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ALCHEMICAL SYMBOLS.*

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Alchemy, the precursor of chemistry, is of interest to the pharmacist because, inasmuch as it has affected the science of chemistry, it has influenced pharmacy. Some small remnant of alchemical terminology is still to be encountered in pharmaceutical synonyms, *e. g.*, water of Saturn, lunar caustic, crocus Martis, etc.; and

* Section on Historical Pharmacy, A. PH. A., Toronto meeting, 1932.

our present method of abbreviating the chemical elements is derived from alchemy through Geoffroy, Bergman, Dalton and Berzelius. When viewed in the light of their remote antiquity, many of the symbols used by the medieval alchemists were but modern applications of ancient ideographs.

When and where the "royal art" originated is not certainly known. Egypt is generally considered the birthplace of chemistry, or, to be more exact, of experimental alchemy. The Land of Chem (or Cham), as Egypt was called, is the root of our word "chemistry"¹ and the Arabic article "al" prefixed to the same root gives us the word for the "black art." Egyptian priests were known to be adepts in certain chemical arts, and, during the later dynasties, their temples occasionally had laboratories attached.

Frequently overlooked in the discussion of the history of alchemy is the fact that it originated as a philosophical system, "an attempt to apply, in a certain manner, the principles of Mysticism to the things of the physical plane." The experimental development of the philosophy is coeval with the beginnings of the science of chemistry. The abstract teachings of the art are buried in a mass of figurative and symbolic terminology for the purpose of shielding the esoteric instructions from the eyes of the vulgar and profane, for the adepts considered a knowledge of their secrets dangerous for the generality of people;² and then, too, their free doctrine was at variance with established religion.

Because of the liaison between alchemy of the spirit and alchemy of matter, the mystical and symbolic expressions of the former were perpetuated in the latter. In any attempt to discover the origin and trace the development of the various symbols and curious designs with which later alchemistic writings are embellished, we must push back through the mists of antiquity, back to the beginnings of a written language, and even earlier, to the time when man first acquired an intellectual interest in the firmament.

The usual coupling of the metals and planets leads directly to astronomy, the earliest of the sciences. Astrology, which chronologically precedes astronomy, arose from man's interpretation of the changes of the celestial bodies as tokens of good-will or enmity, of favor or displeasure of the gods. What primitive man did not understand he feared; and there was much that he did not understand. Contemplation of the heavens and the realization that their phenomena intimately concern man and all nature placed them in the category of Ultimate Causes. The personification and deification of the sun and moon are older than any written records; the worship of the stars was usually subordinated to the "King and Queen of the heavens."

The worship of earth, air, fire and water sprang from fetichism, and primitive religions passed the worship of these elements down to the Sumerian and Egyptian civilizations, where this worship became a part of the religious system. Every

¹ First use of the term is found in the writings of Zosimus of Panopolis, in Upper Egypt (3rd-4th century).

² Philon the Jew (c. 20 B.C.-40 A.D.) in "De Vita Mosis" particularizing the sciences which Moses studied in Egypt mentions Symbolic Philosophy (written in sacred characters), which the Greeks had heard came from the Assyrians, who transmitted the art of letters, and the Chaldeans, who understood the science of the stars.



phase of nature was, over the course of centuries, provided with a special guardian and controlling deity.

The Greek philosopher, Empedocles of Agrigent (c.440 B.C.), considered fire, air, water and earth (deified as Zeus, Hera, Nestis and Aidoneus) to be the four elements; a fifth, "ether," was added by Aristotle. "These elements were regarded not as different kinds of matter, but rather as different forms of the one original matter, whereby it manifested different properties." The two alchemistic principles generally called "man and woman, red and white, sun and moon, sulphur and mercury," were likewise regarded as properties rather than as substances. "Salt" was later added by Paracelsus as a third elementary principle.

The blending of cosmogonic and religious ideas was well advanced in Babylonia as far back as thirty-five centuries before our era, when specific deities were connected with the sun, moon and planets.¹ The further development of Babylonian astrological views, chiefly under Greek influence, led to the idea that each of the seven metals was under the influence of one of the seven planets; and this idea culminated in the Ptolemaic system which endeavored to bring all the known sciences within the scope of astrology. Thereupon the tendency to use the names or astronomical symbols of the planets for their respective metals followed quite naturally.

