

HISTORICAL SECTION

THE HISTORY OF MERCURY.*

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Owing to the great importance of mercury in medicine, pharmacy, dentistry, chemistry and technology, its history should prove of interest to the members of the American Pharmaceutical Association, and especially those attending the sessions of the Historical Section.

The etymology of the word is worth knowing. The present Latin name *Hydrargyrum* is derived from the Greek *Hydrargyros*, which means "Water Silver" or "Liquid Silver." The English name mercury comes from the Latin *Mercurius*, the god of commerce and special patron of messengers and thieves in Roman mythology. This name was evidently given to the metal on account of its mobility and volatility.

The history of mercury dates back to old China, India and Egypt. It is said that the Chinese already used it as a remedy against syphilis. In old documents mercury is mentioned by the great Greek philosopher Aristoteles (384-322 B. C.) and by Theophrastus, the father of botany about 315 B. C. The name *Argentum Vivum*, that is, "Alive Silver" or "Quicksilver," was given to the mercury found in the liquid state. Mercury obtained from cinnabar was named *Hydrargyros* in Greek or *Hydrargyrum* in Latin by Dioscorides (about 50 A. D.), the father of the old *Materia Medica*, who in his works also points out that cinnabar was frequently confused and adulterated with minium, the red oxide of lead. The Ancients supposed that *Argentum Vivum* and *Hydrargyrum* were not alike and possessed different properties. The alchemists named the metal *Mercurius vivus* on account of its properties.

The name *Mercurius* and the association of the metal with the smallest of all major planets, the planet nearest to the sun, is first authentically mentioned in a list of metals by Stephanus of Alexandria in the 7th century. It is, however, well known that the old Babylonians connected the planets and their gods, and with them "Naba" or Mercury was the god of revelations and priestly wisdom. The star-gods were very prominent in the cultus of Babylon.

Plinius, the Roman historian, and Claudius Galenus, the Roman physician-pharmacist, speak of mercury as a poison! According to Pliny, the Romans obtained about 10,000 pounds of cinnabar every year from Almaden in Spain.

The important use of mercury of extracting gold and silver dates back to the Ancients. Pliny records in his 7th book that quicksilver is employed for separating the noble metals from earthy matter and also in gilding.

Mercury was used by the Venetians in the preparation of tin amalgam for silvering mirrors as early as the 16th century.

The Arabs inherited their medical knowledge from the Greeks, the Arabs

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introduced chemicals into pharmacy and medicine, and the Arabian alchemists enriched chemistry with a great many discoveries. Among the latter, Abu-Musa-Dschafar-al-Sofi, commonly called Geber, which is the translation of his middle name (699-756), was the so-called *Magister Magistorum*. He described and used the metal mercury and was perhaps the first to recognize its valuable property to form amalgams, inasmuch as it softens gold. Geber, furthermore, was the first to prepare red precipitate and to sublime mercuric bichloride or corrosive sublimate.

In connection with the history of mercury it might be well to mention Geber's theory as to the chemical composition of metals, which found universal recognition up to the later Middle Ages. All metals consist of sulphur and mercury, which are present in different proportions and in different degrees of purity. Sulphur, on account of its combustibility, causes the alteration of metals when heated, and mercury imparts lustre, malleability, fusibility and other metallic properties.

Rhazes (850-923), the director of the Bagdad Hospital and the Galen of his time, introduced mercurial ointment and employed bichloride externally against the itch. Mesué (925-1015) used mercury in his *Emplastrum expertum ad scabiem* and in various skin diseases. Avicenna (980-1037), the greatest of all the Moorish physicians, considered corrosive sublimate as the most deadly of all poisons, but was the first to express his doubts as to the poisonous nature of the metal, having observed that it passed through the body unchanged and without any bad effects.

