among those who rejected Paracelsus' cosmological views. The chapters on the cure of wounds caused by gunshot clearly spoke to a growing problem in sixteenth-century medicine. But Paracelsus was aware of other current problems as well. In his *Von der Bergsucht oder Bergkranckheiten drey Bücher* (1533-34) he prepared the first book on miners' diseases—indeed, it was the first book specifically on an occupational disease. And in his discussion of syphilis [*Vom Holtz Guaiaco gründlicher heylung* (1529) and *Von der Französischen kranckheit Drey Bücher* (1530)] he criticized current methods of treatment including the popular use of guaiac.

Works on specific medical problems were less inflammatory than concepts that seemed to directly challenge Galenic authority. Among the latter, Paracelsus' repeated use of chemistry and chemical analogies was particularly objectionable to the medical establishment. As an example one may turn to his conviction that each bodily organ acted as

an alchemist separating pure from impure. Thus, the stomach separated the nutritional part of foodstuffs from the dross which was eliminated through the intestines. Similarly, other organs had their function in maintaining the health of the body. Illness occurred when the directive force in an organ failed and poisons accumulated. Examples were the tartaric diseases where stony precipitates developed in the kidneys or the bladder or—as in the case of tuberculosis—in the lungs.

The essentially localized seats of diseases of the Paracelsians differed from the humoral explanations of the Galenists. Utilizing the ancient concept of the four humors (blood, phlegm, yellow and black bile) which were associated with the elements, the Galenists argued that health derived from a proper balance of these fluids while disease was the result of imbalance. The physician might note an excess of blood from a ruddy complexion, yellow bile through the yellowing associated with jaundice, black bile through diarrhoea, or phlegm from a running nose. Even uroscopy might be employed to diagnose an illness through a sample of urine without examining the actual patient since a humoral excess would be evident in the sample.

The Paracelsian rejection of humoral medicine was clearly a fundamental break with medical tradition. No less



Depiction of urine examination, Seventeenth Century. Print, "Le Medecin Empyrique," by David Teniers, II, 1610-1690, NLM collection

so was their method of cure. The Galenists argued that contraries cure. That is, a disease of a certain quality and magnitude would be cured by a medicine of opposed quality and magnitude. The Paracelsians turned rather to folk tradition arguing that like cures like: a poison in the body would be cured by a similar poison. And when the Galenists charged that the Paracelsians were a veritable legion of homicide physicians, the latter replied that their medicines were safe because they had been altered chemically; moreover, careful attention had been paid to dosage.

These medical reformers not only proposed a new approach to cure, they also emphasized a new class of *materia medica*. To be sure, some metallic and mineral substances had been employed

by the ancients, but the great bulk of traditional remedies were derived from plant substances. This balance was to shift with the chemists who argued that the new and violent diseases of their age required stronger medicines. Neither the medieval herbals nor the works of the ancients described substances that could combat syphilis and other new diseases successfully. The internal use of metals and their compounds seemed essential to them. Used as purges and vomatives their action was truly more violent than the old herbal mixtures. In some cases the new medicines proved too strong and the Galenists accused their opponents with murder. When we examine the chemical and pharmaceutical books of the late sixteenth and the seventeenth centuries we see directions for the preparation of

numerous compounds of mercury, lead, arsenic and antimony, almost all of which would be avoided today.

The Paracelsian Debates

The growing interest in the works of Paracelsus in the third quarter of the sixteenth century led to an ever increasing number of publications, translations and commentaries on his works. At stake was the question of educational reform, the relation of religion to science and medicine, and the relative value of ancient authority to fresh observational evidence. The role of chemistry in all of this was crucial.

It would be wrong to picture the growing confrontation in terms of stark contrasts. To be sure, Peter Severinus sought to establish the superiority of Paracelsism to Galenism in his important *Idea medicinae philosophicae* (1571) while Thomas Erastus upheld the authority of Aristotle and Galen and damned the innovations of Paracelsus in his *Disputationes de medicina nova Paracelsi* (1572-1574). These were but the opening salvos of a confrontational literature that extended over more than a century.

