








# The Chemical Elements: Their Names, Symbols, and History

## The Seven Metals Known to the Ancients (A cosmic allegory)

"If gold ruste,  
what shall Iren do?"  
Geoffrey Chaucer  
(1340?-1400)  
Canterbury tales,  
prologue, line 500

About 1700 B.C., the Chaldeans invented a cosmology in which the seven days of the week and the seven known heavenly bodies were identified with the seven most famous gods. Part of their argument may have been: gods don't follow rules, planets ("wanderers") don't follow rules, thus planets are gods. This system pleased them so much that they also named the seven known metals after those seven gods. As time went on, other people added further allegorical correlations to the pattern. Their system and its remnants in modern languages is outlined below.








<b>Days of the Week</b>	English name from Anglo-Saxon	<b>Sunday</b> Sun's day	<b>Monday</b> Moon's day	<b>Tuesday</b> Tiw's day	<b>Wednesday</b> Woden's day	<b>Thursday</b> Thor's day	<b>Friday</b> Freya's day	<b>Saturday</b> Saturn's day
	French name	(Dimanche)	Lundi	Mardi	Mercredi	Jeudi	Vendredi	Samedi
	German name	Sonntag	Montag	Dienstag	(Mittwoch)	Donnerstag	Fritag	Samstag
<b>Deities</b>	Roman name	Sun god Apollo	Moon goddess Luna	God of war Mars	God of storms Mercury	God of thunder Jupiter	Goddess of love Venus	God of time (Father time) Saturn
	Greek name	Helios	Selene	Arès	Hermes	Zeus	Aphrodite	Kronos
<b>Moods (astrological)</b>	English adjective	sunny	loony (lunatic)	martial	mercurial	jovial	venereal	saturnine
<b>Planets</b>	Heavenly bodies	Sun	Moon	Mars (the red planet)	Mercury ("fast-moving", always near sun)	Jupiter (a bright, shimmering planet)	Venus	Saturn (a "slow-moving", dull appearance planet)
<b>Symbols</b>	Used by alchemists		 crescent moon	 spear of Mars	 caduceus of Mercury	 thunderbolt of Jove (or 4th planet)	 looking glass of Venus	 scythe of Saturn
<b>Metals</b>	English name	<b>gold</b>	<b>silver</b>	<b>iron</b>	quicksilver	<b>tin</b>	<b>copper</b>	<b>lead</b>
	Latin name	Aurum	Argentum	Ferrum	Hydrargentum	Stannum	Cuprum	Plumbum
	Modern chemical symbol	<b>Au</b>	<b>Ag</b>	<b>Fe</b>	<b>Hg</b>	<b>Sn</b>	<b>Cu</b>	<b>Pb</b>

So, the names of the days of the week are related to seven of the elements having symbols that do not come directly from the English name. Each of these seven (the oldest known metals) do not use letters from the modern name, but rather use letters that come from the ancient name.

Other elements having symbols not derived from the modern name:

Modern name	Symbol	Former name
Antimony	Sb	Stibium (Latin)
Potassium	K	Kalium (Latin)
Sodium	Na	Natrium (Latin)
Tungsten	W	Wolfram (German)

An old (tenth century) manuscript at St. Mark's, Venice, gives the following early list:

Metal	Planet	Symbol
χρυσος gold	Ηλιος Sun	
αργυρος silver	Σεληνη Moon	
μολιβδος lead	Κρονος Saturn	
ηλεκτρος electrum	Zeus Jupiter	
σιδηρος iron	Αρης Mars	
χαλκος copper	Αφροδιτη Venus	
κασιτηρος tin	Ερμης Mercury	

METAL	DATE OF INTRODUCTION	PLACE OF INTRODUCTION
gold	before 5000 B.C.	Armenia-Anatolia
electrum (= Au/Ag alloy)	3800	
native copper	before 5000	Asia
smelted copper	4300	Armenia-Anatolia
bronze	4300	Armenia-Anatolia
lead	3500	
silver (gold free)	2500	Asia Minor?
tin	1800-1600	NW Persia
iron	1400	Anatolia

Gold is for the mistress—silver for the maid—  
Copper for the craftsman, cunning at his trade.  
—Kipling.