During the medieval period mercury became an internal remedy against worms in cattle and sheep. According to such an authority as Sprengel, Pierandrea Matthioli (1501-1577), the celebrated botanist and physician to Archduke Ferdinand and Emperor Maximilian II of Austria, was the first to administer the metal mercury internally to human beings. The internal administration of mercurials was popularized by Paracelsus (1493-1541), whose full name is Philippus Aureolus Theophrastus Paracelsus Bombastus von Hohenheim. This iconoclast (image-breaker) of medicine became the founder of Iatrochemistry or medical chemistry and deserves an everlasting credit for introducing the mercurials into the materia medica as a specific against Morbus Gallicus or syphilis.

"One night with Venus and seven years with Mercury" has been the proverbial adage ever since! Paracelsus administered corrosive sublimate, red precipitate and mercuric nitrate. He also originated the process of preparing red mercuric oxide by heating the nitrate.

As a remedy for syphilis, mercury was employed in the form of fumigations, frictions, ointments and plasters. Mercurial plaster was originated by John de Vigó of Naples, physician to Pope Julius II, when during the summer of 1493 syphilis raged throughout Western Europe.

Beginning with the 15th century, attempts were made to extinguish or "kill" the mercury, that is, to finely subdivide it in preparations containing the metal. It is well acknowledged that mercury in the state of minute subdivision has distinctive physiologic effects and that the more perfectly the mercury is "killed," the more efficient is the compound.

The first mercurial pills were originated about 1540 by Barbarossa II, King of Algiers and admiral to the Turkish fleet. The formula which was sent to Francis I, King of France, contained metallic mercury, which was extinguished with the juice of roses. One of the most recent "killed" mercury preparations is gray powder or mercury with chalk, which was originated by the celebrated London syphilologist, Dr. Jonathan Hutchinson, F.R.S.

Quicksilver girdles or belts were made by the application of mercury with the white of eggs and were at one time employed in the treatment of itch.

In 1759 Prof. Braun, of St. Petersburg, was the first to solidify mercury. During that winter the thermometer registered -34° F. and when Braun placed it into a mixture of snow and nitric acid the mercury sank with great rapidity, owing to its contraction, to -352° F. When the professor took the bulb, he saw what had never been seen before, namely, solid mercury. Instead of the eternal fluid, he had before him a metallic mass, which could be hammered like lead. Since that day mercury was properly classified among the true metals.

A very important markstone in the history of mercury is the performance of Torricelli's Experiment in 1643. It remains an everlasting credit to this pupil of Galileo to determine the pressure of the atmosphere as the equivalent of 30 inches or 760 mm. of mercury. The barometer was the direct result of this experiment.

Gabriel Daniel Fahrenheit, about 1720, introduced the use of mercury in thermometers, in place of alcohol, which was employed by Galileo.

Joseph Priestley (1733-1804) was the first to use metallic mercury as a sealing agent when working with water-soluble gases.

K. W. Hempel (1819-1898), pharmacist and assistant to the great Liebig, originated the volumetric determination of mercury by titrating with Iodine Volumetric Solution.

As an example of the opposition to innovations, even in the enlightened 19th century, let me state that the first dentist who filled teeth with amalgam in New York about 1830, had to flee for his life on account of a rumor that he was poisoning his patients with mercury.

In conclusion, do not let us forget the history of mercury in our own country, which furnishes about one million pounds of mercury annually. The California mines in New Almaden, about 60 miles from San Francisco, have long been known to the Indians, who used the bright red cinnabar as a paint. The commercial value of the mines was first made known by a Mexican named Castilleró, who became the first owner, but at present the mines are in American hands. The California cinnabar yields 70 percent of mercury, while the Spanish ore yields only 30 percent.

This short account of the history of mercury does not pretend to be complete and will be followed by the History of Mercurials. The author, however, will be well repaid if it arouses more interest into that fascinating study of History of Pharmacy and Chemistry, which should be taught in every college of pharmacy, so as to inspire the younger generation with more love for their profession!