The human mind is so constituted that it craves symbols for the representation of its ideas and principles, and this tendency was particularly strong in the peoples of the East. In the astronomical signs for the sun, moon, planets and zodiac we have symbols representing, directly or metaphorically, by form or significance, the objects intended. In the following sections we shall attempt to show how the various symbols for the metals came to be used in their respective forms.

Gold is represented as a circle with or without a point at its center. This symbol is the divine circle associated with the sun. The ancient Sumerians worshipped a sun-god whom they called Utu or Babbar. Their earliest symbol for


this deity was , later (about 2400 B.C.) modified to  which was as

close as they could approximate a circle with cuneiform writing. This sun-worship penetrated prehistoric Egypt, where it became the main religion of the early kings, as early as 3100 B.C., imposing itself on a substratum of totemism. Ra, the sun-god, was designated by the divine circle in the hieroglyphics of the Egyptians,² clearly a personification of the physical sun as was also the Babylonian Shamash, the Greek Helios, the Latin Sol. Identification of Ra with those local deities which he did not supplant resulted in many titles being given to the sun-god.³ The desire of the ancient rulers to be considered divine gave rise to the king-sun

¹ The astronomer-priests noting the number of planetary bodies came to ascribe a particular sacredness to the number seven, and the seven planetary deities held a place of peculiar consequence amid the spirits of heaven and earth in Mesopotamia.

² Breasted says that the most ancient symbol of the sun-god was a pyramid. Amenhotep IV (c.1370 B.C.) gave a new name and symbol to the sun, a disc with rays.

³ Theocrasia was very prevalent in Egypt. The worship of Ra was grafted onto that of Atmu (Tem), while Osiris and Heru-neb ("the golden Horus") and Amen and Chnum and Aton were all fused at different times with the sun-deity.



idea and the sun was frequently referred to as "noble," "king," "lord." Although a female goddess at first, masculine attributes very early supplanted the feminine ones which were then assigned to the moon. The inherent color of gold was likened to the sun, which was described as "golden-eyed," "golden-tongued," "golden-handed," etc. The hieroglyph¹ for the metal gold ² itself is a simplified

form of the winged-disc, a flying-sun deity (Horus) of Upper Egypt.

The Greeks distinguished between physical light and mental illumination—a distinction which placed Helios on one side and Phoebus Apollo on the other. Helios is represented with the solar disc and rays behind his head in an ancient Trojan relief, while Apollo hurling his disc alludes to the course of the sun through the sky.

The old Roman family of the Aurelii were believed by the ancients to have taken their name from the sun, their family deity.³ Although occupying an insignificant part in the religion of the ancient Romans, sun-worship, introduced from the East, received imperial patronage in the first century before our era and spread throughout the empire, where Strabo says the Persian god Mithra was worshipped under the title of the Unconquered Sun. The Roman gods Sol and Apollo were both sun-gods; neither more sharply distinguished from each other than the Greek Helios and Apollo.

The character for silver is a semicircle or a crescent. The gradual waxing and waning of the moon to the primitive mind was personified by woman, and the ancient moon goddesses were mostly mother-deities, spouses of the sun.⁴ The Assyrian Sin and Egyptian Isis (especially in later times) were linked with the moon. The symbol of Sin was a crescent moon; a moon was the head-dress of Isis, the Queen of Heaven, to which the horns of the cow-goddess Hathor (Hetheru) were added after the fusion of the two deities. The hieroglyph for silver

^{*} was a combination of "het" ( -white) and "nub" (gold).

As goddesses of the moon, the Grecian Selene and Artemis stood in the same relation to each other as Helios did to Phoebus Apollo. Selene is figured with a half-moon on her brow, or less frequently with horns.

* Chaucer in Chaucer's Yemanne's Tale says:

"Sol gold is, and Luna silver we threpe;
Mars iren, Mercurie silver we clepe:
Saturnus led, and Jupiter is tin,
And Venus coper, by my faderkin."

The sequence found in the old cuneiform literature of Babylonia is: Sun, Moon, Jupiter (tin), Venus, Saturn, Mercury, Mars.

¹ Assyrian monuments show the sun represented as a disc with long wings similar to the Egyptian hieroglyph.

