

THE
INSTITUTE OF CHEMISTRY
OF
GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.

INCORPORATED BY ROYAL CHARTER, 1885.

LECTURE
ON
Alchemists in Art and
Literature

BY
RICHARD B. PILCHER, O.B.E.
(Registrar and Secretary)



30, RUSSELL SQUARE, LONDON, W.C.1.

1933.

ALCHEMISTS IN ART AND LITERATURE



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*Please attach to "Alchemists in Art and Literature"—
published by the Institute of Chemistry in 1933.*

Arising from enquiries received from Dr. E. J. Holmyard, of Clifton College, Bristol, whose kind interest is hereby acknowledged, some corrections necessary in this lecture should be noted in order to avoid repetition of statements which, on investigation, have been found to be inaccurate.

On page 11—the statement appears that Morien was “contemporary with Averroes.”

In *The Lives of the Alchymistical Philosophers (1815)*, the date of Morien is given as 1000, and Lacroix, who deals with the alchemists chronologically, in his *Science and Literature in the Middle Ages*, mentions Morien immediately after Averroes and before Albertus Magnus.

However, as Morien taught Kalid, who lived in the seventh century, it is clear that he was not contemporary with Averroes.

Also, on page 11—Robert of Chester is mentioned as the “preceptor of Roger Bacon.”

He was confused with Robert Grosseteste, who founded the Franciscan School at Oxford, *circa* 1224—the year in which the Franciscans first came to England. Both Roberts were great scholars and interested in natural science. Robert Grosseteste was, for some years, Archdeacon of Chester, but he was not known as Robert of Chester. Bacon is clearly regarded by Bridges, Hutton, and other authorities as the pupil of Grosseteste.

—R. B. P.

This publication embodies the substance of a Lecture—modified from time to time—delivered by the Registrar before Local Sections of the Institute and elsewhere since 1925.

Given (for the most part) before the Oil and Colour Chemists' Association on 12th October, 1933, it was published for the first time in the Journal of that Association in the same month, and is now reprinted, with the concurrence of the Association and by authority of the Council of the Institute—November, 1933.



HERMES: from the Temple of Pseltis, erected by Ergonum.
(Rodwell: *Birth of Chemistry. Nature Series*, 1874.)

(Fig. 1)

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ALCHEMISTS IN ART AND LITERATURE

By Richard B. Pilcher, O.B.E.

The lecture was illustrated by numerous lantern slides, including prints and paintings of portraits and pictures, on which the lecturer gave a commentary.

THE object of this lecture is to show that chemistry has its own history and traditions, and to recall the alchemists and the chemical philosophers who kept alight the chemical lamp and prepared the way for the wonderful science and profession which have now been developed.

There would seem to have been three phases of alchemy, the objects being, first, the transmutation of base metals into gold and silver; second, the search for the elixir of life; and later, for the alcahest, or universal solvent. The last may be dismissed, at once, for, as Kunckel declared, no vessel could be made to contain it.

The alchemists held that all things were composed of one single principle into which they might be resolved. Some had high ideals, regarding the notion of transmutation as the purification of a substance to its condition of greatest perfection; others were in quest of the elixir as something which was supposed to contain all the beautiful powers of life.

Some had the notion that metals were derived from a mineral rooted in the ocean, nourished by the internal heat of the earth, undergoing gradual perfection to gold and silver, progress depending on the proportion of a first nourishing vaporous matter to other ingredients of the earth which the metals encountered. This process of the perfection of the metals was influenced by the planets. If, for example, gold and pure earth came into contact with sulphur, the result was copper (Venus); with less sulphur, silver (Luna); and similarly, with less pure environment, were produced tin (Jupiter); and iron (Mars); and, least pure, lead (Saturn).

The idea of transmutation was not so absurd as it might appear on first thoughts, because it was common experience to see water change into vapour and leave a solid residue, and metals and glass melt and become solid again.

The mysterious changes which take place in the form of material things in Nature—the hatching of a bird from the egg, the growth

of a tree from a seed, the evolution of the moth and the butterfly, the modifications and varieties which occur in plants, and, indeed, in animals and in human beings, and all life,—all were, and still are, subjects for wonder.

If such changes could occur in living things growing in and on the earth, why not in inanimate things, in minerals, and metals, which were formed and found in the earth?

The alchemists adopted the idea that, by thought and experiment, man could quicken the processes of nature. Serious philosophers were bent on solving the problem as a definite "research." In course of time, sovereigns and popes, noblemen and clergy, took up the pursuit as a hobby, and often fell ready prey to charlatans and mountebanks, who saw an easy way of getting a living out of those who were attracted by the possibilities of the proposition and ready to risk all they possessed in its solution. That it was made illegal to practise alchemy, and that those who were thought to be adepts kept their processes a profound secret, made its possibility appear more than probable and added to the excitement and the temptation. Then, it was shrouded in mystery. Success in the Great Work could only be attained by the pure in heart. Small success therefore for those who sought only to enrich themselves! Whoever would learn the great secret must comprehend the secret of the Creation—the first of all alchemical processes. Secrecy and mysticism naturally led people to look upon the experimenters as unsociable eccentrics, sorcerers and magicians. The mysticism of it involved the use of obscure language and symbols, not only symbols to represent metals and other substances, but very ingenious pictorial representations of processes both of nature and of the laboratory.

Yet, however amusing the doings of the alchemists may appear to us to-day, we can be almost certain that some things we now do will be no less amusing to posterity, and we can console ourselves with the thought that alchemy opened the way to chemistry, as astrology did to astronomy, and feel assured that, though we may sometimes stray, our endeavours will ever lead to new thought and new developments.

Scaliger held that the fallen angels, who taught mankind all manner of evil things, included this art in their curriculum; while Fabricius suggested that Adam, Moses and Solomon should be included among the adepts.

The mythological Hermes, who represented the wind, caused fire by friction among the treetops in the forest, and was the giver of fire to man. He was synonymous with the Egyptian god, Thoth, the scribe of the gods, and himself the god of wisdom. (Fig. 2.) There is ample evidence of the early arts of Egypt, and it is fair

to assume that these could not have existed without some scientific knowledge.

The origin of alchemy is often ascribed to Hermes, a ruler of Egypt, who lived hundreds of years before Moses and was the author of the emerald table of alchemy which was discovered in Hebrew and Arabic, 400 A.D. (Fig. 1.) It has been quoted so often that it need not be reproduced here. On the other hand, Borrichius, Professor of Chemistry at Copenhagen, in the seventeenth century, states his preference for Tubal Cain or Vulcan—the Roman Fire God, who is synonymous with the Egyptian Ptah, the Parent of the Sun. (Fig. 3.) Now, Tubal Cain was the instructor of every artificer in brass and iron. Chemists and metallurgists may therefore be styled “Sons of Tubal Cain.”



THOTH, scribe of the gods. (Fig. 2)



PTAH, the Creator. (Fig. 3)

Croesus (B.C. 560) was suspected of having gained his wealth by the art, because it was thought that he obtained gold from the sandy bottom of the river Pactolus, but no trace of gold could be found there.

Chemistry deals with the constitution of matter. This point, therefore, is fundamental in the early history of alchemy. Thales, the father of Greek philosophy, born at Miletus in the seventh century before Christ, conceived the notion that water was the first and sole principle of all matter, and so long did this notion prevail that Lavoisier, in the eighteenth century, distilled water repeatedly for days and nights from one alembic to another, in order to determine whether it could be converted into earthy matter. Scheele and Davy conducted experiments much to the same purpose. Indeed, Davy suggested that oxygen and hydrogen might prove the ultimate elements of the world and all that therein is.

Anaximenes (6th century) gave his preference to air, and held that it was intelligence or soul.

Pythagoras (d. *circa* 500 B.C.) advanced four elements—earth, air, fire and water. His view was supported by Empedocles (d. *circa* 430 B.C.), and also by Aristotle (d. 322 B.C.)—except that the latter, who enjoyed the title of “Master of them that know,”

added the *Quintessence* which was common to and essential to the original four.

Julius Firmicus, a Latin author of the fourth century, writes of alchemy as a thing well known in the third century, and several authorities state that the earliest mention of the subject occurs in an edict of Diocletian issued in that century, commanding a search to be made through all Egypt for ancient books about the melting of gold and silver, that they might be burnt, for fear that the knowledge possessed by the Egyptians might be used to the disadvantage of the Roman Empire. Gibbon, in his *Decline and Fall of the Roman Empire*, is amusing on this episode.

Suidas, who confirmed or copied the story, suggested that the Golden Fleece, which Jason and the Argonauts carried off from Colchis with Medea, was in reality a treatise on gold-making, inscribed on sheepskin.

Plato (d. 347 B.C.) perhaps hinted at alchemy when he said, "Let the transmutation of the elements be frequently the subject of your meditation: such contemplations as these scour off the rust contracted by dwelling here below."

Lucretius (96 B.C.) clearly held notions of the eternity of time, the infinity of space, the indestructibility of matter, and such.

The story of Archimedes (d. 212 B.C.)—of his detection of the fraudulent goldsmith who introduced silver into a crown made for King Hiero, and of the wonderful inventive genius of this philosopher—is related in *Plutarch's Lives*, with an account of his untimely end, when Syracuse was taken by Marcellus. (A slide was shown of an ancient mosaic, depicting a soldier advancing on Archimedes while at work.)

The learning of Egypt was absorbed, and in some respects advanced by the Arabians, who attained skill in many operations and were acquainted with many chemical substances. Geber, Rhazes, Avicenna, and Averroes belonged to the Arabian school. All were men of outstanding intelligence and personality.

From works attributed to Geber it is clear that he knew how to prepare nitric acid, silver nitrate, and mercuric chloride; but he taught that mercury, sulphur and arsenic were the elementary principles and that other metals were composed of sulphur and mercury.

Leo Africanus, a fifteenth-century traveller, described the followers of Geber at Fez:—"In this city is a vast concourse of alchemists who pursue their vainest art. They are a set of stupidest fellows, for they mummify themselves with sulphur and other horrible stinks. According to their wont, they assemble in the evening in the chief temple, and there discuss their false doctrines. They have a great number of books written by learned men, the



CHINESE ALCHEMIST WITH A BASKET OF CHARCOAL.
(Old Painting on Silk: British Museum.)



ROGERIVS BACO,
Monachus in Anglia.
Astrologiae Chemiae et Mathe.
seos peritissimus.
Nat. A. 1206. Den. A. 1284.
Ex collectione Friderici Roth-Scholtzii Norib.

chief place among whom is assigned to a certain Geber, who flourished a hundred years after Mahomet (that is, in the eighth century) and was, they say, a Greek who abjured his faith. His treatise and all his dogmas are couched in allegory." There were two sects or societies in this place, but the aim of both (continues the traveller) was the same, namely, to coin bad money, on which account most of the 'Fellows' (as they would be styled now) might be found with one hand lopped off. Such was then the punishment of forgery.

Geber defined calcination as the pulverisation of a thing by fire, by depriving it of the moisture which consolidates its parts. He noted that a metal increased in weight during calcination, although it lost its moisture.

He insisted on experiment, observation and proof.

Rhazes (866–925), a Persian but reckoned of the Arabian school, became attracted to medicine in middle life through his friendship with a dispenser whom he frequently visited in a hospital. He became Director of the great hospital of Baghdad. He was a keen alchemist and believed in the possibility of transmutation, in which he was opposed by Avicenna. He classified substances as we do in the game—"Animal, Mineral, Vegetable!" and described many kinds of apparatus. He advocated the study of the medicinal properties of chemical substances, on which Paracelsus insisted 500 years later.

Avicenna, "the Persian Aristotle," and Prince of physicians, denied the possibility of transmutation of base metal into gold, but regarded all metals in the molten state as mercury, and agreed with Geber that metals were derived from mercury and sulphur.

