



'GARDEN WOODS WIND WATER'

園林風水

YUAN LIN FENG SHUI:
GEOMANTIC HORTICULTURE

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***YUAN LIN FENG SHUI:* GEOMANTIC HORTICULTURE**

an expansion of the Geomancy book of

**道占 *DAOZHAN:* DIVINATION RESOURCE
FOR TAOIST CALCULATION**

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PREFACE TO ‘GARDEN WOODS WIND WATER’ (園林風水 YUAN LIN FENG SHUI): GEOMANTIC HORTICULTURE

The inspiration to compile and write this reference text on the classical Chinese ‘garden-landscape’ (園林 *yuan lin*), and build a traditional *feng shui* plant table, came through the necessity to more deeply understand and hence expand on the “Garden” feature of the “Geomancy” section of *Daozhan: Divination Resource for Taoist Calculation*, (3rd edition).

The objectives of this text, ‘Garden Woods Wind Water’ (園林風水 *Yuan Lin Feng Shui*), include:

- Definition: to expand upon a considered feature, the garden, in the divinatory practice of Chinese-Taoist geomancy (堪輿 *Kanyu*; 風水 *Feng Shui*);
- Introduction: to describe the classical Chinese landscape garden, within the context of geomancy, by term, form, function, user or participant, and feature;
- History: to summarize and outline historical developments and examples of Chinese geomantic (風水 *feng shui*) gardening/horticulture, which have been in existence since the inception of Chinese civilization (Shang dynasty), and have influenced the creation of the modern Western (ie. European and American) gardens in recent history; this section includes explanations on-
 - the interchange between the classical Chinese garden and Chinese art and literature;
 - the classical Chinese garden taking a natural philosophical direction, or following the ecstatic Taoist path towards immortality;
 - the influence of the classical Chinese garden abroad (ie. Japan, Europe) through the visitation of the Chinese gardens, cultural exchanges, and the initial writings on Chinese *feng shui* gardens by Westerners
- Design: to summarize and outline the main ideas behind the design of the Chinese classical garden, or scholar garden, through the identification and explanation of:
 - the various types of garden design features
 - the five basic design principles
 - some basic guidelines
 - planning aspects
- Traditional Chinese *Feng Shui* Plants (table): to build a quick reference guide for traditional plants native to China, in an outlined tabular format, which compiles pertinent plant information (see criteria below) for geomantic use; the table is divided into 3 columns:
 - i) identification: names, photographs and drawings
 - names: <given in> common English; taxonomy/etymology- scientific classification by species, genus, and family (in Latin, Greek, or other botanical/pharmaceutical names of origin); traditional (or simplified) Chinese (in Mandarin and phonetically in *pinyin*), as referenced in Traditional Chinese Medicine (TCM);
 - photographs and drawings: all figures are sourced beneath
 - ii) energetics: polarity, symbolism
 - polarity: *yin* or *yang* orientation
 - symbolism: geomantic affect or aspect representation; some plants have seasonal or elemental significations (eg. ‘Four Gentlemen’ or ‘Three Friends of Winter’)
 - iii) description (of species and genus): plant type, foliage, landscape uses, native habitat, general description; cultivation; *feng shui* use;
 - plant type: tree, shrub, grass, aquatic, etc.
 - foliage: deciduous or evergreen
 - landscape uses: functional, ornamental, etc.
 - native habitat: by nation or region; some entries may also include the plant’s fossil record
 - general description: arrangement, color, size range, shape, texture, season of interest/appearance; for the root/bark, leaf, flower, fruit/cone/nut/seed; and their

known individual plant part uses (eg. culinary, medical, cosmetic, etc.); some plant entries may also include photographs

- cultivation: propagation; planting method; preferred location; planting season; sunlight/shade; soil; moisture and watering; pruning; varieties/cultivars; most plant entries may also include information on uses, cultural influence, etc.
- *feng shui*: explains how to ideally apply the plant in the geomantic practice of *feng shui*

This text depicts classical China as an ancient origin for the geomantic art of gardening or horticulture, used not only for encouraging natural ornamental beauty to inspire the ecstatic quest for immortality, but also for the more practical purposes of producing food, medicine, art, and influencing culture. Perhaps this ancient horticultural origin was due to the fact that many of the plants used and celebrated in gardening today are native to China.

GEOMANTIC HORTICULTURE: Landscape Gardens using *Feng Shui*

The garden or yard ['park'; 'landscape garden'; '<garden-woods>' (園林 *yuan lin*); 'China garden-woods' (中國園林 *zhong guo yuan lin*); 'China classical garden-woods' (中國古典園林 *zhong guo gu dian yuan lin*)], or specifically, the 'Chinese <*feng shui*> landscape garden' (中國園林 *zhong guo yuan lin*), evolving for 3000+ years, included the vast pleasure gardens of the Chinese emperors and imperial family members, and the intimate secluded gardens used for reflection by scholars, poets, artists, former officials, soldiers, and merchants. The *yuanlin* was the creation of an idealized miniature landscape expressing the harmony intended to exist between nature and humanity. A typical *yuanlin* is enclosed by walls, and includes ponds, rockeries, trees, flowers, halls and pavilions, connected by winding paths and zig-zagging galleries. The garden experience participant moves through a series of thoughtfully composed landscape scenes.

History of the Chinese Landscape Garden:

- Shang d. (1600-1046 BCE): earliest recorded gardens in the Yellow r. valley; enclosed parks where nobles hunted game, and fruit and vegetables were grown; early inscriptions, carved on tortoise shells, used 3 different characters for 'garden' [Chin.: 'park' <where birds and animals are kept> (囿 *you*); 'orchard' <for plants> (圃 *pu*); 'garden' (園 *yuan*)]
<examples:>
 - 'Terrace, Pond and Park of the Spirit' (靈臺 靈沼 靈囿 *Lingtai, Lingzhao, Lingyou*): royal garden of the late Shang d., constructed by king Wenwang, west of the capital city, Yin; described in the 'Classic of Poetry' (詩經 *Shijing*)
 - 'Dunes of Sand' (沙丘 *Shaqiu*): build by the last Shang d. ruler, king Zhou (1075-1046 BCE); it consisted of a large earth terrace (臺 *tai*), which served as an observation platform in the center of a large square park; the 'Records of the Grand Historian' (史記 *Shiji*) (Chiu), described one of the most famous features of the garden, the 'Wine Pool and Meat Forest' (酒池肉林 *Jiuchi Roulin*); this term carried through to modern times to mean 'debauchery sumptuous entertainment'
- Spring and Autumn period (722-481 BCE):
 - 'Terrace of Shanghua' (上華台 *Shanghua tai*): a garden w/ lavish palaces was built (535 BCE) by king Jing of the Zhou d.;
 - 'Terrace of Gusu' (姑蘇台 *Gusu tai*): more elaborate garden (505 BCE); located on a mountain side; included a series of terraces connected by galleries, and a lake where azure dragon-like boats navigated; the highest terrace had a view of Lake Tai (Chiu);
- Warring States (480-222 BCE):
 - the legend of *Penglai* Isle of the Immortals (蓬萊仙島 *Penglai xiandao*): in a tale in the 'Classic of Mountains and Seas' (山海經 *Shan Hai Jing*) (500-200 BCE), described a peak called 'Mount *Penglai* [tr. 'fleabane' (fam. *Asteraceae*); 'rampant'; (蓬 *peng*); weed plant (萊 *lai*); 'isle' (仙 *dao*) of the 'immortals' (島 *xian*); (蓬萊仙島 *Penglai xiandao*); (see also 'Cosmology' section)] located on one of three islands at the eastern end of the Bohai Sea (between China and Korea), which was the residence of the 8 Immortals; on this island, there were palaces of gold and silver, w/ jewels on the trees; and no pain, nor winter, wine glasses and rice bowls were always full, and fruits of eternal life; miniatures of *Penglai* were recreated in many classical Chinese gardens; (see 'Ying Zheng' below)



