

tion of an untried freedom and the zest of unlimited experiment; but it took the human soul from its station in a balanced and rounded scheme of things to deliver it over to every kind of danger and excess; . . . [man] was like a child out of school, trying his strength and resource in all kinds of fantastic and extravagant attempts." That I think is what Caius felt in his later life, just as Fairfax came to feel about the attitude of Parliament to Charles I and Wordsworth about the French Revolution. Emancipation brought disillusionment in its train. Is not the same feeling in the air to-day, as we witness the overthrow of moral standards which had seemed to our fathers to be absolute? And can we not sympathize with Caius as he watched his college drifting towards the unknown, when we are watching institutions to which we have devoted much of our lives in peril of change? What the future holds for them we know not, but we suspect it will hardly accord with the hopes we held. Still the adaptability of man is extraordinary and the brave new world to come will doubtless have virtues all its own. If Caius returned he would find his college flourishing beyond his wildest dreams. "Fui Caius", but the past tense loses its poignancy in the living present which truly proclaims of him "Vivit post funera virtus". For his name is not "one that is writ in water".

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Paracelsus: Personality, Doctrines and His Alleged Influence in the Reform of Medicine

By H. P. BAYON, M.D., PH.D.

(St. Catharine's College, Cambridge)

AUREOLUS PHILIPP THEOPHRAST BOMBAST AB HOHENHEIM—commonly known as Paracelsus—died in Salzburg on September 24, 1541; the 400th anniversary of his death may be commemorated by an essay to evaluate the historical significance of his doctrines in relation to the development of medicine and modern science.

PARACELSIAN LITERATURE

From contemporary testimony it is known that Paracelsus was a copious author, but that, notwithstanding his efforts, only few of his writings were printed and published during his lifetime. After his death, Paracelsian writings were collected and edited, but there is reason to believe that among these several supposititious works made their appearance, for imitators were numerous.

For example, Johann Thölde published the *Triumph Wagen Antimonii* (Leipzig, 1604), which purported to be the MS. of a fourteenth century Benedictine monk, Basil Valentine, but in reality consisted of transcriptions from various Paracelsian works. This book gave rise to considerable controversy, because until Basil Valentine was shown to be a figment, it seemed that Paracelsus had copied from this MS.

Sudhoff undertook to edit the genuine writings in *Bibliotheca paracelsica* (Berlin, 1894) and traced 23 publications *intra vitam Paracelsi*, including several *Prognosticationes* relative to judicial astrology. He then had the extant MSS. printed in *Paracelsus-Handschriften, gesammelt und besprochen* (Berlin, 1899). Later, Sudhoff and Matthiessen published several of the religious writings of Paracelsus in *Archiv für Reformationsgeschichte* 1917-8. Lastly, Sudhoff collected all medical works in fourteen volumes under the title *Theophrast von Hohenheim, genannt Paracelsus* (Munich-Berlin, 1922-33) and incorporated the results of his studies in a small readable book: *Paracelsus* (Leipzig, 1936). Even those who disagree with Sudhoff's conclusions about the merits of Paracelsus, must admit that the investigations of the Leipzig professor were prolonged and extensive; yet he failed in achieving the recognition of the genuine writings of his hero. It is ascertained that the only major work that appeared in the lifetime of Paracelsus was *Die grosse Wundartzney* (Augsburg, 1536), Steyner.

There is a large and widespread Paracelsian literature in many languages, but it is not captious to say that a great deal is based on erroneous assumptions. Too often the appraisal of Paracelsus has been founded on incorrect statements about his activities; so that a thumbnail sketch of his life is necessary to sift from the assertions of his admirers or detractors much that is irrelevant or grossly inaccurate.