In the tenth century, the Moors brought much of the Arabian philosophy to Spain, and thus it spread through Europe and, in the twelfth century, we have Averroes, a Spanish Arabian, the Commentator of Aristotle, whose works were often quoted by subsequent writers on alchemy; and, contemporary with Averroes, Morien, a holy man living in a hair cloth, who attempted to convert Kalid, the Sultan, to Christianity by revealing to him the secret of the elixir. Although he failed in his mission, Kalid profited by his instruction sufficiently to leave behind him some works on alchemy.

The works ascribed to Morien were translated into Latin by Robert of Chester, the first translator of the Koran and the preceptor of Roger Bacon.

The search for the elixir of life was pursued in China as early as the sixth century, and legends of four hundred years later indicate that immortals inhabited islands in the Pacific Ocean where grew a herb which gave them exemption from the common fate of man.

Early in the Christian era, Wei-peh-yang, a Taouist, wrote a treatise entitled *The Uniting Bond* which explained transformations of metals and gave particulars of the elixir of life. Later, one Ko-Hung, writing in the fourth century, related how Wei-peh-yang and one of his pupils (and a dog) tried the great elixir and, after a period of temporary anxiety and seeming suspension of vitality, became immortal.

Vou-Ti, the Emperor, was passionately fond of the mysterious. An impostor sought to benefit by this foible by offering him a cup of elixir to render him immortal. One of his ministers, however, intercepted the cup and drained it at a gulp. The enraged Emperor ordered his immediate execution, but the Minister, laughing, said that, if the elixir bestowed immortality, any attempt to kill him would be useless; if he died, the injustice of the execution would be obvious. On this, the Emperor was pacified and commended him.

In the thirteenth century, alchemists of note were active in various countries. Albertus Magnus, Bishop of Ratisbon, was "great in magic, greater in philosophy, greatest in theology," could change the seasons at will, and make brazen heads to speak. If books attributed to him and his pupils are to be taken as authentic, he was conversant with the use of nitric acid in separating gold and silver, and gave us the word "affinity" (*affinitas*) to express the process of chemical combination.

Albertus was said to have given the great secret to his pupil, St. Thomas Aquinas, but the latter said that gold made by alchemy could not be sold as good gold. St. Thomas first used the word "amalgam" to describe compounds of mercury with other metals, and prepared artificial gems by the fusion of glass with various metals. In his works, which are still widely read, he blends philosophy and theology into one comprehensive view of life. He was canonised by Pope John XXII, to whom further reference will be made shortly.

Michael Scotus, a wizard of mighty power, patronised by the Emperor Frederick II, had the honour of mention by Dante. A great traveller, he was for a time tutor to the Prince of Palermo, in Sicily, where he became acquainted with alchemy; then settled in Toledo, noted for the study of magic and alchemy, where he wrote several treatises on the latter subject. He translated the works of Aristotle into Latin and brought them to Roger Bacon at Oxford.

Roger Bacon himself was another philosopher of exceptional ability for his and all time. He wrote on optics, reflection and refraction of light, perspective and the *camera obscura*, and prophesied many inventions which have since been realised. He defined alchemy as the science teaching how to transform any kind of

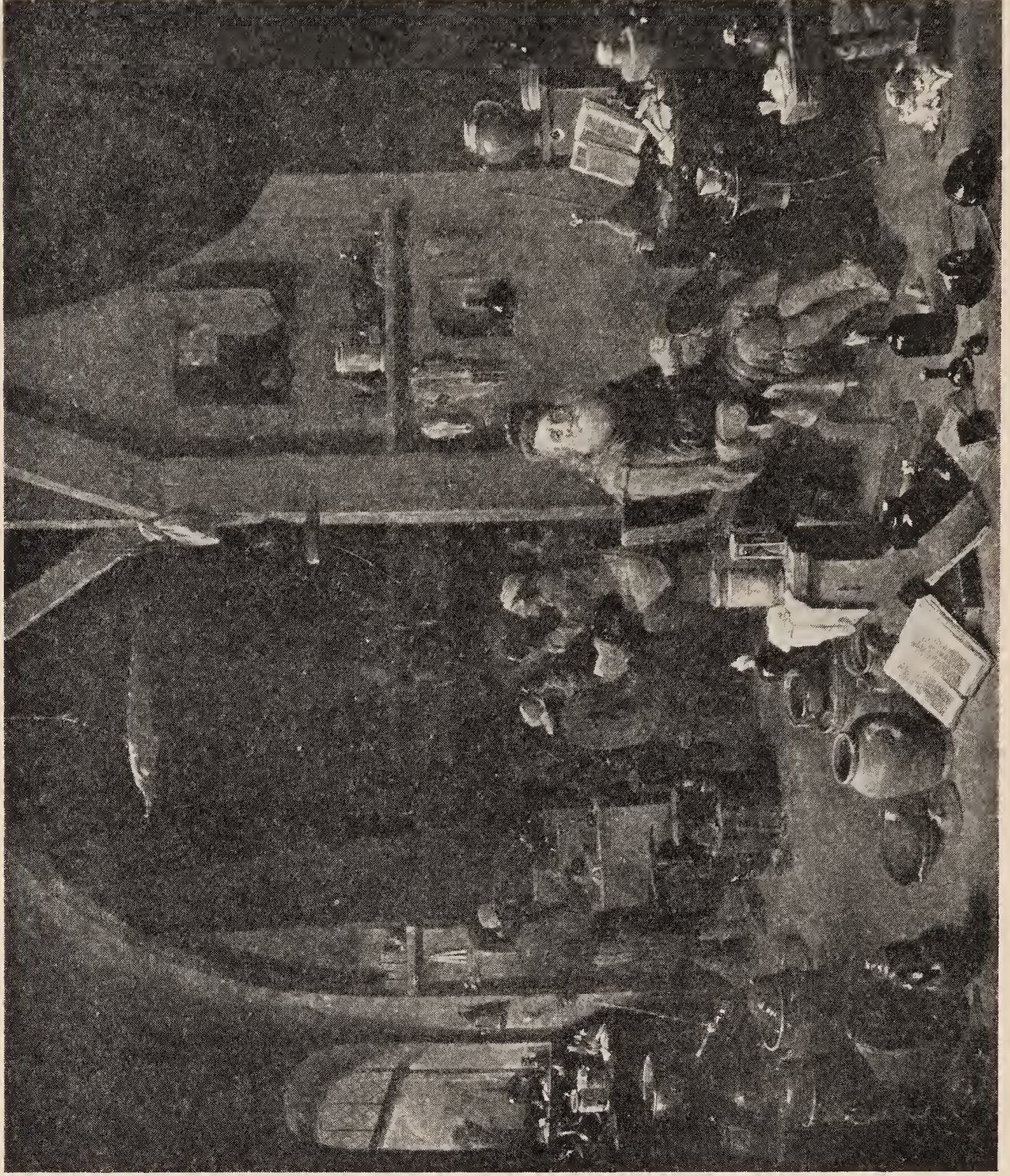


1654.

B. RAYMUNDVS LULLIVS PHILOSOPHVS.
 Doctrinam Pandit Raymundus Lullius omnem, Cui Deus
 infudit scibile quicquid erat. ex Vetustissimo prototypo
 chiamabistico authentico. I. mittamour. Moncornet ex.
 obiit 26 mart. 1315 æt. 80.

RAYMUND LULLY.

Moncornet Sc.



AN ALCHEMIST: (Compare Raymond Lully.)

Teniers pinx.

metal to another, and appears to have believed in transmutation. It has also been claimed that he indicated the constitution of gunpowder, but this is disputed. He noted the inflammable nature of gases evolved from the distillation of organic substances, and showed that air was necessary to support flame. He was one of the first to realise that science could be of service to the arts and manufactures, but like many clever men of his time, he was regarded as a conjurer, and suffered persecution and imprisonment for his enlightened ideas. Some years before his death, however, he was released, and relinquished the pursuit of science for religious devotion.

Raymund Lully, who was born in Majorca in 1235, became a page at the Court of the King of Arragon. A wild youth, he suffered a disappointment in love, turned his thoughts to more serious matters, became a missionary and studied philosophy and alchemy, on which he wrote several treatises. He was reported to be a successful adept; but the statement made by Edmund Dickenson, a chemist in the employ of our King Charles II, that Lully transmuted an immense quantity of base metal into gold, in order to enable the King of England to join the Crusades, was disputed, if not disproved, by Campbell Brown, who found that "the gold coins of Edward I were of good gold and not the gold of the philosophers."

Lully, who describes alcohol and refers to ammonia, says that the elixir makes glass malleable. It was common knowledge that he could turn himself into a red cock! He died, a martyr from injuries received while pursuing his ministry at Tunis. (Portraits of Lully closely resemble the alchemist shown in two pictures by Teniers.)

Lully seems to have been encouraged in alchemy by Arnold de Villanova, who had lived under the patronage of Frederick, King of Italy, James II of Arragon, and later of Pope Clement V at Avignon. Arnold professed to describe the philosopher's stone, and Andreas relates that he turned base metal into gold in the presence of many cardinals at Rome, and that the gold was put to the trial and determination of the touchstone; which is somehow not very convincing! He regarded gold as an essential part of the elixir of life and indispensable in transmutation. He distilled *aqua vitae*, oils and essences, and held that, in the treatment of minerals, the volatile products—such as sulphur, arsenic and mercury—were the spirits of metals released by calcination. He instructed Pope John XXII, who left a great fortune of 18,000,000 florins, which was regarded as proof of his alchemical skill.

Berthold Schwarz, alias Constantin Anklitzen, an alchemist of Freiburg in Baden, is the rival of Roger Bacon, for the credit of, or

blame for, the invention of gunpowder. Several old prints depict Schwarz, who was a master of the black art, in his laboratory. He was trying to make a gold paint when his mortar exploded. He is further accused of having invented firearms and therefore must have lived early in the fourteenth century, or even earlier, for cannon were known in England in 1344; guns were used in France in 1338, and in Florence in 1326, while an Oxford MS. dated 1325 gives an illustration of a gun.

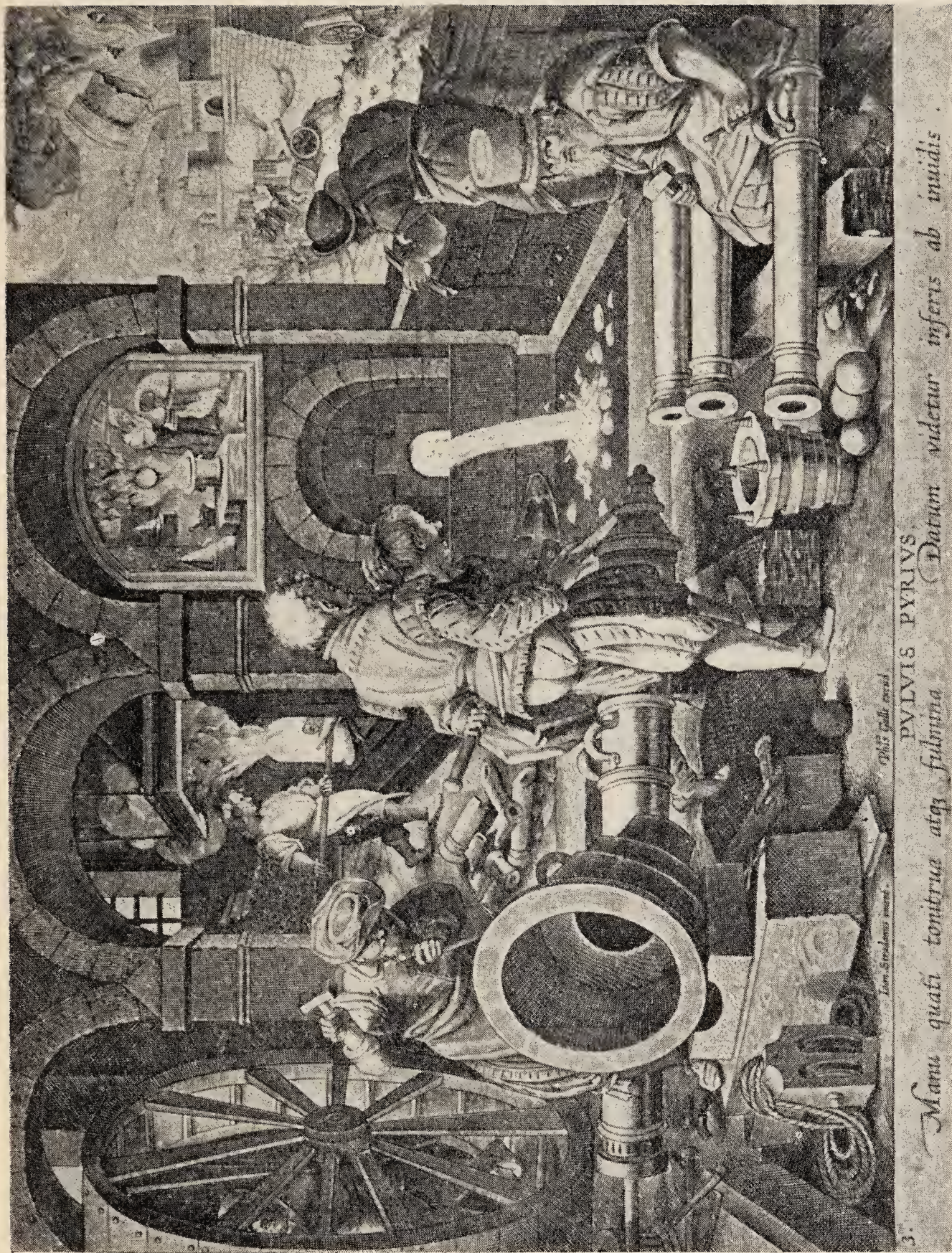
An interesting and mystifying case is that of Nicolas Flamel, a scrivener of Paris, who became possessed of great wealth, which he employed in charitable endowments and pious foundations—no fewer than 14 hospitals, 7 churches, and 3 chapels in Paris, and a like number at Boulogne. In his Will, he related how he became possessed of the gilded book of Abraham, the Jew, containing mystical instructions in transmutation, which after many years of study and adventure he was able to interpret. He then made successful projections.