Yuan Jiang (1680-1730), Penglai island

- Qin d. (221-206 BCE): the character for all types of gardens became '園 *yuan*' (a small picture of a garden; enclosed w/in a square, which can represent a wall, are the interior symbols representing the site plan- the central small square representing a pond, and a symbol for plantation);
 - 'Lake of the Orchids' (蘭池公 *Lanchi gong*): Ying Zheng (259-210 BCE; 1st emperor of Qin) conquered rival states and unified China under the Qin empire; after becoming aware of the legend of *Penglai*, he dispatched emissaries to discover the islands and retrieve the elixir of immortality, without success; at his palace near Xianyang, he created a large garden called, 'Lake <pond; moat; reservoir> of the Orchids' (蘭池公 *Lanchi gong*), w/ a replica of Mount *Penglai* on the island in the lake, symbolizing his search for paradise; after the fall of the Qin empire (206 BCE), even though the capital and garden were completely destroyed, the legend of its existence continued to inspire Chinese gardens- a single or group of islands w/ an artificial mountain representing the island of the 8 Immortals; (Chiu)
- Han d. (206 BCE-220 CE): emperor Wudi built a new imperial capital at Chang'an w/ an imperial garden which combined features of botanical and zoological gardens, as well as traditional hunting grounds;
 - 'Lake of Supreme Essence' (太精池 *Taijingchi*): the name was inspired by the Daoist classic, '<Writings of> Master Lie' (列子 *Liezi*) (5-4th c. BCE), another version of the Isles of the Immortals, Wudi created a replica- a large artificial lake with 3 artificial islands in the center; the park was later destroyed, but its memory continued to influence Chinese garden design for centuries
 - 'Garden of General Liang Ji' (將梁冀園 *Jiang Liang Ji Yuan*): built under emperor Shun (125-144 CE); during his immense landscape garden w/ artificial mountains, ravines, and forests, filled w/ rare birds and domesticated wild animals;
 - 'Rabbit Garden' (兔園 *Tu Yuan*): built during the Western Han d. (206 BCE-9 CE); the 1st known rock garden
 - Gardens for poets and scholars (221-618 CE: Three Kingdoms; Six d.; Southern and Northern d.; Northern d.): period of political instability; Buddhism was introduced into China by emperor Ming (57-75 CE), and spread rapidly; Luoyang, the capital of the Northern Wei d., had 1300+ Buddhist temples, each of which had its own small garden;

- 'Autumn Peak Cave'
- 'Gatehouse'
- 'In Company with a Ravine Hall': a 3-bay hall w/ front portico and an attached courtyard w/ covered corridor on 3 sides;
- 'Housing the Mountain with a Half-Filled Pool': a square plan pavilion on top of the grotto;
- 'Make-Up Autumn Gallery': a 3-bay hall on top of the grotto w/ full gables and rustic design;
- 'Mountain Villa': the main structure, named after the garden; a 3-bay hall w/ a portico on all 4 sides;
- 'Putting a Question to Spring Pavilion': a square plan pavilion on piers over 'Flying Snow Pool';
- 'Side Building': an enclosed multilevel gallery built along the west wall of the garden;
- 'Flying Snow Spring'

The Classical Chinese Garden Interchange in Chinese Art and Literature:

The classical Chinese landscape garden has been a predominant inspiration on Chinese art and literature, and inversely, human creative endeavors have inspired artificial designs to follow the knowledge of nature (see examples of inspiration throughout the 'History of the Chinese landscape garden' below); historical benchmarks in Chinese art and literature assoc. w/ landscape gardening include:

- 'landscape <mountains and water> painting' (山水畫 *shanshuihua*); (5th c. CE: Liu Song d.)
- 'fields and gardens <countryside; rural>' (田園 *tianyuan*); (8th c. CE: Tang d.): genre of poetry that reached its peak through the poetry of Wang Wei (701-61 CE), Han Yu (768-824 CE), and Li Bai (701-62)
- 'Garden Treatise,' or 'The Craft of Gardens' (園冶 *Yuanye*), a work on garden design/architecture (1631 CE: Ming d.), by Ji Cheng (1582-1642 CE: Ming d.), described 'borrowed scenery' (借景 *jiejing*) as the most fundamental idea or essential technique to be applied to landscape/garden design
- 'Dream of the Red Chamber' (紅樓夢 *Hong Lou Meng*); aka. 'The Story/Records of the Stone' (石頭記 *Shi tou Ji*); (pub. 1791; Qing d.); composed by Cao Xueqin; one of China's 'Four Great Classical Novels/Masterpieces' (四大名著 *Si da mingzhu*)

Natural Philosophical Direction: Taoist Path Towards Immortality

The classical Chinese garden had multiple functions (Ebrey): a) social activities: banquets, celebrations, reunions, and romance; b) meditation: solitude, contemplation; c) art and literature: painting, poetry, calligraphy, music, and studying classical texts; a place for poets to become happily drunk on wine (Chiu); d) a place for drinking tea (Chiu); e) a showcase to display the aesthetic taste of the owner (Metropolitan Museum of Art, New York); f) philosophical message-

- Taoism (after Han d.): gardens were constructed as retreats for government officials who were either impeached or escaped the corruption of the imperial court; or simply, those who chose to pursue the Taoist ideals of disengaging from mundane concerns to return to follow the way of nature; (Ebrey, Origins)
Taoists believe that longevity (physical immortality) and enlightenment (spiritual immortality) can be achieved by meditating on the unified <center of> creation, by integrating the self with the cosmos (ie. nature), or becoming <living in harmony with> the Tao (Stepanova). As a consequence of following the Taoist ideal, the classical Chinese garden intended to evoke the feeling of ecstatically wandering through a natural landscape, on a quest for immortality (ie. invoking the- Taoist realm of the immortals; or the Confucianist golden age of scholarship); (Metropolitan Museum of Art); (Wong); (Chiu).
In Taoist cosmology, the concept of duality (陽 *yang* and 陰 *yin*) was used to identify opposite yet complementary agents within the process of erosion: water (陽 *yang*) wearing down solid rocks (陰 *yin*). The deeply eroded rocks from Lake Tai, used in the classical garden, demonstrated this principle.

Influence of the Classical Chinese Garden:

- Influence on the Japanese garden (via Korea; before 600 CE):
 - Asuka period (538-710 CE; or 592-645 CE):
 - Shotoku (607 CE), Japanese crown prince: sent a diplomatic mission to the Chinese court, initiating a cultural exchange that would last for centuries; hundreds of Japanese scholars were sent to learn the Chinese language, political system, and culture; (Baridon)
 - Ono no Imoko (late 6th-early 7th c.CE), Japanese ambassador to China: reported great landscape gardens of the Chinese emperor to the Japanese court, which had profound influence on the development of Japanese landscape design; (Chen, 2011)
 - Nara period (710-794 CE: when the Japanese capital was located in Nara; and later in Heian): using the Chinese precedent, the Japanese court created large landscape gardens w/ lakes and pavilions for aristocrats promenade and drift leisurely in small boats, and more intimate gardens were created for contemplation and religious meditation; (Baridon)
 - Myoan Eisai/Yosai (1141-1215 CE): imported the Rinzaï school of Zen Buddhism and green tea from China to Japan; green tea was originally used to keep monks awake during long meditation, and provided the foundation for the Japanese tea ceremony, which became an important ritual performed in Japanese gardens; these imports led to the acceptance of the Chinese 'dry garden' and the development of the Japanese rock garden, or Zen garden (exemplified in the garden of Ryoan-ji); (Baridon)
 - Kamakura period (1185-1333 CE) and Muromachi period (1336-1573 CE): by following its own aesthetic principles (ie. minimalism), the Japanese garden became more austere than the Chinese garden; (Baridon)
 - Muso Soseki (1275-1351 CE): created the 'Moss Garden' (苔寺 *Kokedera*) in Kyoto; the garden included a recreation of the isle of the 8 immortals, *Penglai*, called *Horai* in Japanese; (Baridon)
- Influence on Europe:
 - Marco Polo (1254-1324 CE): Venetian merchant and traveler; visited the summer palace of Kublai Khan at Xanadu; the first known European to describe the Chinese garden; the garden of Kublai Khan had inspiration later on European culture- English romantic poem 'Kubla Khan,' by Samuel Taylor Coleridge (1772-1834); (Coleridge)
Marco Polo also described the gardens of the imperial palace in Khanbaliq (the Mongol name for the city which eventually became Beijing), having ramparts, balustrades, and pavilions surrounding a deep lake w/ fish, swans, and other aquatic birds; and at the center was an artificial hill (100 steps high and 1000 steps around), covered w/ evergreen trees and decorated w/ green azurite stones; (Baridon)
 - Francis Xavier (1506-1552 CE): the first Jesuit priest (co-founder of the Society of Jesus; 1534); arrived in China (1552);
 - the priest Matteo Ricci (1552-1610) received permission to settle in Beijing (1601);
 - Jesuit priests began sending reports of Chinese culture and gardens to Europe;
 - Louis Le Comte (1655-1728), French Jesuit priest, who participated in their mission to China (1687; arrived 1688), under Jean de Fontaney; he was later appointed as the mathematician of the king of France (1696); Le Comte described (in *Nouveaux Memoires sur l'etat present de la Chine*) Chinese gardens to contain grottos, artificial hills and piled rocks to mimic nature, and did not use geometrical arrangements;
 - Chinoiserie (18th c.CE): Chinese vases and other decorative objects began to arrive in Europe- surge of popularity for Chinoiserie [loan word from French; def.: the European interpretation and imitation of Chinese and East Asian artistic traditions, esp. decorative arts, garden design, architecture, literature, theatre, and music]; (Impei)
 - Jean-Antoine Watteau (1684-1721): French painter and architect; painted Chinese scenes as he imagined; (Impei)
 - Françoise Boucher (1703-1770): French painter, draughtsman, and etcher; painted Chinese scenes as imagined; (Impei)