² The author corrects symbols for gold and silver in saying that the dots should be open circles.—*Editor*.

³ The Latin "aurum" apparently derives from the name of this family, which Frazer says should be Auselii since the old Sabine name for the sun was "ausel."

⁴ The old Babylonian moon-god, Nannar (Enzu), worshipped at Ur was masculine.

The second most precious metal was naturally associated with the moon, wife of the golden sun, since the color of her lustrous beams was very like this metal. The silvery moon was as much the theme of the ancient poets' lays as it is the motif of modern songsters.

Tin is symbolized by the sign of Jupiter Υ . Some have suggested that this symbol represents Jove's thunderbolt, others that it is a modified form of the Greek zeta, the first letter of Zeus's name. We are inclined to a much earlier derivation.

The Roman sky-god, Jupiter (from Zeus pater), and his Grecian counterpart were omnipresent and beneficent deities, controlling all the heavenly phenomena. In Egypt the local god of Thebes, Ammon (Amen), had been raised to the first position in the pantheon, where, as Amen-Ra, he was regularly called "King of the Gods and Lord of the Throne." The ram was sacred to Amen and his head-dress is represented with the roundly curved ram's horn. The combination of the curved horn and the scepter of the god gives us the character for the sky-god.

In the Sumero-Accadian pantheon we find Marduk associated with the planet Jupiter, and although he, too, was called "King of the Heavens," we can adduce no symbol similar to that used for tin.

The symbol for copper, a circle with a cross beneath, is the planetary sign of Venus. According to Bailly, the mirror of the Roman goddess of love and beauty is the source of this symbol. Since the worship of Venus was not general in Rome until later times, an earlier derivation is indicated.

One of the most celebrated shrines of the ancient world was the temple of Aphrodite, at Paphos in Cyprus. This Grecian goddess of love—the love thought to be the cause of productiveness—was intimately associated with the island of Cyprus¹ whose rich copper mines were early exploited by the Phœnicians. In fact, the Phœnician Astarte was the transplanted source of Aphrodite.² The Phœnicians, in turn, had adopted the Babylonian mother-goddess, Ishtar, who embodied the reproductive energies of nature, and who had been identified by the Babylonian astronomers with the planet Venus.

The Egyptian hieroglyph for copper bears no resemblance to any of the symbols or attributes of the mother-goddess, but the ankh or crux ansata, the symbol of life, is extraordinarily like the symbol for copper. This "cross with a handle," borne by almost every Egyptian divinity, represents the male triad and the female unit and is a likely character to associate with the great goddess of fertility.

Lead is characterized by a sickle, the sacred emblem of Saturn. The association of the scythe with the precursor of Saturn, the Grecian god Kronos, is well known. We could elicit no similar emblem from Egyptian or Babylonian deities connected with this planet and, therefore, incline to the belief that the association of this symbol with the planet Saturn does not antedate the Greeks.

Mercury is symbolically represented by a circle, joined to a crescent above and a cross beneath. Some have claimed that this character represents the caduceus which Mercury carried in his hand in his flying embassies for the gods. Mer-

¹ The word "cuprum" is derived from the name of this island.

² Lucian identifies her with Selene, the moon-goddess, and with the planet Venus.

Syrian works. Distortions and mutilations had crept into the copies during the passage of time and because of repeated transcriptions. The obligation of secrecy continued to be stressed,¹ and symbols and secret names finally became legion.

The various symbols underwent very little change during their transmission through the centuries, although new characters were devised to represent the ever-increasing number of substances with which the "pseudo-chemists" experimented in their search for the "elixir" and the "stone." These symbols were a convenient shorthand system at a period when calligraphy was little employed; and so the muddle of arbitrary figures wriggled and twisted over the pages of pharmaceutical and chemical writings down to the 19th century, when they were replaced by our present method of abbreviation.

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¹ The hermetic philosophers continued to write in figures of speech and with symbols because they feared the persecution of the Church. Augustine began the war on symbolic language, the use of which he declared was a characteristic of the Gnostics, and from 325 A.D. on, every departure from the beliefs of the state church was considered a state offense. Pope John XXII, in the 14th century, issued a strong bull against the hermetic art as devil's work. The 15th century saw local decrees against alchemy in Venice and Nuremberg; also by the English Parliament.