He lived a blameless life; but his wealth aroused the curiosity of the mad Charles VI of France, who, himself an experimenter in his lucid moments, desired to see the worthy scrivener. However, it would appear from subsequent events that Flamel and his wife, Perenelle, had no desire to receive that honour and both inconveniently died before a meeting could be arranged. Three hundred years later, Paul Lucas, a French physician employed at the court in the early eighteenth century, in relating his travels, said that at Burnus Baschi, near Brussa, Natolia, he fell in with an Usbec dervish who affirmed that both Flamel and his wife were still alive, having gained over their physician and the curate of Holy Innocents to report their death and to superintend the burial of two logs of wood in their stead. They were then nearly 400 years old and belonged to a society of adepts who travelled about the world and met at some appointed place at intervals of about 20 years!

In the fourteenth century, Chaucer gave us the Canon Yeoman's Tale, wherein the false Canon persuades the priest to send his servant for quicksilver to make "into as good silver and fine as there is in your purse or mine"; and he then cheats the priest by the old trick of putting silver into a hole in his fuel, and covering the hole with wax.

Chaucer is rude to the alchymist—

“ . . . ever more wher that ever they goon
Men may hem knowe by smel of brimstoon;
For al the world, they stincken as a goot,
Her savour is so rammish and so hoot.”



3.
Manus quasi tonitruae atq; fulmina
PULVIS PYRIVS
Datum videtur inferis ab invidis

Stradani inv.

PULVIS PYRIVS.
 (Note.—Schwarz in the alcove.)

Galle Sc.



NICOLAVS FLAMELLVS,
Pontisatensis,

*Vixit circa finem XIV. initium et
XV. Seculi apud Parisienses civitate
donatus. Erat insignis in patria lingua
Poeta, egregius Pictor, occultus Philosoph.
et Mathematicus et Alchemista celebris*
Nat. A. Donat.
Ex collectione Friderici Roth Scholtzii Norib.

As to the actual existence of Basil Valentine, there has been much discussion, because if the writings attributed to him are authentic he must have been much in advance of many who came after him. By his own account he was Abbot of Erfurt, but Borrichius says that there was no Benedictine monastery there early in the fifteenth century. On the other hand, Gudenus has confirmed the existence of a philosopher named Valentine who was at Erfurt in 1413. It was thought that Thölde, the publisher of the *Triumphal Car of Antimony*, adopted the name of Basil Valentine as a *nom de plume*, for Thölde himself was the author of a book on occult philosophy published in 1603.

Borrichius states also that Valentine's works were said to have been discovered when a thunderbolt struck a pillar in the abbey. Valentine is credited with the discovery of muriatic or hydrochloric acid and with the introduction of antimony in medical treatment; but Thomas Thomson rejects the story that it was called antimony because he tried it on his monks, and explains that *antimony* in German is *speisglas*, which bears no resemblance to the Latin—*anti-monine*. He regarded metals as composed of salt, sulphur and mercury, and derived from the same principal matter, and, for the fifteenth century, shows a remarkable knowledge of operations and chemical compounds.

You will recall, too, that amazing personality—Gilles de Rais (1404–1440)—born of a noble family, inheriting enormous wealth in his youth. He was early given to vice, but when the English occupied the whole of France north of the Loire, and Joan of Arc was entrusted with the command of the French Army, Gilles de Rais followed the Maid and showed that he was a fearless warrior. He himself was soon recognised as a leader, and became Maréchal of France at the age of 25. He was with Joan when she raised the siege of Orleans, and again at the great victory of Patay; but two years later, when Joan was burnt by the English at Rouen, he returned to a life of untellable wickedness and extravagance, and when he had lost almost the whole of his possessions, turned to alchemy in the hope of recovering his wealth. When his experiments failed, he became possessed with the idea that human sacrifice was necessary, and slaughtered hundreds of children, before he was hanged for his crimes in 1440.

The attempt to make gold or silver by alchemical processes had been prohibited by a constitution of Pope John XXII (d. 1277), for fear that some successful alchemist might become too powerful for the State; but, after the time of Roger Bacon and for over 100 years, the English nobility and gentry wasted so much of their money as to render necessary the interference of Government to restrain their folly. In the fifth year of Henry IV (1404) an Act—

one of the shortest on record—was passed that “None from henceforth shall use to multiply gold or silver, or use the craft of multiplication, and if any the same do, he shall incur the pain of felony.” The Act, which was not repealed until 1689, did not cure the disposition on the part of individuals to practise alchemy privately or remove the general credulity. In 1454, Henry VI granted patents to a number of enthusiasts and later a commission of ten learned men was appointed to determine the possibility of transmutation; but no report of the inquiry appears to have been published.

Bernard Trevisan (1406) spent all his life and a great fortune in vain endeavours; and when 75 years of age, in great poverty, claimed to have achieved at last the great secret, when he could no longer enjoy the fruits of his success.

Ferguson says: “He went everywhere, but though he found enthusiasts and cheats plentiful, he found no philosopher and no philosopher’s stone.” In 1472, after twenty years’ wandering, he returned in poverty to Rhodes, and once more tried a new plan. He compared the statements of different writers, and after two years’ labour “his eyes were opened,” and in 1481 he not only succeeded in making the stone, but in making it with all its virtues in the most exalted condition.

Apparently there were several men named Bernard Trevisan, whereby the difficulty of identification has arisen; probably nobody has dealt with the problem better than Ferguson in his *Bibliotheca Chémica*.

About this time, now over 400 years ago, lived Dürer (1471–1528) whose *Melancholia* shows a crucible and brazier in the background. The flaming mortar also appears in several of his etchings. It is not suggested that Dürer was an alchemist, but it is interesting to note that he knew, and etched the portrait of, the great Erasmus, who translated two philosophical books by Galen and wrote in his *Colloquies* the humorous story of an alchemist and his dupe Balbinus. Erasmus was medically treated by Paracelsus.

Dürer’s father and grandfather were goldsmiths, and Dürer visited the Fuggers, distinguished patrons of literature and science. He painted one of them, Christopher, the Master of the Goldsmiths’ Guild, whose head is shown in the *Feast of the Rose Garlands*. His work was also admired by Rudolph II, another patron of alchemists. This, however, is rather a digression, although it shows that Dürer links up several characters connected with the subject.

George Ripley, Canon of Bridlington, an Englishman, should not be overlooked. He was a Carmelite monk, who died at St. Botolph’s Lincs., about 1490, and the author of *The Compound of Alchymie*, which was dedicated to King Edward IV and reproduced in Ashmole’s *Theatrum Chémicum Britannicum*. Ashmole believed that

Ripley possessed the great secret and supplied the Knights of Malta (or Rhodes) with £100,000 a year to fight against the Turks. The Bodleian Library at Oxford contains a large scroll of hermetic symbolism, by Ripley, whereby the uninitiated may become adepts. His pupil, Thomas Norton, of Bristol, is renowned for his *Ordinall of Alchemy*, which is also reprinted in Ashmole's *Theatrum*.

Henry Cornelius Agrippa, of Nettesheim (1486–1535), who was born at Cologne, although reputed to have the philosopher's stone, wrote on the vanity and uncertainty of the sciences, as also on occult philosophy. He was the commentator of Lully, and Ferguson says that Agrippa tried transmutation and apparently came to the conclusion that alchemy was vanity; but Ferguson suggests that Agrippa might have revealed more than he did.

Georgius Agricola (otherwise Bauer) practised medicine among the miners of Joachimstahl, and acquired a knowledge of mining. In 1530 he moved to Chemnitz, where he was the town physician, and continued his writings on mining and metallurgy. He brought together in systematic form the existing knowledge of these subjects, and his *De re Metallica*, which was published with many woodcuts, was for a long time the standard work on metals. He appears to have been one of the first to mention bismuth. Ferguson describes him as the pioneer in mineralogical science in Europe. He was superstitious about demons who frequented the mines and made strange noises to frighten the miners, but was a highly practical metallurgist, and hardly comes within the category of alchemists.

Of Paracelsus, there are divergent views. As a physician, some of his supposed remedies are absurd and disgusting; but eminent physicians and surgeons give him credit for the introduction of useful medicines of mineral origin, including compounds of antimony iron, lead, copper, arsenic, and mercury. He was the pupil of Trithemius of Spanheim, and had worked in the laboratory of Sigismund Fugger, in the Tyrol. At thirty-two, he was appointed professor of physic, medicine and surgery at Basle. Professing to have the philosopher's stone, he would not deny the possibility of transmutation, although he declared that the main object of chemistry was not to make gold but medicines. To show his disgust with the methods of the ancients, he burned the works of Galen and Avicenna. His brutal attacks upon his professional brethren, his arrogance of manner and drunken habits resulted, however, in his losing his appointment. He followed the notion that a salt, with mercury and sulphur, were the three principles, not only of metals, but of every substance, although he supposed the existence of many qualities of salt, mercury and sulphur. He boasted that he had found the elixir, but he died at Salzburg, some say by violence, in his forty-eighth year.

Paracelsus compared the alchemist of his day with the physician, in the following terms:—

“For they are not given to idleness, nor go in a proud habit, or plush and velvet garments, often showing their rings upon their fingers, or wearing swords with silver hilts by their sides, or fine and gay gloves upon their hands, but diligently following their labours, sweating whole days and nights by their furnaces. They do not spend their time abroad for recreation, but take delight in their laboratory. They wear leather garments with a pouch, and an apron wherewith they wipe their hands. They put their fingers ’mongst coals, into clay, and filth, not into gold rings. They are sooty and black, like smiths and colliers, and do not pride themselves upon clean and beautiful faces.”