- Catherine the Great (1729-1796): empress of Russia (1762-1796); decorated a room in her palace in Chinese style; (see also 'Sir William Chambers' below); (Impei)
 - Jean Denis Attiret [Chin.: 'king devoted to honesty' (王致誠 Wang Zhi Cheng)] (1702-1768): French Jesuit painter and missionary to China (1738), where he became a court painter for the Qianlong emperor (see also 'initial writings' below); (Spence)
 - "English Garden" (18th c.CE): first Chinese house in the English garden at Stowe House (Buckinghamshire); (see also 'initial writings' below);
 - "Anglo-Chinoise" style of garden: many European critics disliked the term "English Garden" so the term, "Anglo-Chinoise" became more accurately preferred; gradually (end of 19th c.CE), parks throughout Europe had picturesque Chinese pagodas, pavilions, or bridges; but there were very few European gardens that expressed the more subtle and profound natural aesthetics of the real Chinese garden;
- Initial writings and examples of Chinese *feng shui* gardens by westerners: commencing a garden revolution in the West
- There are many famous Chinese *feng shui* garden examples that influenced the West (see 'History of the Chinese landscape garden' above). For many centuries, the gardens of China were secret places, excluding "barbarians" and "foreign devils." Reports of their existence from Westerners did not occur until the middle of the 18th century (see below);
- Sir William Temple, 1st Baronet (1628-1699): English diplomat and essayist; wrote an essay, 'Upon the garden of Epicurus' (1692), which contrasted European symmetrical garden theories with irregular and asymmetrical compositions in gardens from China; Temple never visited China, but based his writings on the works of European travelers there; (Chang)
 - Joseph Addison (1672-1719): essayist, poet, playwright, and politician; Temple's notes were cited by Addison in an essay (1712), which bashed English gardeners, who tried to copy French symmetrical gardens, instead of imitating nature; (Baridon)
 - Jean Denis Attiret: French Jesuit priest; was allowed entry into the gardens of the Qianlong emperor in Beijing (1749), 'Garden of Perfect Brightness' (圓明園 Yuanming Yuan); the priest's letter, was sent back to Paris, and published; it described the garden as a natural place where the emperor and (without straight lines and right angles) his courtiers could relax; Attiret wrote,

"One admires the art with which this irregularity is carried out. Everything is in good taste, and so well arranged, that there is not a single view from which all the beauty can be seen; you have to see it piece by piece."

"Everything is truly great and beautiful, both as to the design and the execution: and <the gardens> struck me the more, because I had never seen anything that bore any manner of resemblance to them, in any part of the world that I had been before." (Chang)
 - German garden (Alsatia; late 19th c.) at house of the postmaster of Allkirk
 - Sir William Chambers (1723-1796): lived in China (1745-7); he wrote a book, 'The Drawings, Buildings, Furniture, Habits, Machines and Utensils of the Chinese' (1757); he urged western garden designers to use Chinese stylistic conventions (eg. concealment, asymmetry, naturalism, and full of surprise); Chambers considered the designs of Capability/Lancelot Brown, the leading landscape architect in England, to be boring; he published 'Dissertation on Oriental Gardening' (1772), which explains how the Chinese garden imitates the "irregularities" of nature; he misnomered the term '*feng shui*' as "*shanawadgi*";
- The *Feng Shui* philosophy applied to the planting of trees, is guided by many rules, and founded on strict reason and long observation; [Sir William Chambers. 'A Dissertation on Oriental Gardening.' (1772)]:
- 'The perfection of trees for ornamental gardening': consists of- a) size; b) beauty; c) form; d) bark character; e) foliage quantity, shape; f) early appearance in spring; and long duration in autumn; g) growth speed; h) hardiness to endure the harshness of heat, cold, drought, or moisture; i) making no litter by falling blossom in spring or

summer; j) strength of branches to resist undamaged, the violence of wind and tempests

- 'The perfection of shrubs': k) beauty; l) durability; or long succession of their blossom; m) appearance (before and after bloom)
- General criteria for trees and shrubs: a) color; b) form; c) foliage; d) both trees and shrubs should be harmoniously assembled in the garden; e) never mix horizontal elements w/ vertical/upright ones (ie. bamboo), because the intersecting branches form the visual of opposition;

he built a Chinese pagoda (1761) in Kew Gardens (London), along w/ a mosque, a temple of the Sun, a ruined arch, and Palladian bridge; Chambers commenced a trend of Chinese structures (esp. pagoda) throughout Europe-

- Louis Carrogis Carmontelle (1717-1806): French dramatist, painter, architect, set designer; designer of one of the earliest French landscape gardens, Parc Monceau (Paris), where he added a Chinese pavilion (1772); he also invented the 'transparent,' an early prototype of the magic lantern and motion picture, for viewing moving bands of landscape paintings;
 - Duc de Choiseul: built a pagoda on his estate at Chanteloup (1775-8; France);
 - Catherine the Great, empress: built a pagoda (1778-1786) in the garden of her palace (Tsarkoye Selo; near St. Petersburg); (Orloff and Chvidkovski)
- J.C. Loudon: 'The Encyclopedia of Gardening' (1860); a tome of horticulture and landscape gardening around the world; an illustration of a Chinese-Cantonese suburban villa and garden with trelliswork, walls, and plant containers
- Olivier de Serres: wrote in the 'Gardener's Magazine' (June, 1890), about a garden he had recently visited, in Beijing
- Florence Ayscough: article, 'The Chinese Idea of a Garden,' published in 'The China Journal' (July, 1935)
- Dorothy Graham: 'Chinese Gardens' (1938)
- Henry Inn and S.C. Lu: 'Chinese Houses and Gardens' (1940)
- Osvald Siren: 'Gardens of China' (1949)
- Ernest H. Wilson: China: Mother of Gardens (1971)
- Edwin T. Morris: 'The Gardens of China: Art, Architecture and Meanings' (1984)

Design of the Classical Chinese Garden: Scholar Gardens

The classical Chinese garden was meant to be incrementally experienced by presenting visitors with a series of framed views into harmonious compositions of natural scenery (eg. a pond, a rock, a bamboo grove, a blossoming tree, or a distant mountain peak or pagoda). The garden designer Ji Cheng (1582-1642: Ming d.) recommended that "the vulgar and the common" should be removed from vision and "splendor" be included. Ji Cheng wrote in 'The Craft of Gardens' (園冶 *Yuanye*),

"The spirit and the charm of mountains and forests must be studied in depth... ..only the knowledge of the real permits the creation of the artificial, so that the work created possesses the spirit of the real, in part because of divine inspiration, but especially because of human effort." (Ji Cheng as quoted in Baridon)

French Jesuit, Pere Jean Denis Attiret (see above) observed that the classical Chinese garden was designed with intentional irregularity, beautiful disorder, and asymmetry. The classical Chinese garden can vary in size, with the design principles being applicable to any size. (Baridon)

In Chinese scholar gardens, the central building was usually a library or study, connected by galleries with other pavilions which served as observation points of specific garden features; structures also aided the division of the garden into separate scenes or landscapes. The other essential elements were plants, trees, and rocks, which were carefully composed into miniature landscapes. Scholar gardens often used the method, 'borrowed scenery' (借景 *jiejing*) (Feng), where unexpected views to scenery outside the garden (eg. mountain peaks), seemed to be an

extension of the garden itself. The four essential elements of the classical Chinese garden are: i) plants- flowers and trees; ii) water; iii) rocks; iv) architecture.