And yet from the beginning there were those who sought to chart a middle course. Albertus Wimpeneus of Munich wrote his *De concordia Hippocraticorum et Paracelsistarum* in 1569 and here he admitted that although he followed Paracelsus in some

matters he also followed the ancient authorities. Even more important was the venerable Johannes Guinter of Andernach, who late in life, began to read the Paracelsian texts. In his massive *De medicina veteri et noua . . .* (1571) Guinter held to much of traditional medical theory, but he hoped to conciliate the warring factions. He wrote that Paracelsus himself was an arrogant man, but Guinter felt that there was much of value in his chemically-prepared remedies. He sought to show the similarities between the Aristotelian elements and the Paracelsian principles and he argued that the macrocosm-microcosm analogy had been employed by some of the ancients as well as Paracelsus. He also suggested that cure by similitude was not so different from that by contrariety.

The works of Severinus, Erastus, Wimpfenaeus and Guinter give some idea of the range of opinion that had developed by the early 1570s. The tone of the debate became far more bitter in the coming decades. By 1612 John Cotta expressed the views of many when he wrote that “the innumerable dissensions amongst the learned concerning the Arabicke and Chymicke remedies at this day infinitely, with opposite and contradictorie writings, and invectives, burthen the whole- world.” Although there was some debate over the more mystical views of the later Paracelsians, the most inflammatory point

was the use of chemistry in medicine.

In France the internal use of antimony was being promoted as an effective purgative—and specifically as a Paracelsian cure—by the early 1560s. The conservative medical faculty of Paris reacted quickly, charging that antimony in any form was a dangerous poison that should not be taken internally (1566). In a series of decrees and court cases this powerful body tried to forbid any use of chemistry in medicine. Nevertheless, publishers continued to print books favoring medical chemistry, and by the early years of the new century courses in the preparation of pharmaceutical chemicals were available in Paris. In the 1630s the medical faculty forced Théophraste Renaudot to close his Bureau d’Adresse where he fostered the use of pharmaceutical chemicals. But in 1641 the establishment of the Jardin des plantes provided for a professor who taught chemical operations. Although the medical faculty won repeated legal battles, they could do little to end the growing use of chemical remedies which became ever more fashionable



Figure representing “The Spirit of Sulphur.” Engraving from Leonhard Thurneisser zum Thurn, *Quinta essentia . . . und Alchemia*

among the younger physicians. After Louis XIV was cured with an antimony purge (1658) the end was in sight. An assembly of the medical faculty in 1666 resulted in an overwhelming vote accepting antimony as an approved purgative, and after that time there was little resistance to the use of chemical medicines along with more traditional cures in France.

The English reaction to the new chemical medicine was closely related to the French scene. As in France, the first English references to Paracelsus appear in the 1560s. In this case we find that the authors had lived in exile in Switzerland during the harsh reign of the Roman Catholic Queen, Mary. But if the London College of Physicians was initially hostile

to the chemists, this attitude gradually faded. By the mid-eighties the Fellows of the College planned an official pharmacopoeia that was to include a section on chemically-prepared medicines. Thomas Moffett who had taken his M.D. at Basel, and was a friend of Peter Severinus, was placed in charge of this section since he had already written a defence of chemical medicines (*De Jure et Praestantia Chemicorum Medicamentorum*, 1584). Although the project was abandoned at that time there is evidence of an increasing interest in the value of chemistry. R. Bostocke wrote an apology for the entire Paracelsian system in 1585 and reference to specific Paracelsian preparations appear in the works of a number of late Elizabethan surgeons.

After the turn of the century, the medical faculty of Paris went on the offensive once more, this time against such defenders of chemical medicine as Joseph Duchesne (Quercetanus) and Theodore Turquet de Mayerne. Turquet ultimately left the country for London where he revived the dormant pharmacopoeia project of the College and pressed for the inclusion of chemically-prepared medicines. The preface to the *Pharmacopoeia Londinensis* of 1618—surely written by Turquet—states that

we venerate the age old learning of the ancients and for this reason we have placed their remedies at the beginning, but on the other hand, we neither



The new pharmacopoeias helped improve the dispensing of medications in Renaissance pharmacies. Woodcut from E. Feynon, *Der Barmhertziger Samariter*

spurn the subsidiary medicines of the more recent chemists and we have conceded to them a place and corner in the rear so that they might be as a servant to the dogmatic medicine, and thus they might act as auxiliaries.