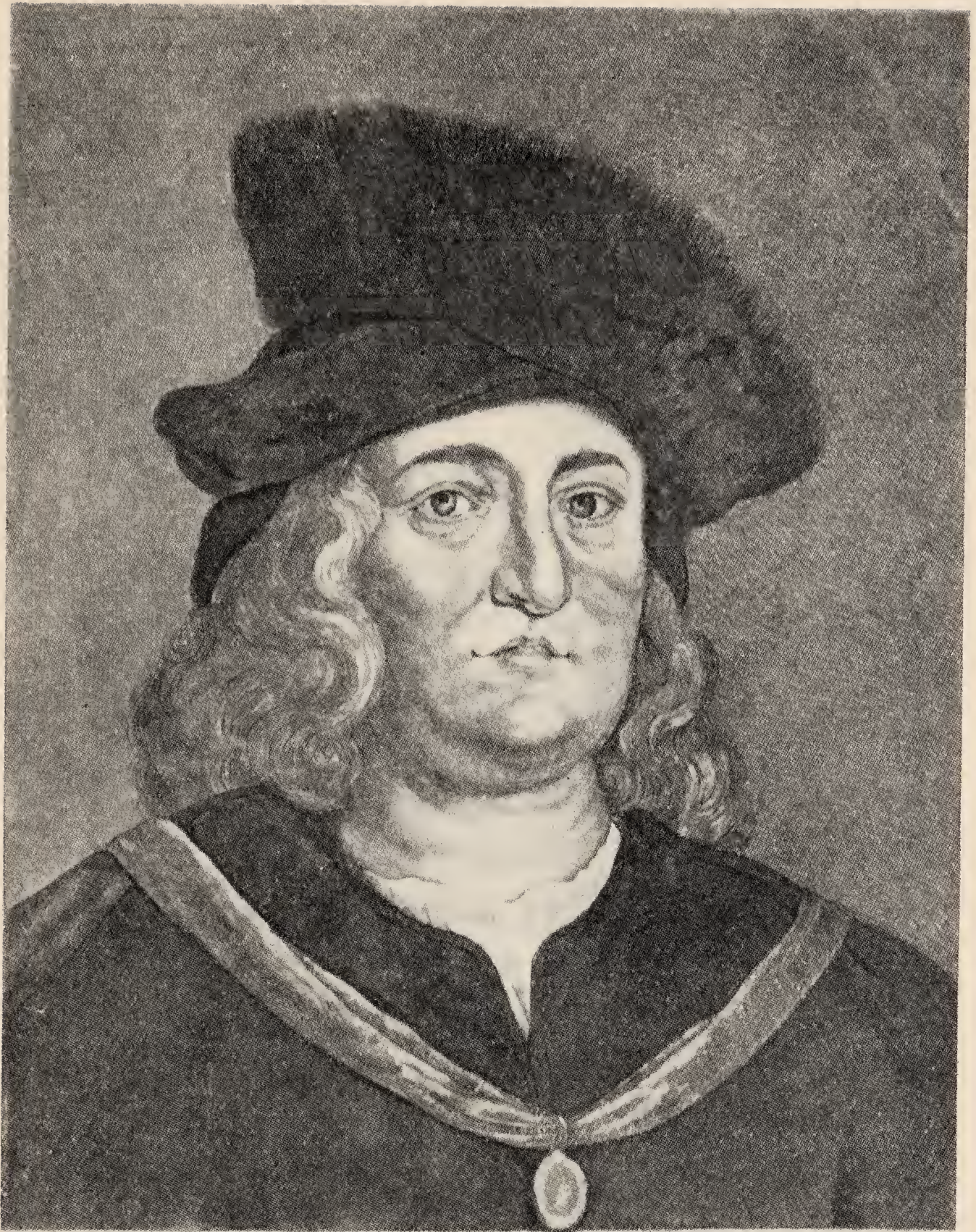
Robert Browning, in his play *Paracelsus*, is said to have recreated many of his own feelings about life, and many of his own aspirations. He added a short history of his subject, and in a footnote mentioned that most of the engravings of Paracelsus were after a painting by Tintoretto (probably painted when Paracelsus was a surgeon with the Italian Army). The whereabouts of the original is unknown. It was reproduced as a print by Bitiskius at Geneva in 1658. The portrait by Schorel (Louvre), which was copied by Rubens (Brussels) fifty years later, bears little resemblance to that attributed to Tintoretto or to the engraving by Visscher.

From Butler’s *Hudibras* may be quoted:—

“Bombastus kept a devil’s bird,
Shut in the pommel of his sword,
That taught him all the cunning pranks
Of past and future mountebanks.”

About this time, lived Parmegiano, otherwise Mazzuoli, the great painter of the Lombard School. A story is told of him similar to, but with an ending different from, that told of Archimedes; for when the Constable of Bourbon sacked Rome, the soldiers burst in upon him, and, struck with amazement at seeing him quietly going on with his work, protected him, although their captain exacted as tribute a number of paintings. In 1532, however, he neglected his art in favour of alchemy, making futile attempts to congeal mercury and to discover the philosopher’s stone. He failed to fulfil his painting contracts and was imprisoned. When he promised to redeem his pledges, and was released, he fled to Cremona, but although he relinquished alchemy, he still hankered after his retorts, lost all his brightness, and presented a poverty-stricken and uncivilised aspect, dying in 1540 in his thirty-seventh year.

Giovanni Battista della Porta (1538–1615) was an Italian natural philosopher of noble and ancient family. He founded the Academy

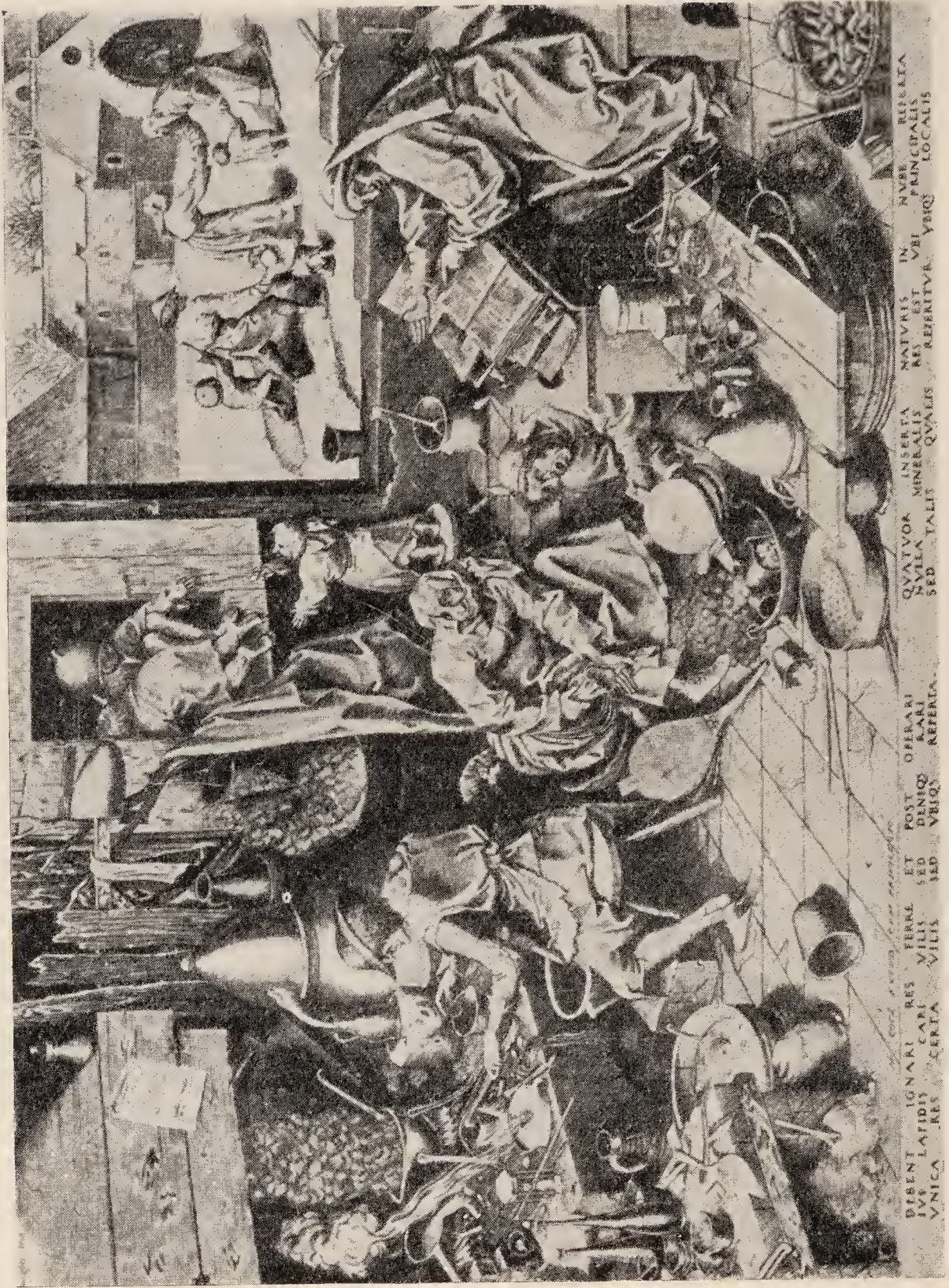


EFFIGIES PARASELCI MEDICI CELEBERRIMI

Quid i lectis Data veritas
 Et non collens iura Alchemie
 Intraque Phantasas salutis
 Almas de R. & P. S. emicant

Et haec lab. sua ne tamen riga
 Decepta recidit hincq; pendit
 Alas occasibus saepeque
 Inpuram, coarctat, laetitia

Engraving by John Overton at the robe, hair, near the fountain, with a rosette to the right.



Breughel pinx.

THE ALCHEMIST AT WORK.

*Cocke Sc.
(British Museum.)*

Secretorum Naturae at Naples, and was only twenty years of age when the first part of his book on *Natural Magic* was published. He also wrote many other works, including one on distillation, published in 1604, and another on the transmutation of copper, in 1609.

Alexander Seton, or Sethon (sixteenth century), self-styled "Cosmopolites," made successful projections in the presence of various people in Holland and Germany, and was put to the torture by the Elector of Saxony to force him to disclose his secret, which he had obtained with the help of his sister, a natural clairvoyante. While in prosperity, he employed his riches for enjoyment, but the Elector made him suffer the rack and hot irons, before he escaped with the aid of Sendivogius, whom he told that had not his body been completely disorganised by the torture, his elixir would have restored him. He survived only two years after his escape, but Sendivogius obtained from him a goodly portion of the powder of projection, and himself performed transmutations. He received high honours, but when his powder was all expended, became the veriest charlatan and narrowly escaped the same fate as Seton.

Dr. John Dee was a celebrated alchemist, mathematician and astrologer, patronised by the sovereigns of England. Aubrey says that he "kept many stilles going at Mortlake," and there is much about him and Edward Kelly in Anthony Wood's *Athenae Oxonienses*. His son, Arthur, physician to the Emperor of Russia, and later to Charles I, swore to Sir Thomas Browne, the great seventeenth century philosopher, that he had seen his father and Kelly transmute pewter dishes and flagons to silver. John Dee was consulted by Queen Elizabeth to fix a fortunate day for her coronation, and after his travels with Kelly, received a licence from her to practise alchemy.

In medieval times, the minds of men were much obsessed by the idea that the end of the world was imminent: a miserable state of things, and hardly conducive to enterprise! Between the thirteenth and sixteenth centuries there was little advance in science, for few were educated and superstition was rife—astrology, sorcery, witchcraft and magic. Small wonder then that the alchemists—most of them men of exceptional intelligence, even the mountebanks—were regarded with suspicion and awe; so John Dee, like most of our "philosophers of the fire," suffered with the rest: his house was ransacked while he was abroad, and, although the Queen gave him some small appointments on his return to England, he died in poverty.

His associate, Kelly, had been operator to Thomas Allen, of Gloucester Hall, Oxford, but early in life lost his ears on being convicted of forgery. Later, he was in trouble again on an accusation of having caused a dead man to rise from his grave in order to

answer certain questions. (There is a print of this episode.) It was Kelly who induced Dee to go to Glastonbury Abbey, where they found a vase containing the elixir, which was presumed to have been prepared by St. Dunstan.