Garden Design Features:

- 'architecture' (結構 *jiegou*): Chinese classical gardens are filled with architecture (eg. halls, pavilions, temples, galleries, bridges, kiosks, and towers), which typically occupies a large portion of the total area; these structures are designed for viewing particular scenes from different perspectives within the garden (Feng); the garden structures are designed to harmonize with the <natural> garden environment, and not to dominate the landscape; some traditional buildings/structures <pavilions> in classical Chinese gardens include:
 - 'ceremony hall <room; pavilion>' (亭 *ting*): a building used for family celebrations; usually with an interior courtyard; not far from the entrance gate
 - 'principal pavilion <large room>' (大亭 *dating*): for guest reception, banquets, and holiday celebrations (eg. New Years); it is often in the form of a veranda around the building to provide shade
 - 'flower pavilion <room>' (花亭 *huating*): located near the residence; this structure has a rear courtyard filled with flowers, plants, and a small rock garden
 - 'four directions <sides; doors; faces> pavilion <room>' (四面亭 *simianting*): this building has folding or movable walls for opening a panoramic <omni-directional> view of the garden
 - 'lotus <flower> pavilion <room>' (荷花亭 *hehuating*): this structure is built next to a lotus pond for viewing blossoms and smelling their aroma
 - 'mandarin duck <affectionate couple> pavilion <room>' (鸞鴦亭 *yuanyangting*) (Chiu): this structure is divided into 2 sections:
 - i) north facing section: used in summer;
 - ii) south facing section: used in winter; faces a lotus pond, which cools down the site; has a courtyard w/ pine trees, and plum trees, whose blossoms announce the arrival of spring
 - small 'pavilion' (亭 *ting*): designed to provide shelter (from the sun or rain), for contemplating a scene (eg. where- the dawn can be watched; the moonlight shines on water; autumn foliage is best seen; rain can be best heard falling on banana leaves; wind whistles through bamboo stalks), reciting a poem, taking advantage of a breeze, resting, or meditating; small pavilions are sometimes attached to the exterior wall of another building, or stand alone selected garden view points (eg. near a pond; hill top); often open on 3 sides;
 - 'storied building <tower>' (樓 *lou*); '2-storied pavilion' (閣 *ge*): usually located at the edge of the garden; the lower story is made of stone; the upper story (2/3rds the H of the ground floor) provided a view to distant scenery;
 - 'stone/marble pavilion in the form of a boat' (石舫 *shifang*); 'pavilion' (榭 *xie*); 'room; house' (房 *fang*): these generally had 3 part:
 - a kiosk w/ winged gables at the front;
 - a more intimate hall in the center;
 - a 2-story structure w/ a panoramic view of the pond at the rear
 - 'courtyard' (院 *yuan*): some gardens contain small enclosed courtyards, offering quiet and solitude for meditation, painting, drinking tea, or playing music
 - 'gallery' (廊 *lang*): narrow covered corridors which connect buildings, protect the users from the rain or sunlight, and also divide the garden into various sections; galleries are rarely straight, but usually zigzag, undulate, follow a wall or edge of a pond, or climb a hill; galleries have small windows, which may be of various geometric shapes (eg. circle, square, hexagon, etc.), with or without lattice work, giving views of scenery to users passing by; the winding path and zig-zag gallery illustrate the Chinese proverb, "By detours, access to secrets." ['Dream of the Red Chamber' (紅樓夢 *Hong Lou Meng*)]

- 'window' (窗 *chuang*) and 'door; gate' (門 *men*): may be of various shapes (round/moon, oval, hexagonal, octagonal, vase-shaped, fruit-shaped, fan-shaped, etc.); may have ornamental ceramic frames; windows may precisely frame an intimate garden scene (eg. a pine tree branch, a plum tree blossoming, etc.); (Chiu)
- 'bridge' (橋 *qiao*): rarely straight, but zigzag, or arch over waterways; providing view points of the garden; bridges are often constructed from rough timber or stone-slab raised pathways; some bridges are brightly painted or lacquered to provide a light feeling in the garden; (Harte)
- '<study> hut' (書房 *shufang*): small, austere houses of solitude or meditation, in the form of a fishing hut, or an isolated building serving as library or study; (Chiu)
- 'artificial mountains' and 'rockery' (假山 *jiashan*): the mountain peak was a symbol of virtue, stability, and endurance in Confucianism and the 'Book of Changes' (易經 *Yijing*) (Chiu); the mountain peak on an island was symbolic of the legendary Isle of the Immortals, and became a central feature in many classical Chinese gardens; (exemplary examples are given below; see also 'History of the Chinese landscape garden' above for details of examples);
 - origin: the first known rock garden was built (206 BCE-9 CE: during the Western Han d.); 'Rabbit Garden' (兔園 *Tu Yuan*); (Tsu)
 - art object: the rock became an object of art (Tang d.), evaluated by 'form' (形 *xing*), 'substance' (質 *zhi*), 'color' (色 *se*), and 'texture' (理 *li*), and other factors (eg. softness, transparency, etc.);
 - 'Lake Tai Stones' (太湖石 *Taihushi*): famous rocks of 'Lake Tai,' called 'porous <limestone sculpted by erosion> stones' (太湖石 *taihushi*) rocks (produced at the foot of Dongting mt. in Suzhou, near Lake Tai), were written about in the 'Records of Lake Tai Stones' (太湖石記 *Taihu Shiji*), by Bo Juyi (772-846 CE);



Daderot (2009), a scholar rock from Lake Tai in the Beijing Botanical Garden

- mounds: artificial mountains made mostly of earth (Song d.); emperor Huizong (1100-1125 CE) almost ruined the Song d. economy, when he destroyed the bridges of the

the *qi* into a beneficial curve, which generates a sense of invitation (while straight driveways cause earth energy to pass by, creating an unwelcoming impression; coldness and dampness of the spirit is caused by an absence of the *qi*)

- containers <for plants>: advantages- function to restrain growth; prevents overgrowth; garden design can be changed regularly (ie. weekly); pot shapes are considered as important as color and plant mix for a balanced composition in design; a variety of pot sizes can be used to accommodate plants of different heights and shapes;
- small fountain (or bird bath): attracts wildlife, which creates good fortune; may be placed in the middle of the path to divert *sha qi*;
- only a small space is available or window box: the regular interchanging of flowering plants through the seasons of the year is recommended

Fragrance of Flowers:

- Taoist method: European missionaries and merchant traders in China were in awe-inspired by the flower displays (ie. peonies, chrysanthemum, lilies, asters, magnolias, wisteria, camellias, hydrangeas, azaleas, passion-flowers, roses); the Chinese geomantic garden with beautiful flowers and trees, follows the 'way/method' (道 *dao*) of nature (sim. permaculture); as a Daoist adept uses free will to follow destiny;
- flower garden (花園 *hua yuan*): considered a very important element in the geomantic garden; must have a wall; could be in the form of a 'flower bed <garden; orchard>' (花圃 *hua pu*), where flowers grow in clusters throughout the garden;
 - <as described in the> 'Dream of the Red Chamber' (紅樓夢 *Hong Lou Meng*); aka. 'The Story/Records of the Stone' (石頭記 *Shi tou Ji*); pub. 1791; composed by Cao Xueqin; one of China's 'Four Great Classical Novels/Masterpieces' (四大名著 *Si da mingzhu*);
 - 'dream chamber <floor; multi-storied building>' (夢樓 *meng lou*)
- diversity of plant species in China: the abundance of botany in China has been attributed to the continuous development of plant species in the mountainous regions, which avoided the devastation or the polar ice caps <during the ice age>; later (for millenia), the diversity of flora has combined species from the sub-tropical south, the cold, dry north, and the alpine species of the Himalayan foothills;
- Taoist garden countering Confucian ideology: To counteract the Confucian ideological advocacy for the mandatory duty of taking public office, many Chinese people who disagreed with or were bored <with the duty>, turned to Taoism, which maintained a naturalist, yet opposing view; the opposition resulted in a widespread movement within the aristocracy and intelligentsia to oppose <the Confucianist duty to the state> with the creation of gardens and growing flowers; this naturalist activity was believed to bring the practitioner into harmony with nature, and therefore, provide protection from evil effects (bad luck/*karma*);
- ancient art form: Gardening (originating during the Zhou d.) is considered as one of the seven main art types of ancient China (along with folk art, literature, visual art, music, performing arts, and architecture);
- Eight Immortals: both Han Xiangzi and Lan Caihe were designated by flower emblems (ie. a bouquet and basket <of flowers>, respectively), which symbolized the art of gardening
- early Chinese gardens: were created by warriors to please women, for their enjoyment while the men were away campaigning in war
- floral bloom calendar <for *feng shui*>: each month <of the year> is symbolized by a prominent coinciding seasonal floral bloom; a floral bloom for a particular month can be used as decoration to enhance good fortune; (these designations are based on the various literary names of the months within the 'Farmer's Solar Calendar'; consistent floral designations are found with the months of July and October)
 - i) January: Prunus/ Plum blossom
 - ii) February: Peach blossom
 - iii) March: Peony
 - iv) April: Cherry blossom