In short, although interest in chemical medicine may have originally been centered in Germany and Switzerland, it became widely known in England, France, and other European countries during the late sixteenth and early seventeenth centuries. This influence was even to be found in the Ottoman Empire where an Arabic work titled the *New Chemical Medicine Invented by*

Paracelsus was completed by Salih Ibn Nasrallah Ibn Sallum no later than 1640. The relatively large number of manuscript copies of this work attest to the fact that the Paracelsian union of chemistry and medicine had spread beyond the borders of Western Europe by the mid-seventeenth century.

Chemistry and the Universities

Throughout the sixteenth century the medical faculties of European universities relied on the medical writings of the ancient and Arabic physicians. Those students who wished to learn about chemical operations were generally forced to find private instruction. In Paris Jean Beguin established a laboratory where he lectured on pharmaceutical preparations and wrote the first true chemical textbook, the *Tyrocinium Chymicum* (1610) which became a model for later texts with its division into animal, vegetable and mineral preparations. This text was reprinted throughout the century often with additions and commentaries by others.

However, soon there were further chemical texts. The founder of the Jardin des Plantes, Guy de la Brosse, included a lengthy discussion of chemistry in his *De la Natur, Vertu, et Vtilité des Plantes* (1628), and after the appointment of William Davisson we find a succession of chemical textbooks written for the lecture series presented

at the Jardin des Plantes. Davisson's own textbook was followed by those of his successors; Nicholas Le Fèvre, Christoffle Glaser and Moyse Charas. The tradition culminated in the *Cours de chymie* of Nicholas Lemery which appeared in French in numerous editions from 1675 to 1757 and was translated into Latin, German, English and Spanish. However, the courses at the Jardin des Plantes were only one source for students to learn chemistry. Throughout Europe there is evidence of private tutors and chemical entrepreneurs who established courses of their own.

With a continually growing interest it was to be expected that the universities would have to consider this new subject. But although the Paracelsians looked upon chemistry as a key to a total new philosophy of nature and man, it was the physicians who were most concerned. As the idea of a chemically operating macrocosm and microcosm declined, interest in the medical value of chemically prepared substances grew. The result was that chemical instruction gradually became established in the medical programs of European universities while the natural philosophy curriculum remained wedded to subjects we would classify as the physical sciences.

There is little doubt that the preparation of some chemical substances was taught in a few universities in the sixteenth century. At

Montpellier, and elsewhere, for instance, the authority of Dioscorides permitted the use of some "stones and minerals" in medicine and it is in this tradition that a limited number of inorganic substances were accepted by physicians. However, the first chair in chemical medicine was created at Marburg

in 1609. The professor, Johann Hartmann was a Paracelsian in the broadest sense, but his teaching emphasized pharmaceutical preparations. He prepared editions of the practical texts of Jean Beguin's *Tyrocinium* and Oswald Croll's *Basilica Chymica* which were extremely popular.



Renaissance instruction in preparation of chemicals. From Annibal Barlet, *Le Vray et methodique cours de Chymie* (Paris, 1653)

Hartmann's appointment was the first of many. A course in chemistry for medical students was offered at Jena as early as 1612 by Zacharias Brendel and this was continued first by his son and then by Werner Rolfinck who became the first Professor of Chemistry in the Medical Faculty. His long tenure at Jena ensured the importance of that university in this field. These teachers wrote their own textbooks following the French tradition. And during the second half of the seventeenth century the medical faculties of many Central European universities established chairs in chemistry: Wittenburg, Helmstedt, Leipzig and Halle among them.

In the Netherlands Leiden began teaching in chemistry in 1669 and here too the early instructors published their own texts. Both Oxford and Cambridge began courses in chemistry in 1683, and even in Paris the Medical Faculty established a professorial chair for the teaching of both chemical and Galenic pharmacy in 1696. In short, chemistry was well established in European universities by mid-century and it had become almost universal by the end of the century. However, the acceptance of chemistry was through medicine rather than through natural philosophy.