BIOGRAPHICAL NOTES AND COMMENTS

Paracelsus was born at Einsiedeln, Canton Schwyz, in the latter part of the year 1493, as son of the licensed medical practitioner Wilhelm Bombast ab Hohenheim, whose wife appears to have been a nurse or midwife; she died during the infancy of her only child. In 1502 Wilhelm ab Hohenheim moved to Villach in Carinthia, where mines belonging to the Fuggers of Augsburg were situated; here Paracelsus became interested in technical chemistry, but nothing definite is known of his youthful studies, if any; at the age of 22—that is in 1515—he visited the Fugger mines at Schwatz in Tyrol and was there about a year. Then he began his travels and—if his statements can be trusted—visited the High Schools of Germany, Italy, France; he was also in Granada in Spain, Lisbon in Portugal, Barcelona in Catalonia, England, Denmark, Prussia, Latvia, Poland, Hungary, Rumania, Croatia, Dalmatia, Sicily, Constantinople, Rhodes, Samos, Candia, Alexandria in Egypt. It is, however, definite that in August 1524 he resided in Salzburg, which he left in May 1525 and appeared in Strasbourg in 1526, as a famous practitioner of medicine, so that he was appointed town-physician in December of the same year. He soon left for Basel, having been called to treat Johann Fröben, the well-known book-publisher, at whose house Paracelsus met Erasmus, Oecolampadius and, no doubt, several other theologians. Such men could not fail to influence Paracelsus—and indeed echoes of their opinions are found in his writings.

On the recommendation of Erasmus and Frobenius, Paracelsus was appointed Basel Town Physician, one of whose duties it was to lecture on Medicine at the University; the announcement of his lectures was dated June 5, 1527; in this he declared himself as: *Bombast ex Hohenheim Heremita, utriusque medicinæ doctor ac professor*. The tone was moderate—when compared with what Paracelsus said in his books—and had he abided by his programme he would have scarcely aroused so much hostility. But barely three weeks after, on June 24, he threw a medical book—not clearly defined by him as *Summe der Bücher*—into a bonfire the students had lit on Midsummer's night. This incident was later greatly magnified and considered as an outstanding event in the history of medicine; the volume was said to have been a tome of Galen or an even more ponderous Avicenna; while in reality it must have been a small compendium and the deed was inspired by Luther burning the Papal Bull at Wittenberg on December 10, 1520. Then Paracelsus lectured in German, no doubt in the style we know from his writings—*grob Schwyzer-Dütch*—and obtained a much increased number of hearers—some thirty or more, instead of the half-dozen of his predecessor. The medical profession in Basel cannot be blamed for objecting to such antics and they prepared a counterblast in Latin entitled *Manes Galeni adversus Theophrastum, sed potius Cacophrastum*, had it printed and posted in various public places. Copies still exist and in the text it was doubted whether Paracelsus was worthy of feeding the swine of Hippocrates or carrying his urinal. Paracelsus complained about the libel to the magistrates, became involved in a squabble about fees

with a patient, Canon Lichtenberger, and left the town in anger early in February 1528. Thus his academical activity was brief, even if lively, corresponding to what might be called one semester.

Meanwhile, on May 21, 1527, in a signed document, he had stated that he was a Doctor of Medicine of the "Praiseworthy High School of Ferrara" and henceforth frequently added to his signature *beider Artzney Doctor*=Doctor in both medicines; this may have meant Medicine and Surgery. There is no concrete evidence that he ever passed an examination at Ferrara and indeed the physicians at Basel denied that he was qualified to teach. It seems that either his extensive travelling was exaggerated or that in the five years between 1516 and 1521 he could not have covered so much land and yet attended a medical course leading to a degree; unless it was granted *Honoris causa*. Sudhoff ("Paracelsus," Leipzig, 1936) pieced together the further wanderings of Paracelsus, who was at Colmar end of February 1528, in Nüremberg during 1529 and henceforth resided, or visited, several Swiss, German or Austrian towns, such as St. Gall, Regensburg, Innsbruck. He seems to have travelled to patients by whom he was consulted; it is recorded that on one such occasion he called the ordinary medical attendants "Arschkratzer" and prescribed minced live earthworms as a dressing for a phlegmon of the hand; the treatment was successful. He reached Salzburg late in 1540, dying there next year following an undiagnosed illness. His will has been found and its several bequests show that he must have obtained a modest competence.