- v) May: Magnolia
- vi) June: Wisteria
- vii) July: Lotus
- viii) August: Pear blossom
- ix) September: Mallow
- x) October: Chrysanthemum
- xi) November: Gardenia
- xii) December: Poppy
- mystical function of flowers: cosmological significance (*yin-yang*, 5 elements); [sim. the 'Four Gentlemen/Noble One <Confucian term>' (四君子 *Si Junzi*); sim. to the 'Flowers of the Four Seasons' which designates the lotus flower for summer in the place of bamboo];
 - 4 plants of the (4) annual seasons, directions, and elements:
 - i) plum blossom (winter)
 - ii) orchid (spring)
 - iii) lotus (summer); bamboo ('four gentlemen' designation; aka. 'plum, orchid, bamboo, chrysanthemum' (梅兰竹菊 *mei lan zhu ju*)
 - iv) chrysanthemum (autumn)
 typically depicted in traditional 'ink wash painting' (水墨畫 *shuimohua* ; aka. 'literati painting'; a type of East Asian brush painting- Jap.: 墨絵 *sumi-e* or 水墨画 *suibokuga*; Viet: *tranh thuy mac*; Kor.: 수묵화 *sumukhwa*; sim. East Asian calligraphy; practiced by *junzi*; accd. to textual evidence, practiced as early as the 5th c.CE: 6 Dynasties Period- Liu-Song d.)]
 - **Prunus** <blossom>: <blooming in> winter; spring [N; E]; genus of trees and shrubs which includes, **plum**, cherry, peach, nectarine, apricot, and almond; promise the renewal of vitality and the regeneration of Earth's energy after the cold winter months; [descriptions in the classic, 'The Garden Treatise' or 'The Craft of Gardens' (園冶 *Yuanye*); 1631; Ming d.]
 - **Orchid**: spring [E]
 - <signification of plants representing the eastern direction:>
 - Plum <blossom>: winter [N]; (but designated for the winter month of January in the Farmer's Solar Calendar); beauty and youth; rebirth
 - Orchid: spring [E]
 - Bamboo: (+); summer [S]; longevity
 - **Lotus**: summer [S]; aka. "the flower of flowers"; this title was later displaced to represent the peony [labeled as the 'King of Flowers' within the 'floral manual of Mi Fu' (米芾花經 *Mi Fu Hua Jing*)]; [Mi Fu (1051-1107 CE); Song d. painter, poet, calligrapher]
 - **Chrysanthemum**: (+); autumn [W];
 - *chrysanthemum sinensis*: the ancestor of all chrysanthemums in Europe, was introduced there by the Dutch (1680)
- 'Three Friends of Winter' (歲寒三友 *Suihan Sanyou*): art motif consisting of pine, bamboo, and plum; 3 plants observed <by the scholars who created the classical Chinese gardens> to not wither (ie. remaining green or blooming) in winter; symbolism-
 - i) pine: longevity, tenacity; constance in friendship
 - ii) bamboo: wisdom; modesty; knowledge seeking; flexibility yet strong (in storms) w/o breaking
 - iii) plum: rebirth- blooming at mid-end of winter to early spring, announcing the arrival of spring (the winter plum tree was favored during the Song d., appreciated for its early pink and white blossoms and sweet aroma)

they represent the scholar-gentleman's ideal <virtue> in Confucianism; first appearing together (9th c.CE: Tang d. poem by Zhu Qingyu); the *Suihan Sanyou* were often painted together (eg. Zhao Mengjian, 1199-1264); the 'Three Friends of Winter' is traditionally used as a ranking system in Japan: 1st- 'pine' (松 *matsu*); 2nd- 'bamboo' (竹 *take*); 3rd- 'plum' (梅 *ume*);

<Complementary forces within plants according to their symbolism:>

→ *Yang* <plants>: bamboo, cherry, chrysanthemum orchid, peony, willow

→ *Yin*: apricot, jasmine, magnolia, pear, rhododendron, rose

- fragrance expresses the power of flowers: the *qi* flows best in pleasant floral aromas, while foul smells encourage the creation of the *sha qi*
- Western disseminators of Chinese horticulture:
 - Joseph Francis Charles Rock (1884-1962): American explorer, geographer, linguist, botanist, plant collector; in the journal 'The Horticulturist' (1926), he compared Biblical Eden with the land (Gansu province; Min mts., Bailong r.) of the Tebbu people (Tibetan-Himalayan ethnic group)
 - Sir Osbert Sitwell: English author who travelled to China, described the Chinese attitude <*feng shui* geomantic theory> towards flowers in his 'Penny Foolish' (1935); concepts: i) vast range of colors of tree peony flowers (from lotus-pink to deep purple, or black); ii) terraces enable a panoramic perspective for the onlooker; iii) natural stones are used instead of statues (West)
 - John Reinhold Forster: 'Florula Sinensis' (1771), listed more than 260 species of Chinese plants (since 1900, over 20,000 species have been catalogued)
- planting flowers in gardens in the memory of deceased relatives: planting certain flowers for deceased relatives; accd. to Chinese popular culture, it was believed that angry ghosts or spirits could be appeased, and consequently, preventing them from disturbing the place where they were most happy while alive (ie. garden), by a small display of their favorite plant or flowers;
 - Geomantic design of graveyards and tombs: <dictates the>
 - Positioning of the flowers: ensures the harmony for the entire site;
 - Appearance and fragrance of the flowers: a continual reminder of the departed; ensures the smooth flow of *qi*
 - Picking and giving flowers: these plants are picked on the anniversary of the death of the departed, and a single flower <bloom> is given to relatives in remembrance
 - Dream of peace in the <familiar> garden of love

Herbal Gardens: Divination and Health

- psychological interconnectedness of geomantic divination (風水 *feng shui*) and herbal medicine:

<ancient herbal medicine sources:>

→ 'Inner Canon <or Esoteric Scripture> of the Yellow Emperor' (黃帝內經 *Huangdi Neijing*; aka. *Neijing*):

<authorship:> the 'Yellow Emperor' (黃帝 *Huangdi*), the third patriarchal emperor (r.2697/8-2597/8 BCE; accd. to the Jesuit missionary Martino Martini), was the alleged author of the *Huangdi neijing*, the first medical treatise in Chinese history; scholars generally date the work between the late Warring States period (475-221 BCE) and the Han d. (206 BCE-220 CE); c. 320 BCE: the theories of the *yin-yang* and the 5 elements in the *Suwen* ('Celestial Lancets,' by Joseph Needham and Lu Guizhen, 1980); this date coincides with the spread of Buddhism into China, and the insertion of *Ayurveda* concepts from a Buddhist university at Taxila (in modern Pakistan) into China, which lead

to the establishment of the Naturalist School, or ‘Yin-Yang school’ (陰陽家 *Yinyangjia*) by its founder Zhou Yan (c.350-270 BCE); (‘Chinese Medicine,’ by Huard and Wong, 1968); <content:> the ancient Chinese medical text has been treated as the fundamental doctrinal source for Traditional Chinese Medicine (TCM), as well as an important book on Daoist cosmological theory and lifestyle, for over 2 millennia; the work is composed of 2 texts-