Artist's conception of a mid-seventeenth-century laboratory. Print, Francois V. Mieris, 1635-1681, NLM collection

Aftermath

As chemistry became academically respectable for its cures and remedies, its medical emphasis began to change. And as it did so, in the late seventeenth century, the original concepts of the Paracelsians were gradually modified and diluted. One-time Paracelsians such as Jean Baptiste van Helmont embraced the chemical philosophy no less strenuously than did Paracelsus, but they moved on to such areas as chemical physiology. Meanwhile, for Robert Boyle and others in the age of Newton, the decline in authority of the ancient authors made way for a new mathematical and mechanistic approach to science and medicine.

Yet the effect of Paracelsus on medicine was enormous. This influence occurred almost entirely after

his death, partially through his own works and partially through those of his followers who codified and expanded his views. His rejection of establishment medicine came at a time when many Galenic and other ancient medical texts had only recently been rediscovered. The attack on these texts was bound to result in a confrontation. A prime area of contention for the Paracelsians was that of the reform of medical education. But beyond this the chemists questioned the traditional elements, sought a principle of cure based on similitude rather than contrariety, and demanded the introduction of an armory of metallic based remedies. Their rejection of humoral explanations was anathema to the medical establishment, and their frequent use of mystical and fundamentalist interpretations strongly mixed with hermeticism set them apart from other physicians.

By the mid-seventeenth century there had been almost a century of debate, but many of the medical views of Paracelsus were to prevail in the end. The academic acceptance of chemistry by physicians surely was one of the chief accomplishments of his school. Beyond this, the significance of his opening of medical thought to this new approach can be compared with that of the influence of Copernicus on astronomy and physics during the same period.

Some Readings on Paracelsus

Although much of the work of Paracelsus and his followers has appeared in German, there are a number of important studies in English. Essential for background material is Owsei Temkin's *Galenism: Rise and Decline of a Medical Philosophy* (Ithaca: Cornell University Press, 1972). Allen G. Debus has prepared a short general introduction to Renaissance science and medicine in his *Man and Nature in the Renaissance* (Cambridge University Press, 1978).

An enjoyable introduction to the life and work of Paracelsus is Henry Pachter, *Paracelsus: Magic Into Science* (New York: Henry Schumann, 1951). However, for those who would go beyond this, a far more authoritative work is that of Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance* (Basel: Karger, 1968; second edition, 1982). Several texts, including the work on the diseases of miners, have been translated in *Four Treatises of Theophrastus von Hohenheim Called Paracelsus*, edited, with a preface by Henry E. Sigerist (Baltimore: The John Hopkins Press, 1941). Selections from his writings may also be found in Nicholas Goodrick-Clarke, *Paracelsus: Essential Readings* (Wellingborough: Crucible, 1990) and in *Paracelsus: Selected Writings*, edited with an introduction by Jolande Jacobi, translated by Norbert Guterman (New York: Pantheon Books, 1951). A number of the alchemical and chemical works were translated by Arthur Edward Waite in *The Hermetic and Alchemical Writings of Aureolus Phillipus*

Theophrastus Bombast, of Hohenheim, Called Paracelsus the Great (2 vols., London Elliott and Co., 1894).

The reader will find Walter Pagel's *The Smiling Spleen: Paracelsianism in Storm and Stress* (Basel et al: Karger, 1984) useful for many specific aspects of the Paracelsian tradition. Allen G. Debus has discussed the English and the French scenes in *The English Paracelsians* (London: Oldbourne, 1965) and in *The French Paracelsians: The Chemical Challenge to Medical and Scientific Tradition in Early Modern France* (Cambridge University Press, 1991). In *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries* (2 vols., New York: Science History Publications, 1977) Debus discussed the Paracelsian tradition up to Robert Boyle. Of considerable interest for detailing the opposed views of the Paracelsian, Oswald Croll and his adversary, Andreas Libavius, is Owen Hannaway's *The Chemists and the Word: The Didactic Origins of Chemistry* (Baltimore and London: The John Hopkins Press, 1975). Bruce T. Moran has uncovered much new material related to the teaching of chemistry and chemical medicine at Marburg in *The Alchemical World of the German Court: Occult Philosophy and Chemical Medicine in the Circle of Moritz of Hessen (1572-1632), Sudhoffs Archiv, Beiheft 29* (Stuttgart: Franz Steiner Verlag, 1991).