THE PHYSIOGNOMY AND PERSONALITY OF PARACELUSUS

A portrait of Wilhelm von Hohenheim still exists and shows a certain resemblance to some of the paintings or engravings supposed to depict his son. In my opinion, the pictures which represent Paracelsus as a stately handsome, bearded person are fictitious, for he was a rather small, blond man of the "eunuchoid" type, to use a contemporary expression. Sudhoff (1936) reported that the skull examined in the grave at Salzburg showed the stigmata of rachitis, but I should like to suggest a different ætiological explanation, which agrees with many recorded observations viz.: Congenital syphilis. The diagnosis is supported by his eunuchoid type—testicular atrophy; early baldness and premature senility; square cranium; death at the age of 47-48; it has been suggested by Sudhoff (1936) that Paracelsus was jaundiced during the last year of his life; if that could be ascertained it would be additional evidence.

It would appear that Paracelsus was a heavy drinker; the evidence is a letter of Johannes Herbst (Oporinus), the renowned book-publisher, who had been his "famulus" at Basel in 1527-8. Writing November 26, 1555, to Johann Weyer, Oporinus said that Paracelsus, even when drunk, could dictate speeches in German (to be translated into Latin) which a sober man could not have improved; that he would return home at midnight, throw himself on his bed fully dressed and then get up waving his sword. Sudhoff—and others—have tried to contradict such evidence, but the letter of Oporinus is a clear description by a reliable contemporary witness of drunken conduct and is moreover confirmed by other letters which refer to Paracelsus as a convivial toper and agrees with the notes of Reuchlin about the behaviour of Paracelsus at St. Gall.

WHO WERE THE TEACHERS OF PARACELUSUS?

Sudhoff (1936) wrote in the preface l.c.:

Seit über fünfzig Jahren habe ich mich mit dem Werken und Wirken dieses grossen, urdeutschen Mannes beschäftigt, der die Bindungen der Naturwissenschaften des Mittelalters an antike Vorstellungen löste und seine ärztliche Tätigkeit und sein Wissen allein aus dem Selbst-Forschen ableitete.

It is not quite correct that Paracelsus derived his knowledge and his medical practice from personal investigations alone; apart from the utter impossibility of such a process, it can be shown that he was original in few matters and in those he was abysmally wrong.

Paracelsus stated that he intended relying on his own observations and experience—*Alterius non sit qui suus esse potest*. He however acknowledged as teachers in the *Adepta philosophia* first of all his father then a Bishop Erhart, the artisans of the noble Sigmund Fugger of Schwartz and the Abbot of Sponheim. The latter is usually said to have been Johannes Trithemius (1462-1516), Abbot of Sponheim in Nahegau; but Sudhoff (1936), p. 13, asserted that instead Bruno, Graf von Sponheim was meant. Sudhoff's arguments

do not sound very convincing, because Abbot Bruno lived in the thirteenth century, while Trithemius dabbled in alchemy, expressed Neo-platonic views and said that when an ignorant man became a doctor, it was like putting a barrel outside a house where there was no wine to sell. There are many echoes of such opinions in Paracelsian writings.

Then Paracelsus stated that he had discussed philosophical and medical questions with doctors, barbers, bath-attendants, learned physicians, [old] women, magicians, wherever they may have been, in convents, in the company of noblemen or commoners, among the wise or foolish; from these he learnt that medicine was a dubious art, which could not promise a cure with any degree of certainty and moreover was mostly taught by those who did not know the first thing about the subject. Incidentally, this can be found much more entertainingly presented in the writings of Bernard Shaw, author of the apothegm: "He who can, does; he who cannot, teaches." Numerous other quotations could be made from the writings of Paracelsus which show that his medical outlook was that of the irregular practitioner of medicine—I avoid saying "quack" because it is an uncertain term. At the same time it is not denied that unorthodox practitioners of medicine have introduced valuable therapeutical means and methods; for example, the old wise woman who made Withering adopt digitalis.