- i) ‘Basic Questions’ (素問 *Suwen*), which covered the theoretical foundation of Chinese medicine and its diagnosis methods;
- ii) ‘Spiritual Pivot’ (靈樞 *Lingshu*), which discusses acupuncture therapy in great detail;

each text consists of 81 chapters or treatises, enveloped within 9 volumes, totaling 18 volumes (卷 *juan*) for the whole work; the chapters are composed into a question-answer format between the mythical 3rd patriarchal emperor Yellow Emperor (r.2697/8-2597/8 BCE), and 6 of his equally legendary ministers or physicians (eg. Qibo and Shaoyu); the *Huangdi Neijing* departs from the old shamanistic belief that disease is caused by demonic influences (ie. ghosts and spirits), and instead provides the reason that diseases develop due to the natural effects of diet, lifestyle, emotions, environment, and age; the *Neijing* teaches that the universe is composed of various natural forces (ie. *qi*, *yin* and *yang*, and 5 elements/ phases), and that a human being either be well by living in harmony with the cosmic <natural> forces, or can become ill from living in disharmony with the forces;

the work recognized nutrient distribution in blood circulation; affirmed the success of medical remedies for illnesses, through the usage of the 5 senses, the assessment of a patient’s breathing, pulse, and skin odors during diagnosis; examination of the symptoms, and observation of the emotions and attitude;

- ‘Divine Husbandman’s Classic of Herbal Medicine’ (神農本草經 *Shennong Bencaojing*): <authorship:> even though the text was attributed to the legendary 2nd patriarchal emperor, prehistoric mythical sage, *Shennong* (r. 2800 BCE), researchers believe the text is a compilation of oral traditions written during the late Han d. (200-250 CE); *Shennong* is reputed to have invented the plough, tested different soil types best for particular agricultural crops, and instituted ceremonies for sowing various seeds, plants, and flowers, during the most auspicious annual <astrological> times; the *Shennong Bencaojing*, the foundational pharmacopoeia, was reconstructed, as ‘Annotations <Collected Commentaries> to the Classic of Herbal Medicine’ (本草經集注 *Shennong Bencaojing Jizhu*), by the Maoshan school founder, Dao Hongjing (456-536 CE); the work dominated the pharmaceutical literature until the 7th c. CE; <content:> the original text is no longer in existence, but is said to have been composed of 3 volumes containing 364/5 medicament entries for each day of the year (252 botanical, 45 mineral, 67 zoological), with descriptions of their properties, and details on preservation and usage; treatise on agriculture and medicinal plants- the primary book for herbal prescription; and an archetype for modern material medicas; <contents of 3 volumes:>
- i) ‘upper herbs <commodity; variety; type/kind; rank; grade> (上品 *shang pin*): 120 drugs harmless to humans, with “stimulating properties” (eg. *lingzhi*, jujube, cinnamon, cannabis, liquorice, etc.); described as “noble”
 - ii) ‘middle herbs’ (中品 *zhong pin*): 120 therapeutic substances intended to treat illness, but have toxic, or potentially toxic properties of varying degrees (eg. ginger, peonies, cucumber, etc.); described as “human,” or “commoner”
 - iii) ‘low herbs’ (下品 *xia pin*): 125 substances which have a strong or violent action on physiological functions and are often poisonous (eg. rhubarb, various pitted fruits- peaches, etc.)

- 'Revised Materia Medica' (新修本草 *Xinxiu Bencao*) [later renamed: 'Materia Medica of the Tang <dynasty>' (唐本草 *Tang Bencao*):
 <authorship:> mandated by the government (657-9 CE: Tang d.) to be written by physician and renowned herbalist, Su Jing, with 20 other experts; this was the first official pharmacopoeia in China, and the world;
 <content:> listed 850 medicines; [which included 9 human drug entries; out of a total of 35 human drug entries and 287 prescriptions found in material medica sources throughout the history of China]
 <influence:> thereafter, it was printed and distributed throughout China (600 years before the first Western printing press); used as an herbal reference for over 300 years; became very influential on other cultures (eg. Japan)
- 'Compendium of Materia Medica' (本草綱目 *Bencao Gangmu*) [Chin.: 'pharmacopoeia' (本草 *bencao*) combines 'root; origin; basis' (本 *ben*); and 'grass; plant; herb' (草 *cao*); 'detailed outline; table of contents' (綱目 *gangmu*) combines 'main rope/threads; essential principles; <later- 'class' in biological classification> (綱 *gang*) and 'eye; look; category/division; <later- 'order' in biological classification>' (目 *mu*):
 <authorship:> the volume was written by Li Shizhen (1518-93 CE; 1578 CE; first draft; Ming d.); Li Shizhen has been compared to the mythological deity *Shennong*, who provided instruction on agriculture and herbal medicine
 <content:> a Chinese herbology or pharmaceutical volume epitomizing the material medica known at the time; the text lists 1892 entries (eg. plants, animals, minerals), whose titles included the 'class'-taxonomy (綱 *gang*), and if the entry was a synonym, the title name included the 'order'-taxonomy (目 *mu*); British biochemist, historian, and sinologist, Joseph Needham (1900-1995) stated that the *Bencao Gangmu* is "undoubtedly the greatest scientific achievement of the Ming";
 <53 volumes in total:>
- table of contents: containing a list of entries and 1160 hand drawn illustrations
 - volume 1-4: an 'index' (序例 *xuli*), and a comprehensive list of 'herbs <medicines> that treat the most common illnesses' (百病主治藥 *bai bing zhu zhi yao*)
 - volume 5-53: main content of the text, contains 1892 distinct herbs (of which 374 were added by Li Shizhen); contains 11,096 prescriptions to treat common illness (of which 8160 are compiled by Li Shizhen); [which included 13 human drug entries with 217 prescriptions]
 - the text is written in nearly 2 million Chinese characters, classified into 16 divisions and 60 orders; every herb with an entry, provides the name, a detailed description of appearance and odor, nature, medical function, effects and side recipes, etc.
- <value of the *Bencao Gangmu*:>
- improved the classification of traditional medicine
 - corrected many mistakes and misapprehensions of the nature of herbs and diseases; included many new herbs, as well as the addition of the experimental drug discoveries made by Li Shizhen
 - included a vast amount of information on other topics (eg. biology, chemistry, geography, mineralogy, geology, history, mining, astronomy)
- China still expands the material medica: the Chinese have collected and identified a further 2000 medicinal herbs since 1975
- harmonious herb garden: even though the ancient Chinese distinguished between herbs, flowers, and trees, their geomantic principles blended the different plants within the garden [eg. summer palaces at Beijing and Kunming Lake, 'Garden of Preserving Harmony' (頤和園 *Yiheyuan*): aka. "the city of eternal spring"; the garden combines willow, maple, apricot, peony, rose, lotus, chive, saffron, ginseng, and chrysanthemum];

- herb garden form: informal natural beauty; devise an area where circular/curved shapes predominate, to encourage the smooth flow of energy; choose herbs that are useful to the household, are beautiful, and create harmony; it is not necessary to separate culinary from medicinal herbs, since they are ideal complementary partners (sim. *yin-yang*); using inventiveness is the key for applying *feng shui* in the garden- devising various plays of light and shade (vision) with pleasant herbal aromas (smell), to create peaceful, private, and harmonious garden areas; avoid using- sharp corners, walled-off areas, regimented herb beds (ie. monasteries of the Middle Ages), and orderly kitchen gardens (ie. Victorian); <circular/curve shape-type herb garden/bed examples:>
 - *yin-yang*: most basic type and easiest to maintain; based on the 'suprem ultimate diagram' (太極圖 *taijitu*); each curved half provides space for a favorite low lying herb, while the internal circles provide space for a slightly taller growing plant (ie. chives or coriander); it is considered inauspicious to use more than 2 different single herb species per half;
 - herb clock: an Asian favorite; shaped like a 4-quartered zodiac cross with a circular element in the center; the outline <of the quarter sections> can be made with bricks, stone slabs, or turf; each soil section should contain a single herb species; the central feature can be a rounded plinth <where a sculpture or statue could be placed> or small pagoda (nothing angular), which will encourage the smooth flow of energy
 - cartwheel: popular in Hong Kong, Singapore, and Australia residential gardens; geometric layout consisting of rings (3+) and sections (8 sections for each ring, except for the central circular section; sim. arrayed *bagua* arrangement); each section contains a different single herb species; planting should start in the center at the inner hub, and then expand outward by adding outer rings; more rings can be added as long as space permits;
 - *qi*: most complex of all types; requires the most land; the design utilizes a meandering path, which is symbolic and encouraging of the smooth flow of energy; the participant carries a variety of herbal aromas to the central focal point of the garden, a pool or pond; the number of herb types are discretionary, but low-growing varieties should be planted along the path, with taller varieties behind the pool; the finishing touch is the placement of a bench on the midpoint of the curved path facing the water feature, where the wafting fragrance of herbal aromas can be experienced;