A.D.

The Paracelsus Collection at Hahnemann University

Hahnemann Medical College in Philadelphia was founded in 1848 as a school devoted to the homeopathic principles of Samuel Hahnemann (1755-1843). It was the first successful center for homeopathic education in the world. Much as Paracelsus, breaking from the authority of Galen, taught that the basis of medical science should be the study of nature, observation of the patient, and experiment and experience, so too, some 300 years later, did Samuel Hahnemann break with the tradition of allopathic medicine in his effort to establish a more benign, sympathetic approach to treating medical ills.

Constantine Hering (1800-1880), a student and follower of Samuel Hahnemann, was a physician, chemist, and zoologist. Known as the father of homeopathy in America, he was one of the founders of Hahnemann University. His passion—or one of them, for he was a man of enormous curiosity and many interest—was to obtain a perfect collection of all the works by or pertaining to Paracelsus. He devoted nearly half a century to this pursuit. The fruits of his labour form one of the principal collections of works by and about Paracelsus. This collection, known as the Constantine Hering Collection, is now a part of the special collections of Hahnemann University.

Housing over 200 volumes dating from 1502—many in Latin and Old German—the collection, in addition to the original works of Paracelsus, includes early works on the philosopher's stone, alchemy, botany, and a first edition of Robert Browning's poem, *Paracelsus*. In 1881, a catalogue documenting the collection was published by Globe Publishing House and in 1932, Hahnemann Medical College and Hospital produced a second catalogue of the Constantine Hering *Paracelsus Collection* housed at the College.

In conjunction with the celebration of the 500th anniversary of the birth of Paracelsus, Hahnemann University Library will present an exhibit of books and memorabilia from this collection. The Paracelsus Exhibit will run from October through December, 1993 at Hahnemann University in Philadelphia. On display will be selections from the original writings of Paracelsus, as well as material documenting the initial reaction to him and his work. The exhibit also will trace the thinking of Paracelsus and his philosophical progeny through Hahnemann and Hering, with books and memorabilia from the Hering Collection.

Carol H. Fenichel

Paracelsian Works at the National Library of Medicine

The National Library of Medicine's History of Medicine Division holds an outstanding collection of works by Paracelsus. The Library's predecessor was the Library of the Surgeon-General's Office and the first Paracelsus work to be acquired was the *Opera Omnia Medico-Chemico-Chirurgica* (Geneva, 1658) which appears in its 1868 catalogue. By the 1880's and the printing of the first series of the *Index-Catalogue of the Library of the Surgeon-General's Office*, there were an additional thirty entries. Today, the Library's collection of works by Paracelsus continues to grow, with five titles having been acquired since 1989. The collection includes over 150 of the titles listed in Karl Sudhoff's *Bibliographia Paracelsica*. The earliest Paracelsus work in the collection is a copy of the 1536 Ulm edition of the *Grosse Wund Artzney...* which contains annotations in the hand of Konrad Gesner. Among other especially noteworthy holdings is the rare complete 10-part set of Paracelsus' collected works edited by Johann Huser and published in Basel between 1589 and 1591.

In addition to works written by Paracelsus, the Library holds numerous original works by his immediate disciples as well as



Title page from one of NLM's most recently acquired works by Paracelsus. Paracelsus, *Vom Ursprung und herkommen des Bads Pfeffers* (Basel, 1576)

by authors of various countries who were influenced by him. It also includes a large number of historical studies of Paracelsus' life and contributions to medicine and science. The Library's collection is a rich resource for the study of an innovative and controversial figure in the history of medicine. Access to all of these titles is provided through CATLINE, the Library's online book catalog. In addition, many of these titles are available on microfilm for loan and for purchase.