A REMARKABLE DOCUMENT FROM FERRARA

The poet Lodovico Ariosto (1474-1533) of Ferrara, wrote *L'Erbolato*—the word having a meaning similar to "The Herbarium": in this strange literary product, Maestro Antonio Faentino proclaimed that he was the pupil and heir of Nicola da Lonigo, i.e. Leoniceno; that he had been made a Doctor of the Famous College of Ferrara, a Knight of the Golden Spur and was entitled to bear arms; moreover praised his own medical skill, for his fame had spread "nell'ingegnosa Alemagna, ducato d'Austria, Sassonia e Selesia, Fiandra col Brabante e nell'isola d'Olanda; Francia, Inghilterra, Scozia, Albania, la Bosina, la Romania, La Morea, l'Arcipelago e tutta la Grecia, la famosa città di Constantinopoli, Candia, Rodi, Cipro, Cairo, Jerusalem, Damasco, Soria". Faentino also boasted that his personal experience was superior to classical learning and recommended a never-failing, marvellous Electuary. *L'Erbolato* was written about 1530 and the literary critics I have consulted were unable to say more than it was obviously a skit on the speech of a charlatan, probably meant to lampoon Antonio Cittadini of Faenza, who taught at Ferrara about the year 1474; but Cittadini was a serious professor of classics and medicine and no mean author; not the expansive booster apparent in the text of Ariosto. The resemblance to what Paracelsus wrote is so striking, that it seems as if it was intended to be an echo of some of his pronouncements, that may either have been made in Ferrara or have been imitated by someone called Faentino. A chance discovery of some document may yet explain this strange resemblance, which is not without relevance in ascertaining the true personality of Paracelsus.

L'Erbolato may help to answer the question whether Paracelsus obtained or was granted a medical degree at Ferrara. In his time, eminent teachers were at the University of Ferrara, e.g. Nicola Leoniceno (1428-1524), the renowned commentator of Galen and critic of Pliny; Gian Battista del Monte (1498-1551) who recommended bedside teaching in academical medical study; Celio Calcagnini (1479-1541) who taught at Ferrara circa 1519, and by some, is thought to have anticipated Copernicus. Sudhoff (1936) p. 139 did quote Paracelsus writing in the dedicatory preface of the first edition of the *Grosse Wundarztney*: ". . . der treue lobwürdige Johann Manardus von Ferrara, den uns Gott nicht vergönnen wollte." This allusion did not appear in the following edition and affords no evidence of academical study. Giovanni Manardi (1462-1536), a great medical authority, followed Leoniceno from 1526 to 1536. It does seem strange that Paracelsus never mentioned, were it only in a slighting manner, these luminaries of medicine in Ferrara; though it may be recalled that Harvey, who was so warmly attached to Padua, never referred in print to Galileo who taught there in his time. Thus anyone reading the *Grosse Wundarztney*, must find it difficult to believe that Paracelsus had really pursued a serious study of academical medicine as it was then known.

HIS RELIGIOUS BELIEFS

Paracelsus wrote a great deal about religious subjects, even if relatively little was published. Father Raymund Netzhammer (*Paracelsus: das wissenwerthe . . . und die*