- ideal herb garden location: tiger (right-hand; west) side of the garden, where the low-lying, intensity of herbal plants is most appropriate; the position should have well-drained soil, and full sunlight for at least 2/3rd of the day; the herb garden may be close to the kitchen for ease of access for culinary use and the opportunity for aromas to drift indoors, or farther away as a private retreat; many herbs require wind protection, so it may be beneficial to grow herbs in lee of larger plants or trees; erecting a bamboo fence or trellis around the herb garden will concentrate their fragrance, as well as providing seclusion; the herbal garden position should be in harmony and balance with the surrounding landscape- herbal shapes and sizes should be complementary, and annuals should be positioned to not disturb perennials when planting or removing them; in summary- strive for natural planting positions by harmoniously blending flowers and herbs, that will generate energy throughout the seasons; if the residence is small, and without a garden space, but has a balcony or patio, harmonious benefit can be acquired by planting herbs in containers (eg. terracotta, glazed sinks, traditional garden or kitchen containers), bringing decorative aesthetics and scented fragrance to the space, as well as providing practical fruit and vegetable produce; appropriate positioning of the containers can soften harsh angles of yard walls or a balcony, facilitating the smooth flow of energy in and out the home; space can be maximized if containers vary in size, differ in plane (eg. on floor/ground, window sill, shelf, or hanging), and can be moved spontaneously without transplanting; containers and planters should be positioned in bright sunlight, not obstruct the flow of energy, and sheltered from droughts and extreme temperature to encourage growth; plants

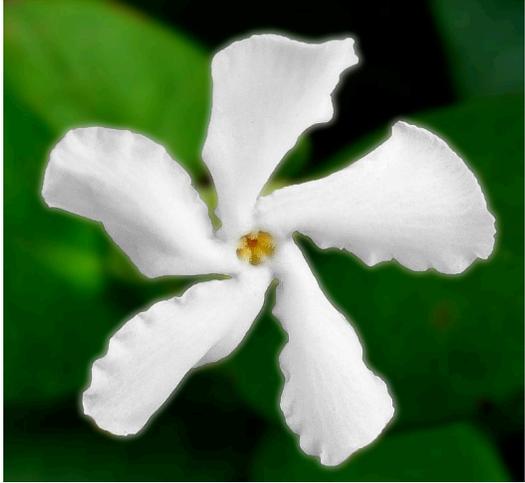
should be of various shapes and sizes, but not to cause confusion, which will hamper the flow of energy;

Traditional Feng Shui Plants: The plants <native to China> commonly used in Chinese <geomantic> horticulture include- shrubs and climbers, herbaceous plants, trees, ornamental fruit trees, and bamboo.

TRADITIONAL CHINESE FENG SHUI PLANTS		
Identification	Energetics	Description
<p>Common Name: Common English; Traditional Chinese (Traditional Mandarin characters; <i>Pinyin</i>)</p> <p>Taxonomy/Etymology: Scientific Classification (SC)- Genus and Species (Greek; <Pharmaceutical> Latin); [Number of species in the genus] (F)amily name: <(B)otanical> Latin; Common English</p>	<p>Polarity: <i>Yin</i> or <i>Yang</i></p> <p>Symbolism: Geomantic (<i>Feng Shui</i>) Representation Season (Element)</p>	<p>Description of Plant Plant Type (T) Foliage (F): deciduous or evergreen Landscape Uses (LU) Native Habitat (NH)</p> <p>General Description (G): (arrangement, color, size range, shape, texture, season of interest/appearance); for the root/bark; leaf; flower; fruit/cone/nut/seed; <uses: > culinary, medical (TCM), cosmetic, etc.</p> <p>Cultivation/Plant Care (C): propagation; planting method; preferred location; planting season; sunlight/shade; soil; moisture and watering; pruning; varieties/cultivars</p> <p><i>Feng Shui</i> (FS): method of generating energy; ideal position; function; benefit</p>
Shrubs and Climbers		
<p>'Beauty Bush'</p> <p>SC: <i>Linnaea amabilis</i> [20];</p>  <p>KENPEI (2008)</p> <p>[first formally described by Carl Linnaeus (1753: 'Species Plantarum'); Ltn.: 'lovable' (<i>amabilis</i>)]</p> <p>[Chin.: 'beauty bush' (美麗楚 <i>mei li chu</i>)]</p> <p>Family: <i>Caprifoliaceae</i> (B); Honeysuckle</p> <p>B: <i>Kolkwitzia amabilis</i> [named after Richard Kolkwitz (1873-1956), professor of botany in Berlin (1)]</p> <p>[Chin.: 'Hedgehog fruit genus' (蝟实属 <i>wei shi shu</i>)]</p>	<p><i>Yin</i> Loveliness</p>	<p>T: shrub F: deciduous LU: hedge, massing, screen; ornamental plant NH: central China</p> <p>G: fast spreading shrub with light brown flaky bark, and arching branches, with numerous <multi-stemmed> sprays along ripened wood; large shrub (<8'; 10' H x 12' W); medium shrub (5-8'); grows in pairs (<i>Caprifoliaceae</i>);</p> <p>Bark: light gray-brown; older stems have exfoliating bark- peels away in strips to give an attractive shaggy appearance in winter</p> <p>Leaf: opposite, simple, ovate (1-3" L; 2" W); mat, dark green, hairy, widely toothed; turning dull red or yellow in autumn</p> <p>Flower: light pink flowers (deep pink buds) w/ yellow-orange bell/vase-shaped (1" long) throats; bloom in late spring to mid-summer</p>  <p>KENPEI (2008)</p> <p>Fruit/seed: hairy/bristly/feathery, ovoid seed capsule</p>

		<p>(1/4" L)</p> <p>C: can be propagated from cuttings; shrubs should be planted near house, or edge; in full sunlight or partial shade; in moist, well-drained soil; plant in October or March; prune after flowering</p>
<p>Sources: (1) Render, Alfred. The Standard Cyclopedia of Horticulture. London: Macmillan & Co., Ltd., p. 1757. 1917.</p>		
<p>Camellia</p> <p>SC: <i>Camellia sinensis</i> [100-300];</p>  <p>Franz Eugen Kohler, <i>Kohler's Medizinal-Pflanzen</i> (1897)</p> <p>[ref. Ltn. name of Rev. Georg Kamel (1661-1706), a Moravian-born Jesuit pharmacist and missionary to the Philippines (1); Carl Linnaeus chose his name in 1753 for the genus to honor Kamel's contributions in botany; Linnaeus considered this plant to be a <i>Thea</i> (2); Robert Sweet shifted all formerly <i>Thea</i> species to genus <i>Camellia</i> (1818) (3); Ltn.: 'from China' (<i>sinensis</i>)]</p> <p>[Chin.: 'tea flower <tea shrub or tree>' (茶花 <i>cha hua</i>); 'mountain tea' (山茶 <i>shan cha</i>); 'mountain tea flower' (山茶花 <i>shan cha hua</i>)]</p> <p>Family: <i>Theaceae</i> (B)</p>	<p>Yang Evergreen</p>	<p>T: shrub or small tree F: evergreen LU: borders; potted plant NH: tropical and subtropical regions; East Asia, India, Southeast Asia</p> <p>G: spreading evergreen shrub or small tree (15-50' H); <genus> (up to 20 m/ 66' H);</p> <p>Root: strong taproot</p> <p>Bark: <uses:></p> <ul style="list-style-type: none"> o 'twig tea' (茎茶 <i>kukicha</i>); aka. (棒茶 <i>bocha</i>); green tea harvested from <i>C. sinensis</i> twigs and stems (Jap.) <p>Leaf: the leaves (1.6-5.9" L; .79-1.97" W); short white hairs on the underside;</p>  <p>Axel Boldt (2004)</p> <p><uses:></p> <ul style="list-style-type: none"> o tea: fresh leaves contain around 4% caffeine; the young, light green leaves (old leaves are deeper green) and buds are used to produce tea; different leaf ages produce different tea qualities (due to the difference in chemical composition); <ul style="list-style-type: none"> → Chinese teas: 2 varieties of <i>Camellia sinensis</i>- <ul style="list-style-type: none"> i) <i>Camellia sinensis, sinensis</i> ii) <i>Camellia sinensis, assamica</i> [includes- white, yellow, green, dark (includes pu-erh tea), and black tea; these teas are processed differently depending on the level of oxidation sought after; trimmed to below 6.6' H when cultivated for leaves; usually the tip (bud) and the nearest 2-3 leaves are harvested for processing; this hand picking is repeated every 1-2 weeks] → Indian teas: <ul style="list-style-type: none"> i) Assam; ii) Darjeeling; iii) Nilgiri