It is related in the ancient Golden Legend:—

“Whan it so was that Saint Dunstan was wery of prayer than used he to werke in goldsmythes werke with his owne handes for to eschewe ydelnes.”

And, again, in the Ingoldsby Legends:—

“St. Dunstan stood in his ivied tower,
Alembic, crucible, all were there;
When in came Nick to play him a trick
Everyone knows how the story goes;
He took up the tongs and caught hold of his nose.”

History relates that Dee and Kelly travelled abroad, performed transmutations, and lived in fine style until the supply of the elixir was exhausted, when they continued wandering about as mere charlatans, living on their dupes.

Reference to the unhappy Kelly is made in *Fugger's News Letters*, about 1591, when he was imprisoned. He had then duped Count Rosenberg and the Emperor Rudolph II to the extent of several thousand guilders. Later he was released and for a time was in favour, and even knighted; but was again imprisoned (at Purglitz) in 1595, and died shortly after, from the effects of a fall sustained while attempting to escape.

Rudolph II was a lover of alchemy and science, though perhaps he was more a lover of the supposed fruits of it, and if he were a patron, he was also a persecutor of alchemists; but he is noted, not only for his employment of Kelly, but of the great Tycho Brahe (1546–1601), mathematician, astronomer, and professed alchemist, who produced a remarkable elixir.

In those days poisoning was a fairly easy method of disposing of an enemy or of anybody “in the way.” The stories of Robert Dudley, Earl of Leicester (1532–1588), himself a chemist, who is said to have had the assistance of Allen and Dee in getting rid of people whom he did not want, and also of Lambe, who was supposed to have poisoned James I, afford examples.

Kings, princes, and great nobles employed tasters, who waited on them at table, and these may be regarded as the forerunners of the public analysts of the present day. Likely enough, the simple process of “trying it on the dog” was fairly efficacious, but the

office cannot have been a very attractive one. It may be conjectured that the private alchemists, who were often also physicians, were called in to be wise after the event.

No less interesting were the ale tasters, but their methods would scarcely satisfy modern requirements. The taster—or rather tester—wearing buckskin breeches, poured the beer on a Windsor chair and then sat in it: when the breeches adhered firmly, added sugar was suspected.

In the sixteenth century, too, the physicians had authority to examine and, if they thought fit, to condemn the preparations of the apothecaries.

The Fuggers were great bankers in the sixteenth and seventeenth centuries, and in *Fugger's News Letters* published a few years ago, mention is made of the famous alchemist—Count Marco Bragadini, a Greek Cypriote, whose real name was Mamugna. He appeared during the 1580's at Vienna, Prague, and Venice. He had been for some time a Mint Master (which is significant) had worked with Pope Gregory, and had been a monk. His fame in alchemy spread to such an extent that a host of princes and lords beleaguered him,—so much so, that he had to be protected by a bodyguard of fifty archers. We read: "He holds banquets daily for 500 people and lives in a princely style." "He literally throws gold about in shovelfuls. This is his recipe: he takes ten ounces of quicksilver, puts it into the fire and mixes it with a drop of liquid, which he carries in an ampulla. Thus it promptly turns into good gold. . ." "The day before yesterday he presented to the Secret Council of Ten two ampullas with this liquid, which have been tested in his absence." "The first test was found to be successful and it is said to have resulted in six million ducats." The same letter continues: "The alchemists have taken heart of grace again and are working night and day. One hears of nothing but of this excellent man who, as already stated, has no other wish but to serve his country." Subsequent letters, however, reveal a falling off. At one time he was making friends presents of twenty thousand and more ducats. Less than a fortnight later, he made two ingots each weighing a pound. Then we are told that he has cut down his expenses, he has reduced his banqueting and is seen with a smaller suite than formerly; then, that he is making gold for his needs. Then, a mention that he has won "near on ten thousand ducats gambling with several noblemen" and is reported to have produced "in these latter days ten thousand gold crowns at one sitting, which fact is confirmed by a credible witness." In May, 1590, we read that his rooms have been sealed at the request of his creditors, and later in the same year he is hanged, as a cheat, on tinselled gallows.

In the days of "Good Queen Bess," one Medley, or Methley,

promoted a syndicate for converting iron into copper, and induced Sir Thomas Smith, the Secretary of State, to support the project. Works were erected, and Medley was appointed manager, but he disappeared before any results were achieved.

There are many references to alchemy in the works of Francis Bacon, Lord Verulam, Viscount St. Albans, who said:

“To alchemy this right is due that it may be compared to the husbandman whereof Aesop makes fable: that, when he died, told his sons that he had left unto them gold buried underground, and gold in his vineyard; and they digged all over the ground and gold found they none; but by reason of their stirring and digging the mould about the roots of their vines, they had a great vintage the year following; so assuredly the search and stir to make gold hath brought to light a great number of good and fruitful inventions and experiments, as well as for the disclosing of nature, as for the use of man’s life.”

In his *Sylva Sylvarum*, published after his death by his Chaplain, Rawley, he discourses on the making of gold and suggests a method “which may (perhaps) by further meditation be improved.” (Perhaps!) He said, also, that the alchemist had made many discoveries and had presented mankind with useful inventions; but elsewhere he compares them with spiders, for their wonderful skill and flimsy results.

There are references to alchemy in Shakespeare—in *Timon of Athens*, *Julius Caesar* and *King John*.

Timon beating the poet and the painter, who hoped to receive gold from him, says (striking the poet), “You are an alchemist, make gold of that. Out rascal dogs!”

In *Julius Caesar*, Casca, referring to Brutus, says:

“O! he sits high in all the people’s hearts;
And that which would appear offence in us,
His countenance, like richest alchemy,
Will change to virtue and to worthiness.”

And in *King John*, Philip, the King of France, says:

“To solemnise this day the glorious sun
Stays in his course and plays the alchemist
Turning with splendour of his precious eye
The meagre cloddy earth to glittering gold.”

These quotations refer to transmutation, but there are other examples of chemical metaphor. Henry V says:

“There is some soul of goodness in things evil
Would men observingly distil it out.”



THE LABORATORY.

By William Pittarri M.D. This Plate is Inscribed by his Majesty's
and Obedient humble Servant, Tho^s. Major.

Teniers pinx.

THE LABORATORY.

Major Sc.

And Theseus in *A Midsummer Night's Dream*:

“But earthlier happy is the rose distill'd
Than that which withering on the virgin thorn
Grows, lives and dies in single blessedness.”

Many writers of the seventeenth century refer to alchemy, and thus we get from Donne:

“And as no chymic yet th' elixir got,
But glorifies his pregnant pot,
If by the way to him befall,
Some odoriferous thing, or medicinal . . .”

Cowley has a similar passage, quoted by Johnson, in his *Lives of the Poets*.

“So, though the chymic his great secret miss
(For neither it in Art nor Nature is),
Yet things well worth his toil he gains:
And does his charge and labour pay
With good unsought experiments by the way.”

Johnson himself was all his life given to chemical experiments and Cowley was an earnest advocate of an institution of the character of the Royal Society.

Sir Thomas Overbury, in his *Characters* mentions the alchemist several times. In his *Character of a Taylor* he says that he is “partly an alchemist; for he extracteth his own aparell out of other men's clothes; and when occasion serveth maketh a broker's shop his alembicke; he can turn your silkes into gold”; and of a French Cook he says: “the lord calls him his alchymist than can extract gold out of herbs, roots, mushrooms, or anything.”

Burton, in his *Anatomy of Melancholy*, makes some interesting references to alchemy, including: “Let him that is melancholy . . . go find the philosopher's stone.”

A renowned patron of alchemists was Henry Percy, Earl of Northumberland—Henry the Wizard—who was imprisoned in the Tower of London at the same time as Sir Walter Raleigh, being supposed to have been concerned in the Gunpowder Plot. He was tried by the Star Chamber and fined £30,000. He retained the services of Nicholas Hill and three “magi,” as they were called—Harriot, Hues and Warner. Harriot had long been associated with Raleigh on his buccaneering expeditions. Warner was thought by Lord Winchester to have been the originator of the notion of the circulation of the blood; but Warner himself attributed it to Prothero, one of Harriot's executors.

Raleigh, who was much given to chemistry, was allowed a room for a laboratory where he engaged in distillation and prepared his celebrated cordial, which Queen Anne, wife of James I, believed to have saved her life. He won a wager with Queen Elizabeth regarding the amount of smoke in a pound of tobacco. The tobacco was burnt, the weight of the ash determined, and the loss in weight was held to represent the weight of the smoke. The Queen said that she had heard of people turning their gold into smoke, but not of turning smoke into gold.

It is curious to note that in his speech from the scaffold, when he came to execution, Raleigh said in his final defence: "The second suspicion was, that his Majesty hath been informed that I should speak dishonourably and disloyally of him. But my accuser was a base Frenchman, a kind of chemical fellow, one whom I knew to be perfidious. . . . I cannot but think it strange that this Frenchman, being so base, so mean a fellow, should be so far credited . . ."

In another version, however, published in *The Remains of Sir Walter Raleigh*, London, 1675, the reference is to a "mimical Frenchman, whom he entertained rather for his jests than his judgment."

Another interesting character was Cornelius Drebbel, a Hollander of long residence in London. He constructed the first submarine boat, in which he travelled from Westminster to Greenwich. He also discovered the lake colour which is formed when a tin salt is added to cochineal. John Evelyn in his *Dairy* refers to "the famous chymist Drebbel, inventor of the bodied scarlet" and Bishop Sprat in his *History of the Royal Society* also mentions "the scarlet of the moderns, a very useful colour," and describes it as "the production of a chymist and not of a dyer."

Drebbel was said to have been the first person to use a microscope in England, and Trusler in his *Chronology* credits him with the invention of thermometers (in 1620). Drebbel's daughter married Keffler, described by Hartlieb as "a very inventive wit who made glass stopples"—in most of the old books on alchemists, flasks are stopped with paper, rag or wool—and Evelyn refers to Keffler's "yron ovens, made portable (formerly) for the Prince of Orange's Army"—(a reference to surplus war stock).

One of the most learned persons of the sixteenth and seventeenth centuries was Daniel Sennertus, who was physician to several princes, including the Elector of Saxony, and, according to Ferguson, was the first to introduce chemistry as a subject in the medical curriculum. He attempted to harmonise the doctrines of Galen with those of Paracelsus; he believed in transmutation, in the

application of astrology to medicine and in the supernatural origin of disease.

Sir Theodore Turquet de Mayerne, who was said to be the first chemist of his time, was a Swiss Protestant emigrant who became physician to James I, having previously been physician to Henri le Grand of France, but expelled from the College of Physicians of the University of Paris, for his revolutionary methods. Knighted by James I, he continued in the service of Charles I and Charles II. He was one of the first medical practitioners to employ calomel and other mineral medicines; but Rimbault, in his *Life of Sir Thomas Overbury*, says that Mayerne was singularly unfortunate with his patients. He died from drinking bad wine. "Good wine," he said, "is slow poison; I have drunk it all my life time, and it has not killed me yet; but bad wine is sudden death." He wrote a book on cookery which at that time was regarded as part of the healing art. (It was a fairly common idea to add a skull to a posthumous portrait as an emblem of mortality—as in the case of the print of Mayerne by Elder.)

Izaak Walton, in *The Compleat Angler*, referring to oils for sweetening bait, mentions other "chemical men." He says: "There be several oils of a strong smell that I have been told of, and to be excellent to tempt fish to bite, of which I could say much; but I remember I once carried a small bottle from Sir George Hastings to Sir Henry Wotton (they were both chemical men) as a great present; it was sent and received and used with great confidence; and yet upon enquiry, I found it did not answer the expectation of Sir Henry; which, with the help of this and other circumstances, makes me have little belief in such things as many men talk of." He continues: "There is a mysterious knack, which though it may be easier than the philosopher's stone, yet it is not attainable by common capacities, or else lies up in the brain or breast of some chemical man, that like the Rosicrucians, will not reveal it."