neueste Forschungen, Einsiedeln, 1901) said, p. 128 "Far more in the domain of theology than even in medicine, does Paracelsus who sometimes called himself Doctor of Sacred Scripture, seem to recognize no authority, but to consider his own thinking and philosophizing as authoritative for him." This would be the standpoint of a devout Roman Catholic, but Schubert and Sudhoff (1887-9) concluded that Paracelsus, while opposing Roman hierarchy and its external forms of worship, also rejected all dissenting religious communities as "sects". My opinion is that Paracelsus remained outwardly a Roman Catholic, but inwardly felt that some Church Doctrines required restating in terms consonant with recently acquired knowledge of natural phenomena. This is evident in the fact that he accepted Baptism and Communion as the two principal roads that led to Heaven, but added what may be called a "chemical" explanation to both Sacraments. A similar intellectual attitude is noticeable in Miguel Serveto, who in his *Christianismi restitutio* (1553) gave a biological explanation of the miracle of the Annunciation. The religious views of Paracelsus seemed clearer when he pleaded for a Divine origin of the Healing Art and stated that physicians can heal either by faith or skill in medicine. The curing by faith could only apply to Christians, but the new foundations of medicine, as taught by him, were valid for all others; his conclusion was: "The physician is the servant of nature and God is the Master of Nature."

Paracelsus has been called the "Luther of Medicine" and though such designations are usually intended to be arresting and picturesque—nothing more—still the inference is that since Luther was the central figure of "The Reformation" so Paracelsus induced a reform of medicine. It is true that both were exponents of coarse German invective; but Luther attacked the Pope and Popery on the basis of theological knowledge and the Sacred Writings; whilst Paracelsus condemned both Galen and Avicenna as scribbling fools, abused all practitioners of academical medicine and praised his own personal skill. In relation to religious matters, differences are also noticeable; Luther propounded his own interpretation of pristine Christian beliefs, while Paracelsus—in so far he is understandable—would have substituted Roman Catholicism by Paracelsian religious doctrines which would have altered nearly all existing dogma.

[In the discussion after this lecture, Dr. R. O. Moon mentioned that Matthew Arnold had said that Cromwell was the Philistine in politics, Luther in religion and Bunyan in literature; it appeared—added Dr. Moon—that Paracelsus was the Philistine in medicine.]

PARACELSUS IN MEDICAL THEORY AND PRACTICE

A redeeming feature of the writings of Paracelsus is the high and noble concept he propounded of medical practice; it remains to be shown, indeed it can be doubted—if we are to judge from some of his letters—whether he succeeded in guiding his conduct by the light of such ideals. He stated that the four pillars on which medicine should rest were: philosophy, astrology, alkemy and *Virtus*; the latter was rather undefined, but corresponded to what is now understood as pharmaco-dynamics; accordingly Paracelsus mentioned a "Religion of medicaments". The recommendation of the study of astrology can be variously interpreted, but he certainly continued that neglect of anatomy, physiology and clinical observation, which had proved so disastrous for the progress of medicine, from the time of Salerno onwards. Then in place of the aetiological significance of the four humours of Galen, Paracelsus proposed five entities or *entia*, of which only the *ens veneni* seems to have any concrete foundation; the other four could be easily lumped together: *ens astrale, naturale, spirituale, deale*. Where the neglect of clinical observation becomes painfully evident in Paracelsus is in his description of the diseases of women, which consists in an exsuccous disquisition about the *Matrix*, not the anatomical uterus, but a nebulous concept, fit subject for endless chatter. This chapter is far inferior to the so-called Trotula of Salerno or Soranus. Paracelsus is often praised for having recommended the use of mercury in syphilis in place of guaiac; but this had already been proposed by Caspate Torella of Valencia in 1497. If the age and opportunities are taken into consideration, it does not seem that Paracelsus reveals any advance on what Roger Bacon (c. 1214-c. 1292) said in *De erroribus medicorum*. Thus John Ferguson wrote in the *Enc. Brit. XIVth edition*:

"... with Paracelsus' lofty views of the scope of medicine it is impossible to reconcile his ignorance, his superstition, his erroneous observations."

PHILOSOPHY AND ALKEMY

Paracelsus has been considered a Neo-platonist, because he was an adherent of the Macrocosmos-microcosmos doctrine, hence his support of astrology; however as taught by Plotinus, and his direct disciples, Neo-platonism was a system of philosophy, the extent of which was unknown to Paracelsus.