Margaret Kaiser

The Paracelsus Collection at Washington University, St. Louis

The Archives and Rare Book Division of Washington University School of Medicine Library (St. Louis) contains the holdings of the Robert E. Schlueter Paracelsus Collection, on deposit from the St. Louis Metropolitan Medical Society. Of significant interest to alchemical and early modern scholars of science and medicine is this exceptional collection, perhaps the world's largest intact of works by, or concerning, the enigmatic German Renaissance physician and philosopher Theophrastus Bombastus von Hohenheim. Included are more than four hundred titles, primary and secondary sources dating from 1530; all materials are now cataloged and available through the OCLC database.

The Schlueter collection includes the larger part of the original writings of Paracelsus and surveys the distinct Paracelsian schools and revivals of interest that have flourished in Germany, England, France, and other countries over the past five centuries. The collection consists of six titles of the twenty-four known editions which were published during the life-time of Paracelsus, that is between the years 1527-1539. The earliest is the first edition of his three works on Syphilis, 1530, and the latest is the third edition of his Great Surgery, 1537. There are 161 titles from the remainder of the sixteenth century, and seventy-seven titles from the seventeenth century.

Five titles represent the important later editions between 1549 and 1560, including some translations. There are 131 titles of the publications between

1560-1588 which include the works published from the personal manuscripts of Paracelsus. Eighty-four titles represent the collected works between 1589-1658, during which period there were publications by Paracelsists, such as John Glauber, William Johnson and Ferdinand Parkhurst, including the Huser edition of his complete works, 1589-1591, and the Latin translation (Frankfurt, 1603).

In addition there are more than one hundred newer works such as facsimile editions, biographies, Kolbenheyer's three dramatic works, Browning's epic poem, Waite's translation of his hermetic writings, and others. Lastly there is an extensive collection of odd pamphlets and reprints of comparatively recent date.

Assembled in a lifetime of discriminate collecting by Dr. Schlueter, a distinguished St. Louis physician, this unrivaled Paracelsus Collection was so focused and complete that it became a model for similar special collections which were developed around other celebrated medical pioneers in other libraries of the world. The collection is at the disposal of any scholar desiring to utilize the primary sources of a controversial, often times discredited, pioneer sixteenth century scientist, surgeon and physician, as we celebrate the five hundredth anniversary of the birth of Phillippus Aureolus Theoprastus Bombastus von Hohenheim, later called Paracelsus.

Susan Alon

INTERNIS RERUM. 77

COROLLARIUM.

Ntiquissimos sapientes, quos Græco sermone Philosophos appellamus, si quæ vel Natura vel Artis reperissent Arcana, ne in pravorum notitiam devenirent, variis modis atq; figuris occultabant: Eodem modo Philosophi Hermetici certis notis Hieroglyphicis solebant insignire Planetas Terrestres, quibus eorum latentes virtutes intuendas, quasi ob oculos intelligentibus & inspicientibus filiis artis exponerent: Ut autem ejusmodi signa ab interitu vel sepultura vindicarentur, opera pretium me factum: in arbitratu sum, si cum aliorum Mineralium Characteribus ad Profanum ac indignum Vulgus ab hoc studio arcendum à Providenti Antiquitate exco- gitationis, in gratiam discipulorum Hermeticorum, nunc Reipub. Chymicæ una operâ à me communicentur.

NOTÆ METALLORUM.

Saturnus	Plumbum	
Jupiter	Stannum	
Mars	Ferrum	
Sol	Aurum	
Venus	Aes, Cuprum	

Vide Mon- dem Hiero- glyphicam Jo- annis Ece Læ- diceusis.

80 DE SIGNATURIS

Sulphur	
Sulphur Philosophorum	
Sulphur nigrum	
Sapo	
Spiritus	
Spiritus Vini	
Sublimare	
Stratum super stratum	
Tartarus	
Tutia	
Talcum	
Tigillum	
Vitriolum	
Vitrum	
Urina	

QUATUOR ELEMENTORUM
NOTÆ.

Ignis	
Aer	
Aqua	
Terra	
Dies	
Nox	

FINIS.

INDEX

Renaissance chemical symbols. From Oswald Crollii, *Basilica Chymica* (Frankfurt, 1609)

Back cover illustration:

Paracelsian-era discussions often took place within a complex framework of symbols such as those shown here. Woodcut in Johann Daniel Mylius, *Opus medico-chymicum . . .*, Vol. 1 (Francofurti, 1618-1620).