The Rosicrucians first appeared in Germany in the fourteenth century. They were thought to have been founded by a Crusader who had learned great secrets from the Arabians, including those of the philosopher's stone and the elixir of life. There is a footnote in *The Compleat Angler* that runs: "They professed to teach the art of making gold; and boasted of a secret, in their power, to protract the period of human life, and even to restore youth. Their founder having been to the Holy Land, pretended to have learned all this from the Arabs. They propagated their senseless philosophy by tradition; and revealed their mysteries only to a chosen few."

Lemery, the author of a well-known *Course of Chemistry*, the first book on the subject written in French in plain language and

without mysticism, has thus defined their art: "*Ars sine arte; cujus principium mentere, medium laborare, et finis mendicare.*" (An art without art, whose beginning is lying, whose middle is labour, and whose end is beggary.) Lemery, however, was hardly just.

The doctrine of the Rosicrucians was a system of theosophy directed to the discovery of the ultimate secrets of Nature; indeed, not only of things natural and visible, but of the supernatural and the invisible.

Through a labyrinth of intricate theory runs a strain of exalted speculation which it would be unfair to regard as merely jargon, however useless it may appear to those who have no desire to accept it. The Rosicrucians regarded light and darkness, controlled by divine influence, as the original principles of creation, itself a miraculous process in which innumerable angels—favourable (of light) and adverse (of darkness)—participated in producing Nature in all her forms. Creation was the alchemy of Nature.

It was not originally intended that man should die by disease; he had corrupted his body by his daily food, and thereby came death. He was to have been as the angels; and herein, perhaps, lay the idea of seeking the elixir of life, which would relieve him of the necessity of ordinary food, and enable him to live chastely and with few wants—an existence of sublime contemplation. Incidentally, the creation of woman was an obtrusion which occurred when man fell from a higher to a lower plane.

Proof against the temptations and the common failings of mankind, the Rosicrucians despised wealth, fame and honours, and yet took their share, or more, in promoting the common weal. A class to themselves, they were learned beyond the majority of scholars of their time, especially in moral and natural philosophy. They reasoned deeply on theology; they were learned in astrology, and in the power of the stars over humanity; in the power of music and of colours; in the influence of emblems, symbols and hieroglyphics; in heraldry and chivalry, and in freemasonry.

Freemasons will be interested in the following:—

In a book entitled, *The Lives of those eminent Antiquaries, John Leland, Thomas Hearne and Anthony à Wood*, is quoted a MS of Leland, which was brought to notice in 1696 by John Locke, who appended explanatory notes to the same.

The title of this MS. was *Certayne Questions with Answers to the same, Concernynge the Mystery of Maconrye; Wryttenne by the Hande of Kynge Henrye the Sixthe of the Name, and faythfullye copyed by me Johan Leylande Antiquarius, by the Commande of His Highnesse.* (*His Highnesse* referred to Henry VIII: our Kings had not then the title of *Majesty*.)

The questions begin with, "What mote ytt be?" i.e. "What may this mystery of masonry be?" and the answer is to the effect that it consists in natural, mathematical and mechanical knowledge, some part of which masons claim to have taught the rest of mankind, and some part they conceal. The dialogue following relates to the origin and aims of freemasonry, which first came from the men in the East and was brought to the West by the Venetians. (Locke explains that this is an ignorant phonetic mistake for the *Phoenicians*.) It came to England through one Peter Gower, a Grecian who had travelled in Egypt, Syria, and elsewhere, and had learned and spread much of the art before its coming to England. (Locke explains that by *Peter Gower* is intended Pythagoras, which in French would be pronounced *Petagore*.) These notes are of passing interest; but what chiefly concerns us is that among the Arts taught by the Masons is our beloved "Kymistrey," and, among the arts which they concealed, was "The Arte of Chaunges," of which Locke says, "I do not know what this means, unless it be the transmutation of metals." (However, the theory of the Rosicrucian and Masonic historical connections is not now accepted by the best authorities.)

The Rosicrucian alchemists were the experimental practitioners of the brotherhood; but their investigations were not directed to worldly gain. No true Rosicrucian sought gold for worldly ends. They had minds to higher things—the great unknown.

The transmutation of metals symbolised to them the perfection of things impure to a state of purity, and not only the perfection of metals, but even of humanity. Thus, Synesius, an early writer, says that "The quintessence and hidden thing of our stone is nothing less than our celestial and glorious soul, drawn, by our magistracy out of its mine, which engenders itself and brings itself forth."

Fire had been deified from the earliest ages, and still has its place in many celebrations and ceremonies. Thus the Egyptian god, Ptah, was the emblem of the eternal spirit, the ethereal fire burning for ever, from which the souls of men were created. Those who pursued alchemy and chemistry, devoutly prayed for spiritual guidance, as philosophers of the fire—fire, inscrutable and evasive, by which all things were ultimately resolved into the unknown—the spiritual. With the Rosicrucians, ordinary fire was but the inadequate representation of a higher spiritual and mysterious element. They believed in an invisible world within this visible world; a world of causes, as well as a world of effects; a world of soul within a world of matter, intimately associated and controlled by a world of spirit. They had discovered the mystery of the Immortal Fire or Light, without which the higher life could not be developed, and were, therefore, sometimes styled "The Illuminati."

Divine inspiration—a kind of intuitive faculty—was the only source of Truth. They relied on inspiration, transcending human reason, and on the emotions, manifesting a state of mental elevation at times amounting to ecstasy; and so earned for themselves yet another title “The Inspirati.” (Charles II, on perusing Boehme’s works said that the man was certainly inspired.)

They recognised the relations of the mineral kingdom to the vegetable, and of the vegetable kingdom to the animal, and demonstrated the gradations among them. They held that metals resulted from the inner operation of the planets, and that they grew in the bowels of the earth or in the ocean. Nature had intended to make all metal gold. That it was not so, was due to impurities or disease which the alchemist could eliminate. Thus, gold and silver were produced, respectively, under the influence of the sun and the moon. The alchemist could effect their extraction and purification.

In their molten state, metals, generally, were regarded as mercury, or akin to mercury, which was, therefore, looked upon as the common original material with which to begin the operations of transmutation; and it was their endeavour to apply the art to accomplish, in a comparatively short time, what the processes of Nature were assumed to accomplish in thousands of years.

If man could achieve transmutation, what need had he for riches or rank? If he could achieve the elixir of life, what could he need more? Truly, he could have too much of a good thing, and having all his heart desired would tire of everything, even of life itself. In such circumstances, the power of prolonging life given to one, or universally, was unthinkable and purposeless. Therefore, if the Rosicrucians possessed these secrets, they preserved them as such, because their revelation would not perfect, but pervert, humanity.

Robert Fludd or Floud (1574–1637) acknowledged himself one of the fraternity, and was known as “The English Rosicrucian.” His family name was originally “Lloyd.” He strongly disclaimed any desire to put the secret powers to which the Brotherhood had attained to any worldly purpose, and, similarly, a French adept, in correspondence with Edmund Dickenson, while protesting that the Rosicrucians possessed such powers, stated that they declined to exercise them because, by so doing, they would simply render themselves obnoxious to the community.

Anthony Wood said that Fludd “did so much doat on the wonders of chymistry, that he would refer all Mysteries and Miracles, even of Religion . . . to it.” He was the author of the *Key to Philosophy and Alchemy*, but it was said to have been “cribbed” from the manuscripts of Simon Forman, (later in the Ashmolean Museum). He displeased the College of Physicians by adopting the

remedies of Paracelsus, especially the Weapon Salve, which consisted partly of human matter, moss from a dead man's skull, and fat. He is mentioned in Butler's *Hudibras*.

Then there were the two Van Helmonts. J. B., the father, was born at Brussels, and was a man of great skill and learning in physics and chemistry. He believed in Paracelsus' Weapon Salve, but stipulated that the dead man whose skull was so useful should have a name with only three letters! After marrying a lady of means, he settled to study at Vilvorde, seeking the philosopher's stone and the elixir of life. He claimed to have effected the transmutation of mercury into gold, and is best known for his discovery of various kinds of gases, including gas sylvestre, or carbonic acid gas. From him we get the word "gas" from gheest, a spirit or ghost, which he derived from the Greek "chaos."

His son, Franz Mercury Van Helmont was also a medical man, who studied chemistry, but did not believe in transmutation. He spent many years in England, where, for his patroness, Anne Finch, Countess of Conway, of Ragley Hall, he edited a work on "The Transmigration of Souls." When she died, on 23rd February, 1678, her husband, Lord Conway, was in Ireland; so, to preserve her body, Van Helmont treated it with spirits of wine, covering the coffin with glass. The body was not buried until 17th April, 1679. Soon after, Van Helmont was at Hanover, where he was on friendly terms with Leibnitz, Secretary of the Rosicrucians; and finally, the Electress of Brandenburg invited him to Berlin, where he died in 1699. His portrait, attributed to Lely, in the National Gallery, London; suggests that he lived in comfortable circumstances.

Professor John Read has mentioned that King James IV of Scotland maintained an alchemist at Stirling Castle.

Scots, as venturesome then as they are to-day, constantly turned up in the history of alchemy somewhere abroad, and, like Michael Scotus, Duns Scotus and Seton, we have William Davisson, who occupied the position of first Professor of Chemistry at the Jardin des Plantes, in Paris, where he gave public lectures. Later, he was physician to the King of Poland. Dr. Thomas Urquhart said of him: "The excellency of Dr. William Davisson in alchemy, above all the men now living in the world, whereof by his wonderful experiments he giveth daily proof, although his learned books published in the Latin tongue do not evidence it, meriteth well to have his name recorded in this place and after him."

William Oughtred (1574–1660), a Buckinghamshire man, educated at Cambridge, was a renowned mathematician who had many famous scholars. He believed in astrology and, although very successful in it, could only suggest that some genius or spirit helped him. He was a great lover of chymistry and a year before

he died told John Evelyn that, if he were but five years younger, he doubted not to find out the philosopher's stone. His son, Ben, who minded the furnaces, said that his father would sometimes say that he could make the stone. In Aubrey's biography of Oughtred, he begins a description of the process, but leaves it unfinished! Oughtred died of joy at the restoration of King Charles II.

There are dozens more who might be mentioned, including Peter Bonus, author of the *Margarita Pretiosa*; Isaac of Holland, and his son, whose work was esteemed by Paracelsus; Charnock, who had repeated accidents with his apparatus, and finally destroyed it himself, when he was pressed to serve in the army; Libavius, who believed in transmutation, but devoted his attention to chemical medicines; Khunrath and Boehme, mystical writers, who employed the language of alchemy, but probably did nothing practical in it; Maier, a physician, under the patronage of Rudolph II, who spent much time and money in search for the philosopher's stone, and defended the Rosicrucians against their critics; and Glauber, who believed in alchemy, and is best known for the introduction of crystallised sodium sulphate.

James Howell, the author of a remarkable book of *Familiar Letters* dedicated to Charles II, was a steward of a glass factory, who later travelled abroad upon his own business and for the Government, and eventually became one of the clerks to the Privy Council. He discoursed on alchemy and on the chymistry of glass, and when he was imprisoned in the Fleet during the Commonwealth—which is reminiscent of Plate VII of Hogarth's *Rake's Progress*—he wrote to his friend, Captain Price, a prisoner at Coventry—"I could wish, if there be no hope of a speedy releasement, you would remove your body hither, and rather than moulder away in idleness we would devoutly blow the coal, and try if we can exalt gold, and bring it o'er the helm in this Fleet; we will transmute metals, and give a resurrection to mortified vegetables, to which end the green Lyon, and the Dragon, the Demogorgon and Mercury himself, with all the Planets shall attend us, till we come to the Elixir, the true Powder of projection, which the vulgar call the Philosopher's stone: if matters hit right we may thereby get better returns than Cardigan silver Mines afford. . . ."

Plate III of *Marriage à la Mode* shows the quack's shop and a laboratory in the background with distilling apparatus.