In alkemy he propounded the existence of three elements in all bodies: Mercury, representing liquidity and volatility; Sulphur, the principle of combustibility; Salt, the nucleus of all that resisted fire and was permanent; these elements were noticeable in wood when it was burnt. Admittedly, no better opinions were presented before van Helmont's books were published and Robert Boyle (1627-91) performed his experiments; but then it can be said that they were true pioneers and not Paracelsus.

In relation to technical chemistry of metals his work did not reach the practical standard of the *De la Pirotechnia* (Venice, 1540), of Vannocchio Biringuccio (1480-c. 1538), or still less that of *De re metallica* (Basel, 1556), of the physician Georg Bauer [*Agricola*] (1494-1555). It must be mentioned that Paracelsus was the first to describe "Bergsucht" or miner's phthisis.

These were the views propounded during his lifetime; after his death books were published of which he was stated to be the author and several paracelsians arose and became known as Iatro-chemists; the most eminent would be Johann Baptista van Helmont (1577-1644), Oswald Croll (1580-1609), Franciscus Sylvius (De le Boe) (1598-1679); all three, be it noted, were University graduates.

THE ROMANTIC "ROSA ET CRUCE" LEGEND

The religious views of Paracelsus influenced his medical theories and these with his philosophical outlook and alchemical disquisitions, inspired the formulation of the Rosicrucian romantic legend, which caused a great stir in certain intellectual circles during the seventeenth to eighteenth centuries. A few words may be said of this offshoot of Paracelsian doctrines, which is relevant to the conflict between Religion and Science.

A protestant teacher, Valentin Andreae (1586-1654) of Herrenberg wrote a small book, published in 1615, relating that a German nobleman—Christian Rosencreutz—had lived in the fifteenth century; had travelled through Europe to Egypt and Arabia and returned with all the profound knowledge of the East. He thereupon obtained the collaboration of twelve unmarried adepts and they retired into a building called the "House of the Holy Ghost", there to meditate and philosophize. Rosencreutz died at the ripe age of 106 years, was interred but it was intended that after one hundred and twenty years his sepulchre should be reopened. His adepts added to their numbers by the admission of suitable candidates.

This little story was implicitly believed, but in 1619 Andreae admitted that it was fiction. This was held to mean that Andreae was not allowed to divulge anything about the Fraternity and the controversy continued more actively than ever. In England the physician Robert Fludd (1574-1637)—who had travelled in Germany—took up the defence of the Rosicrucians against the accusation of magic and dealings with the Devil and gave the first coherent account of Rosicrucianism. However, Fludd was unable to assert where the Fraternity existed, but there is reason to believe that his information was obtained from William Fitzer, who published Harvey's *De motu cordis* (1628) and was an "adept" through one of the De Bry's, into whose family he married. Further ramifications cannot be discussed now, but if the main doctrines of the Rosicrucians are examined, they are found to consist in the study of natural philosophy leading to the revelation of the hidden secrets of Nature, among which were the transmutation of baser metals into gold, the production of an Elixir to prolong human life, together with the practice of medicine for the gratuitous healing of the poor. Johann Thölde, the publisher of the *Triumph Wagen Antimonii* (Leipzig, 1604), was a reputed Secretary of the Order; the monk Basil Valentine, like Rosencreutz, was also a fictitious person.

It has already been said that Paracelsus revealed in his religious beliefs the impact of newly acquired knowledge on orthodox religious dogma; this is again very marked in

Fludd and consequently is noticeable in most Rosicrucian writings, which plead for an explanation of religious mysteries on a scientific basis.

PARACELSIAN DOCTRINES HISTORICALLY CONSIDERED

An appreciation of the historical significance of Paracelsus requires a consideration of his doctrines in relation to orthodox medicine, alkemy-chemistry, Roman Catholic religion, philosophy and natural science: for in all these fields of human endeavour he expressed his views in no uncertain terms. A closer acquaintance with the writings which can be accepted as his, shows that he was violently destructive, only rarely critically constructive and never original, if ever right.