Howell was intimate with Ben Jonson, and it appears likely that the latter obtained from Howell many of his ideas for *The Alchemist*. Subtle is said to have been founded on the type of Dr. John Dee, and there is a picture by Zoffany of David Garrick as Abel Drugger.

The Alchemist contains much excellent parody of the jargon employed by the mountebanks.

In Scene IV, Subtle is expecting Sir Epicure Mammon, the most important of his Dupes:—

“This is the Day I am to perfect for him
The *Magisterium*, our *great Work*, the *Stone*
And Yield it, made into his Hands:

. He will make

Nature asham'd of her long Sleep: when Art
Who's but a Step-dame, shall do more than she.
He's, in Belief of Chymistry, so bold,
If his Dream last, he'll turn the Age to Gold.”

In the first Scene of Act II, Mammon is expecting the results:—

“This night, I'll change
All that is Metal, in my House to Gold.
And, early in the morning, will I send
To all the Plumbers, and the Pewterers,
And buy their Tin, and Lead up: and to Lothbury,
For all the copper.”

Mammon. “He that has once the Flower of the Sun,
The perfect Ruby, which we call Elixir,
. by its Virtue,
Can confer Honour, Love, Respect, Long Life,
Give Safety, Valour, yea, and Victory,
To whom he will. In eight and twenty days,
I'll make an old Man, of Fourscore, a Child.”

While Subtle is supposed to be at his prayers, Mammon is holding forth on what he is going to do with his wealth and with the elixir; but there was no prospect of success for this wicked old man!

Hear Subtle again—

Sub. “Son, be not hasty, I exalt our Med'cine,
By hanging him in Balneo Vaporoso
And giving him solution, then congeal him,
And then dissolve him, then again congeal him:
For look how oft I iterate the Work,
So many times I add unto his Virtue.
Get you your Stuff here against Afternoons,
Your Brass, your Pewter, and your Andirons.”



J. Kerseboom pinxit.

B. Baron Sculpsit.

The Honourable



ROBERT BOYLE.

Kerseboom pinx.

THE HON. ROBT. BOYLE.

Baron Sc.



JOHN EVELYN, F.R.S.
 (The only Englishman engraved by Nanteuil.)

Nanteuil Sc.

Athanasius Kircher, a German physicist, occupied the chairs of philosophy and oriental languages at Würzburg and in the Jesuit's College at Avignon, and was subsequently professor of mathematics in the Jesuits' College at Rome, where he died. He was the author of a dissertation on *De Origine Alchymiae* in which he violently attacked the alchemists and their pretended transmutations; but, while he disputed the existence of the philosopher's stone, he told the story of a young man who was visited by a stranger who showed him a process for making it. The stranger and the young man made the powder, and with it converted a large quantity of mercury into gold under the stranger's directions. The young man wrote down the recipe, but neither he nor Kircher could make gold again, and Kircher concluded, therefore, that the strange visitor was the devil. Kircher, however, was an early worker with the microscope and discovered "vermicles in the blood," which he regarded as the cause of the plague.

Another friend of Ben Jonson was Sir Kenelm Digby, whom his friends called "the magazine of all the Arts," and his tutor, Thomas Allen of Gloucester Hall, "the Mirandola of his age"; but who Dr. Stubbes said "was the Pliny of the age for lying." Of fine physique and striking personality, he was an admiral of the buccaneering type, and a great cavalier. He pursued chemistry at Gresham College and later at a laboratory in Covent Garden.

John Evelyn, who was his fellow pupil under Lefevre, in Paris, disparaged his knowledge and ability. He says "I visited Sir Kenelm Digby with whom I had much discourse on chymical matters. I show'd him a particular way of extracting oyle of sulphur, and he gave me a certaine powder with which he affirm'd he had fixed (mercury) before the late King; he advised me to try and digest a little better, and gave me a water which he said was onely raine water of the autumnal equinox exceedingly rectified, very volatile; it had a taste of a strong Vitrioliq, and smelt like *aquafortis*! He intended it for a dissolvent of calx of gold; but the truth is, Sir Kenelm was an errant mountebank." In another place he said: "Sir Kenelm was a teller of strange things." (On the other hand, Lord Clarendon thought better of him.) His toothache cure was to scratch the gums near the offending tooth with an iron nail, and then to hammer the bloody nail into a wooden beam. He had two operators,—Hartmann, who wrote a book of *Chymical Secrets* (1682) and Banfi-Hunjadi, an alchemist from Hungary who settled in London at Whitechapel.

Breughel's *Alchymist* was painted in the sixteenth century, and engraved by Cock. During the seventeenth century alchemists were favourite subjects for painters. Teniers and Wyck both delighted in painting alchemists, and examples of the former are

to be found in public galleries at Brunswick, Dresden, Dusseldorf, Frankfurt and the Hague, and of the latter at Brunswick, Dresden, Karlsruhe and the Hague.

Several of the above have been engraved by Major, Boydell, Le Bas, etc. Other painters of alchemists include—Martin de Vos, Adrien van Ostade, Jan Steen, Rymerswael, Ryckaert, Pinas, and, in more recent times, Isabey, Collier and Lomax.

Thomas Vaughan was born in 1612, and was believed to be still alive in 1749, at which time he was President of the Illuminated Brothers in Europe. A visionary, but a man of high moral character and great ability, he had been known to Robert Boyle, who spoke well of him. He was the author of several "occult" works under the name of Eugenius Philalethes, led a wandering life, and asserted that he had made alchemical gold, which, however, a goldsmith rejected.

Elias Ashmole, the compiler of *Theatrum Chemicum Britannicum*, a collection of alchemical writings, was a doctor of Medicine and a Fellow of the Royal Society, and the founder of the Ashmolean Museum. He was reckoned "very knowing in chymistry," having learned secrets from a Mr. Backhouse of Swallowfield, in Berkshire. Anthony Wood says quaintly that he was "the greatest virtuoso and curioso that ever was known or read of in England before his time." "Much of his time, when he was in the prime of his years, was spent in Chymistry; in which Faculty being accounted Famous, did worthily deserve the title of *Mercuriophilus Anglicus*."

In a footnote to Walton and Cotton's *Compleat Angler*, it is stated that Ashmole "dedicated himself to the then fashionable studies of chemistry and judicial astrology and associated himself with that silly crack-brained enthusiast, John Aubrey, Esq., of Surrey, and that egregious impostor, Lilly, the astrologer. . . . He became the dupe of the knavery of one and the follies of both." In his notes of 1681, he records "I took early in the morning a good dose of the elixir and hung three spiders about my neck; and they drove my ague away. *Deo gratias*."

The first Keeper of the Ashmolean Museum was Dr. Robert Plot, sometime Secretary of the Royal Society (1682), and the first Professor of Chemistry in the University of Oxford, from which position he resigned in 1690.

Before Robert Plot, however, Peter Sthael of Strasbourg had given courses in chemistry in Oxford since 1659, having been introduced by Robert Boyle.

In the life of Anthony Wood, who attended the courses himself, Sthael is described "as a Lutheran, a great hater of women," and "a very useful man," and the names of many of his students who subsequently became noted are given.

One was the famous John Locke, who was described as a man of a turbulent spirit, clamorous and never contented. He scorned to take notes, so that "while every man besides was writing, he would be prating and troublesome." Other scholars were John Wallis, Christopher Wren, Nathaniel Crew, afterwards Bishop of Durham, Dr. Ralph Bathurst, who became Dean of Wells, and Dr. Richard Lower. Sthael was subsequently (1664–1670) an operator to the Royal Society.

About the middle of the seventeenth century, the pursuit of chemistry became more and more the hobby of the nobility. Indeed, Bishop Sprat, the historian of the Royal Society, said that it was about the only thing on which they were united. A group of philosophers gathered at Oxford, forming the nucleus of the association which developed later into the Royal Society, the central figure being the Hon. Robert Boyle; but among others was Thomas Willis, who, according to Anthony Wood, "for his deep insight and happy Researches in natural and experimental philosophy, anatomy and chemistry, for his wonderful success and repute in his practice . . . none scarce hath equalled, much less outdone him, how great so ever." After serving in the Royalist Army, he became Sedleian Professor of Natural Philosophy; he was the author of a book on Fermentation (1659), and held that diseases were caused by irregularities in the fermentation process. He was one of the first to employ iron in medical treatment.

Another promoter of the Royal Society was John Evelyn, the diarist, who made many visits to chemists abroad and attended courses of chemistry in Paris. He wrote a treatise entitled *Fumifugium, or the Smoake of London dissipated*, in which he offered suggestions for getting rid of London fog and smoke, on which Charles II conversed with him in the King's yacht on the river, in 1661.

He also wrote *Terra* in which he showed that he appreciated the use of nitrates in agriculture and, in 1675, wrote:—"I firmly believe that where saltpetre can be obtained in plenty, we should not need to find other composts to ameliorate the ground." While he was in Paris, one Marc Antonio, an enameller, told him that a Genoese jeweller, whom he had met at Cyprus, had made projection before him, several times, and that in a goldsmith's shop at Amsterdam, a stranger had melted a pound of lead, from which, after the addition of a small quantity of powder, the goldsmith had obtained four ounces of good gold. He mentions also Thurneysser, who was supposed to have transmuted half an iron nail into gold, but he said "it plainly appeared to have been soldered together." This Thurneysser was the son of a goldsmith at Basle. He had travelled in England, France and Germany, and after serving for



The Right Reverend Father in God,
 Gilbert Lord Bishop of Sarum &
 Chancellor of y^e most Noble Order of y^e Jarter.

Printed from a life by M^r
 J^r Riley, Principall
 Painter to His Ma^{ty}

I. Smith fecit

Cur. Privilegio Regio

Sold by R. Tompion at y^e
 Survey, Bedford-square &
 E. Coopers at y^e 7. Pall-mall
 in Bedford Street

Riley pinx.

GILBERT BURNET, BISHOP OF SALISBURY.

I. Smith Sc.

some time as a soldier, returned to his father's business. He was a pupil of Paracelsus, and worked in the laboratory of John George, Elector of Brandenburg, at the Grey Monastery, Berlin. He amassed a large fortune, chiefly by quack preparations, including his "Magistry of the Sun," and employed several hundred people in a factory for the manufacture of saltpetre, alum, glass, and paper. Then he lost most of his money over a lawsuit with his wife, and died at Cologne, where, by his own request, he was buried beside Albertus Magnus. Ferguson says: "At the present day he might have been a successful manufacturing chemist, able to turn his raw material into gold without the red elixir."

Returning again to the seventeenth century, we come to the Hon. Robert Boyle, son of the Earl of Cork, who, as has been said, was the central figure of the Oxford group of philosophers which eventually developed into the Royal Society. As the author of *The Sceptical Chymist* he modified the views of men of science of his time. The book is in the form of a dialogue, in which the author himself takes the title rôle under the name of Carneades, and modestly describes himself as "a young man and a younger chymist." Evelyn refers to him as "that excellent person and great virtuoso . . . that pious admirable Christian, excellent philosopher and my worthy friend," and tells of his visits to him to witness experiments, etc. Everyone had praise for Boyle, except Swift, whom Lord Orrery criticises severely for his behaviour. Aubrey mentions him as "that profound philosopher, accomplished humanist, and excellent divine, I had almost said lay bishop"; adding "His greatest delight is chymistrey . . . and when foreigners come hither, it is one of their curiosities to make him a visit." Anthony Wood, too, says a great deal about him. The popularity of chemistry in his time is shown by his remark: "Of late chymistry begins, as indeed it deserves, to be cultivated by learned men who before despised it; and to be pretended to by many who never cultivated it, that they may be thought not to be ignorant of it."

One of Boyle's assistants was the great Robert Hooke, later operator at the Royal Society, of whom Sir William Bragg has reminded us that he foretold the manufacture of artificial silk from vegetable matter in imitation of the performance of the silk-worm. There is no known portrait of Hooke, but Aubrey's description of him provides a fascinating word-picture:—"He was of middling stature, something crooked, pale-faced, and his face was but little belowe, but his head is lardge; his eie full and popping, and not quick: a grey eie. He has a delicate head of haire, browne, and of an excellent moist curle. . . ."

Boyle's other operator was Ambrose Godfrey Hanckwitz, a native of Hamburg, who acquired a process for making phosphorus,

discovered by Brandt, and after Boyle's death monopolised the European market in that commodity. He had two sons, Boyle and Ambrose, who adopted the surname of Godfrey, and the latter carried on his father's business on the south side of Covent Garden, where it was continued until the nineteenth century under the name of Godfrey & Cooke. He invented a fire extinguisher—a hollow wooden bomb, which was filled with phosphorus, ignited by a fuse, and thrown at flames to suffocate them (*circa*. 1724).

Bishop Burnet, himself a keen chemist, in his *History of His Own Times*, said that "King Charles II understood mechanics and physic; and was a good chymist, and much set on several preparations of mercury, chiefly the fixing it." He names the King's chymists—Dr. Tongue (or Tonge), Kirby, Sir Robert Murray (or Moray) and Dr. (Sir Edmund) King. Evelyn also mentions King and Dr. Edmund Dickenson (1624–1707), of whom he says that though very old and infirm he is "yet continuing chymistry." Becher, who dedicated a book to Dickenson, said that the King found pleasure in watching him at work, and Bishop Sprat tells us that the King assisted at the experiments of the Royal Society, and had under his own roof found place for chemical operators. Indeed, Pepys relates a visit to "the King's little elaboratory, under his closet, a pretty place; and there was a great many chymicall glasses and things, but understood none of them." He saw Rupert's drops—"chymical glasses which brake all to pieces by breaking of a small end, which is a great mystery to me."

Another chemist to Charles II was Lefebure, or Lefevre, who worked at St. James' Palace (1664–1666), and whose courses in Paris were attended by Evelyn and Digby. Bishop Burnet says of the King that shortly before his death "He had a humour in his leg which looked like the beginning of gout. . . . In the state the King was, he not being able to walk, spent much of his time in his laboratory and was running a process for the fixing of mercury. . . . In the morning one Dr. King a physician and a chymist, came as he had been ordered, to wait on him." Dr. King's treatment at first appeared to be successful, but Charles died a few days later, after complaining that he was "burnt up within." It was thought that he had been poisoned, but the actual cause appears to have been apoplexy.

His nephew, Prince Rupert, carried on experiments for about ten years in Barbican, London. He was greatly interested in the proceedings of the Royal Society, introduced mezzotint engraving into England, and Izaak Walton credits him with a method for tempering fish-hooks. He also invented a new method of making gunpowder, as well as pinchbeck or Prince's metal, and a kind of revolver. Evelyn tells us how Prince Rupert witnessed



Augustissimi CAROLI
Gratia ANGLIÆ
FRANCIÆ ET



Secundi Dei
SCOTIÆ &
HIBERNIÆ REGIS
Effigies

KING CHARLES II.

Hertochs Sc.



The Effigies of the
 Duke, Marquess, & Earle
 Coventry, Viscount Vil-
 & Knight of y^e most No



Most Noble, George
 of Buckingham Earle of
 lers, Baron of Whaddon,
 ble order of the Garter;

R. White sculp.

GEORGE VILLIERS, SECOND DUKE OF BUCKINGHAM.

R. White Sc.

Boyle's experiments *in vacuo*. He left chemistry, however, for the love of Mistress Hughes of the King's Playhouse. "From this time," says the Comte Grammont, "Adieu alembics, crucibles, furnaces, and all the black furniture of the forges; a complete farewell to all mathematical instruments and chemical speculations. . . ."

George Villiers, second Duke of Buckingham, according to Burnet, "had no literature; only he was drawn to chymistry; and for some years he thought he was very near finding the philosopher's stone; which had the effect that attends all such men as he was, when they are drawn in, they lay out for it"; and Dryden wrote of him:

"A man so various, that he seem'd to be
Not one, but all mankind's epitome:
Stiff in opinions, always in the wrong;
Was everything by starts, and nothing long;
But in the course of one revolving moon
Was chymist, fiddler, statesman and buffoon."

It is conjectured that he acquired an ascendancy over Charles, through the hours which they spent together in experiments. Pope described him as "Lord of thousands useless ends," and in many respects he was a deplorable character; but he was not altogether a worthless fellow, for he owned a glass works, referred to by Evelyn, and Bishop Sprat gave him the credit for introducing the "art of making glass finer and more serviceable for microscopes and telescopes than that of Venice."

The evidence of Dr. J. F. Helvetius, physician to the Prince of Orange, and a man of note and of high character, is one of the strangest; for having acquired, from a mysterious visitor, a particle of a substance less than half the size of a rape-seed, he and his wife declared that they transmuted with it 6 drachms of lead to pure gold, which was assayed by the Master of the Mint at the Hague.

One more hint of the elixir of life is derived from the story of Signor Gualdi—"the sober Signor" as he was called—who appeared in Venice towards the end of the seventeenth century. He was one of those mysterious attractive men who lived respectably and moderately, seeming to have no visible source of means, and yet always paying cash, and therefore was suspected to be a Rosicrucian. Amazingly well-informed and interesting, he was welcomed in the best society, and thus became acquainted with a nobleman and his daughter, the latter being irresistibly drawn to the accomplished stranger. Gualdi was known to possess a collection of old masters, which the nobleman was curious to see. Gualdi politely invited both father and daughter to his house and, in showing his pictures,

chanced to move a curtain behind which he revealed a portrait of himself. The nobleman, however, felt that the work was undoubtedly that of Titian, who had been dead for at least 200 years. After a moment of reserve, Gualdi resumed his composure, and his visitors departed. The nobleman related the incident to his friends, who determined, if possible, to visit Gualdi's rooms and obtain a view of the portrait; but Gualdi vanished, and from that time was never seen again.

A man of mystery, also towards the end of the seventeenth century, was "Beau Wilson," who kept a magnificent establishment, was always faultlessly dressed, kept beautiful horses and carriages, and spent money lavishly; and yet when he died in a duel in 1694 no possible source of his income could be traced. He was thought to be an alchemist.

Jean Delisle (1670–1711) was a French blacksmith, who, in 1705, professed to transmute base metal into gold, and deceived John, Bishop of Senes (? Sens), to such purpose that the prelate induced Louis XIV to invite him to court. For two years Delisle excused himself from accepting the invitation, but the Bishop obtained a *lettre de cachet* by which the blacksmith was apprehended and consigned to the Bastille. His guards, thinking that he had the philosopher's stone about him, sought to rob and murder him while on the road. He was badly wounded, and in that state imprisoned, but although he refused the aid of surgeons, he recovered temporarily. He declined all inducements, and threats, to get on with the work, and died a few months later from grief and vexation.

Lady Mary Wortley Montagu, writing from Vienna in January, 1717, says: "I don't find that learned men abound here: there is indeed a prodigious number of alchymists at Vienna; the philosopher's stone is the great object of zeal and science; and those who have more reading and capacity than the vulgar, have transported their superstition (shall I call it?) or fanaticism from religion to chymistry; and they believe in a kind of transmutation, which is designed to make the laity as rich as the other kind has made the priesthood. This pestilential passion has ruined several great houses. There is scarcely a man of opulence or fashion that has not an alchymist in his service, and even the Emperor is supposed to be no enemy to this folly in secret, though he has pretended to discourage it in public."

Casanova (1725–1805), who confessed that he was a pretender to the occult sciences and that he had been a searcher after a method of augmenting gold, related, in his memoirs, how he instructed a Greek merchant in the art of augmenting mercury with bismuth and lead, the amalgam being strained through chamois leather. The Greek was deceived, of course, but learned a useful lesson.

From Casanova, also, we learn much of Madame d'Urfé, a rich woman devoted to alchemy, who professed to possess the philosopher's stone and had her own private laboratory, in which the furnace had been kept going at an even heat for fifteen years, in an experiment directed to the production of the powder of projection. Madame d'Urfé was the pupil of Maillot, alias Taliamed, and collected manuscripts and books on alchemy and magic. Casanova also noted that she had a small cask of platinum which had been given to her in 1743 by Vood (Wood). She was acquainted with many chemical processes, but carried her ideas of magic to a degree of madness which was positively revolting. She died from the effects of an overdose of the Universal Medicine and in the firm belief that she would become re-incarnated in the opposite sex.

At the house of this extraordinary woman, Casanova met the Comte St. Germain, who claimed to be three hundred years old, to possess the Universal Medicine, and to be master of the secrets of nature. Casanova thought little of his knowledge of chemistry, but Madame de Pompadour, who was under the impression that St. Germain had given her the water of perpetual youth, introduced him to the King. He was financed by Louis XV and made paints and cosmetics for the ladies of the Court, as well as dyes for the French fabrics. Indeed, it was hoped that, with his aid, the superiority of French materials over those of other countries would be assured. When Casanova again encountered St. Germain, the latter converted a twelve-sols silver piece into pure gold by placing it on a live coal with a small black grain, and was furious at the suggestion that the transmutation was a trick.

St. Germain arrived in London in 1746; was arrested on suspicion as a spy, but soon released. He had travelled in the East and was said to have studied with the adepts of Persia and India. His nationality was unknown; but he had money in plenty—nobody knew from what source—moved in the highest circles and lived in great style. He painted, sang, played the violin and composed songs and an opera. Handsome, with polished manners and elegant dress, he was well informed in chemistry and mineralogy, was clever in the concoction of cosmetics for the ladies, in the dyeing of leather and textiles, and in the preparation of artists' colours. He was thought to have the elixir and the secret of transmutation.

He was in France in 1757, and the King, who experimented in chemistry himself, provided him with a laboratory at Chateau Chambord, where he did wonders with precious stones, fusing small diamonds into large ones and removing flaws. He was sent on a mission to Amsterdam, where, however, his jewels came under suspicion and, then to escape arrest, came again to London; but later returned to France where he was once again received at Court.

He travelled again in Belgium, Russia and Germany, and Italy. At Venice he had a factory for bleaching flax and made artificial silk. He appears to have used many names, and nothing definite is known of his end. Voltaire cynically said "He is a man who never dies and who knows everything." Casanova says that he died in 1782; others say not until 1836; his burial place is unknown.

Then there were Joseph Balsamo, or Cagliostro (1743–1795), the chief character in Dumas' *Memoirs of a Physician*, and Altotas, the alchemist, who together visited the Grand Master Pinto at Malta and worked in his laboratory. In 1776, Cagliostro had a laboratory in London at Whitcomb Street, near Leicester Fields, where he was assisted by Vitellini and claimed to have found the secret of the great elixir. Subsequently, he was entertained by distinguished persons in Germany and Poland, who hoped to gain his secret, which, of course, he kept to himself. Finally, he was imprisoned in the Castle of San Leo, near Montefeltro, where he is thought to have died about 1795.

The histories of St. Germain and Cagliostro are well told in *Mysteries of History*, by C. J. S. Thompson.

In 1783, Dr. James Price, né Higginbottom, a Fellow of the Royal Society, made gold before a number of noblemen and professional men, which was assayed by a goldsmith of Guildford. The Royal Society requested him to repeat the experiment before them, which at first he declined, but later he invited them to his house, and, when only three Fellows attended, turned aside and swallowed a dose of laurel water, from which he died.

Early in the nineteenth century, Kellerman, a Hertfordshire man, had experiments in progress in a barricaded house, and offered to settle the National Debt. He was regarded as mentally unbalanced, and not without reason, for an assistant who had worked with him for several years declared that he had never seen any gold in the place.

Semler, an old professor, was deceived by an assistant, who introduced gold leaf into his apparatus, until one day, when the assistant was away and the professor tried to show a gold-making experiment to a friend, the deception was discovered.

Alchemy is not dead: scarcely a year passes without some wonderful story of gold-making, and charlatans still find their victims, while the genuine chemists of to-day create wealth in a different way, and mostly for other people.

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