That the observation of Nature was preferable to the acquisition of mere learning had already been propounded by Roger Bacon (1215-92), D'Autrecourt (c. 1346), Cusanus (1401-64), in face of opposition much more serious than Paracelsus ever had to encounter.

Natural philosophy and its successor—modern Science—arose after a more accurate conception of the universe and the laws governing natural phenomena were obtained in the manner propounded by Copernicus, Galileo, Gilbert, Descartes, Francis Bacon.

It can be said that Paracelsus marked the transition between mystical alkemy and constructive, productive chemistry, but he did not contribute to the progress linked with the names of van Helmont, Libavius, Boyle.

In general intellectual outlook, Paracelsus resembled Bernard Palissy (1510-90), who was also keenly interested in technical chemistry, propounded the study of Nature from nature, attempted academical tuition, indulged in polemical sallies against medical dogma and was a fervid religious disputant. When the two are compared, it seems that Palissy was the greater man and deserves to be considered a pioneer of modern natural science; though his medical activities were scanty and not distinguished by therapeutical success.

EPICRITICAL OBSERVATIONS

The myth of the greatness of Paracelsus seems based on the argument *Post hoc, ergo propter hoc*. It can be recalled that the diffusion of printing with movable types was the outstanding event that really produced a reform of classical learning and the revival of natural science. The astounding effects of the printed words and repeated accurate illustration became clearly noticeable in the lifetime of Paracelsus and acquired additional impetus soon after. Thus, to the more fervid admirers of Paracelsus, it seemed that his attack of scholasticism, caused it to fade out. In reality scholasticism persisted in academic circles more than a century after his death; one of its last—and most absurd—exponents, being Guy Patin (1601-72) of Paris University.

One may reasonably ask: Had Paracelsus not lived, what then? The outstanding figures of modern science—Vesalius, Galileo, Gilbert, Harvey—would still have garnered their harvest of actual observations and controlled experimental results.

It is now easy to perceive why and how the practice of medicine in the sixteenth century required reformation; in the first place, it was not the acceptance of ancient texts that was at fault, but rather the blind adherence to scripts containing passages interpolated, muddled and garbled by copyists; one example I can recall is *sugendo* instead of *inungendo*. Then there was the practice of a fatuous uroscopy, apart from bedside observation, which preserved a traditional, mostly ineffective, polypharmacy; then inane pulsology together with senseless bleeding. It is true that the examination of urine, the study of the pulse, several drugs recommended in ancient times, or even blood transfusion, all these are still most usefully employed, but in a manner quite different from that advocated by Paracelsus. Progress in medical matters was induced by men like Nicola Leoniceno (1428-1524) of Ferrara, Thomas Linacre (1460-1524) of Oxford, John Caius (1510-73) of Cambridge, Jean Fernel (1506-88) of Paris, who revised classical texts, encouraged anatomy—which Paracelsus despised—and furthered Hippocratical clinical observation and Galenical therapeutics. Medicine, in all its branches, began to get into its stride when Vesalius dissected, observational and experimental biology was assiduously cultivated by Gesner, Aldrovandi, Harvey,

and Morgagni (1682-1771) combined pathology with anatomy. A great deal of fruitful work was performed apart from Universities, in learned societies all over Europe but in every case by men who had obtained a University training. The type of medical practitioner exemplified by Paracelsus was not connected with any lasting medical improvement. Indeed, from the time of Boerhaave (1668-1738)—who enforced the teaching of medicine at the bedside, it was the irregular practitioner of healing that continued the practice of uroscopy, astrology, polypharmacy by correspondence or at a distance from the patient.

Therefore, it cannot be said that the abusive rantings of Paracelsus contributed to the general progress of science and medicine that began in the sixteenth century, principally as the outcome of the diffusion of accurate knowledge by means of printed books. For he was a rude, circuitous obscurantist, not a harbinger of light, knowledge and progress.