		FS: good conductor of <i>qi</i> when planted against a wall or pruned into a curved edge;
<p>Sources:</p> <p>(1) Stafleu FA, Cowan RS. 'Taxonomic literature: A selective guide to botanical publications and collections with dates, commentaries and types (2nd ed.)'. Utrecht: Bohn, Scheltema and Holkema. 1976-88.</p> <p>(2) "History of Tea: Botanics"; www.gol27.com/HistoryTeaBotanics.html.</p> <p>(3) International Association for Plant Taxonomy (2006), "Article 13, example 3", 'International Code of Botanical Nomenclature (Vienna Code)' (electronic ed.).</p> <p>(4) Min T., Bartholomew B. "18 Theaceae". 'Flora of China'.</p> <p>(5) Harder, A.; Holden-Dye, L; Walker, R. & Wunderlich, F.. (2005): Mechanisms of action of emodepside. Parasitology Research 97 (Supplement 1): S1-S10. (html abstract)</p> <p>(6) Journal of Plant Research, September 2016, Vol. 129, Issue 5, pp. 823-31, <i>Camellia nanningensis</i> sp. nov.: the earliest fossil wood record of the genus <i>Camellia</i> (Theaceae) from East Asia by Lu-Liang Huang, Jian-Hua Jin, Cheng Qian and Alexei A.</p> <p>(7) Kaemfer, <i>Amoenitates exoticae</i>, 1712, noted by Alice M. Coats, 'Garden Shrubs and Their Histories'. (1964) 1992, s.v. "Camellia".</p> <p>(8) The New York Botanical Garden, 'Curtis' Botanical Magazine Volume X'; Bronx, New York: The New York Botanical Garden, 1797.</p>		
<p>Chinese Jasmine 'Chinese star'; 'Chinese ivy';</p> <p>'star jasmine'; 'confederate jasmine' (2); 'confederate jessamine'; 'southern jasmine' (3);</p> <p>SC: <i>Trachelospermum jasminoides</i> [11];</p>  <p>Scott Zona (2007)</p> <p>[Gk.: 'neck seed' (<i>trachelospermum</i>); ref. to the seed shape (5); 'resembling jasmine' (<i>jasminoides</i>)]</p> <p>[Chin.: 'Collateral Stone' (□石 <i>luo shi</i>)];</p> <p>Family: <i>Apocynaceae</i> (dogbane) (B)</p>	<p><i>Yin</i> Friendship</p>	<p>T: flowering plant; ornamental plant; houseplant; F: evergreen; <genus> evergreen woody vine LU: climbing vine; ground cover; fragrant potted plant terraces and patios NH: <genus/species> eastern and southeastern Asia (Japan, Korea, s. China, Vietnam) (1);</p> <p>G: evergreen woody liana (up to 10' H) (1); <genus> first described (1851);</p> <p>Stem/Vine: <uses:></p> <ul style="list-style-type: none"> ○ a bast fiber is produced ○ TCM tea/tincture: 'Collateral Stone stem' (络石藤 <i>luo shi teng</i>); [pharm. Ltn.: <i>Caulis Trachelospermi</i>; Common Eng.: Star Jasmine stem]; <actions and indications: arthritis, sinew spasms, abscesses and toxic sores> → dispels wind-damp: spasms <p><genus> climbing long stems (12 m H);</p> <p>Leaf: the dark evergreen leaves are opposite, oval to lanceolate (3/4- 3 7/8" L; 3/8-1 3/4" W), hanging from twisting vines; w/acuminate apex</p> <p><genus> opposite, simple broad lanceolate to ovate (2-8 cm L, 0.5-4 cm W);</p> <p>Flower: clusters of delicate, cream-white flowers w/strong sweet fragrance (3/8-3/4" dia.); tube-like corolla opening out into 5 petal-like lobes; the flowers appear from late June-July; cannot survive frost;</p> <p><uses:> (1)</p> <ul style="list-style-type: none"> ○ valuable perfume: oil is extracted from the steam distilled or tinctured flowers; ○ incense: a diluted form of tinctured flowers are used in Chinese, Vietnamese, and Thai incenses

		 <p>Jim Evans (2016)</p> <p><genus> salverform, simple (2.5-7 cm W), w/ 5 white, pale yellow or purple petals joined together at the base forming a tube Fruit/seed: slender follicle (3 7/8-9 7/8" L; 1/8-3/8" W); containing numerous seeds</p> <p>C: cuttings/cloning is the most common form of propagation; blooms in full sun, partial shade, or total shade; prefers full sunlight and well-drained soil for rapid growth (can reach up to 28' H); (constant dampness may lead to fungal infection); use moderate water and fertilizer; use climbing structure (eg. trellis; secondary plant); the plant can be grown from cuttings and shoots layered in September-October; it is beneficial to prune back the old wood after flowering for revitalization (4)</p> <p>FS: ideal near the entrance of the garden to welcome the smooth flow of energy; grows well as ground cover in rock gardens; will twine and climb well over trellises, pergolas, fences, and walls</p>
<p>Sources:</p> <p>(1) Flora of China: "Trachelospermum jasminoides". www.efloras.org. (2) "Trachelospermum jasminoides". Natural Resources Conservation Service Plants Database. USDA. (3) "Trachelospermum jasminoides". Germplasm Resources Information Network (GRIN). Agriculture Research Service (ARS). United States Department of Agriculture (USDA). (4) Garret, Howard (1996). Howard Garrett's Plants for Texas. Univ. of Texas. p. 157. (5) Coombes, Allen J. (2012). The A to Z of plant names. USA: Timber Press. p. 312.</p>		
<p>Clematis 'mountain clematis' (1); 'Himalayan clematis' (2); 'anemone clematis'</p> <p>SC: <i>Clematis montana</i> [c.300] (5);</p>	<p><i>Yang</i> Vigor</p>	<p>T: early flowering plant F: deciduous LU: garden plant that covers unsightly features (eg. sheds, fences) NH: mountain areas of Asia (from Afghanistan to Taiwan) (3); near Himalayas; <genus> clematis are mainly found throughout the temperate regions of the Northern Hemisphere, rarely in the tropics;</p> <p>G: vigorous deciduous climber/lianas; <genus> the cool temperate species are deciduous, but many of the warmer climate species are evergreen;</p> <p>Stem/Vine: initially, the <i>C. montana</i> tends to shoot straight up, and then branches at the top (5-10'/yr); <genus> woody stems are quite fragile until several years old (6);</p> <p>Leaf: the light-green trifoliate leaves grow on a twining</p>

		<p>early Pleistocene sediments in Ludham, E. Anglia, England (11);</p> <p><genus> not all <i>Physalis</i> species bear edible fruit; the typical <i>Physalis</i> fruit is similar to a firm tomato in texture (12), and like strawberries or pineapple in flavor w/ mild acidity; rich in cryptoxanthin</p> <p>C: widely cultivated in temperate regions; can tolerate severe cold well (-4° F) (5); prefers well-drained, sandy soil; the plant is known for its invasiveness via its widespreading root system, and therefore is best grown on its own; but when mixing with other plants in a bed or border, it may be necessary to cut off and dig out the invasive runners w/ a spade; it should be planted in March-April, for the small flowers to bloom in July-August, to be followed by paper-like lanterns, seed husks, which hold an edible orange-red berry (not recommended for eating by Waring);</p> <p><genus></p> <ul style="list-style-type: none"> o cultivation: grows well in most soils, including poor soil and pots; moisture is required until fruiting; o pests and diseases: common tomato pests and diseases, and other pests (ie. aphids, whiteflies, spider mites, false potato beetle); o propagation by seed; <p>FS: decoration use- pick the lanterns before their color turns; hang the stems in room with plenty of natural light and air circulation</p>
<p>Sources:</p> <p>(1) "Physalis alkekengi". Germplasm Resources Information Network (GRIN). Agriculture Research Service (ARS), United States Department of Agriculture (USDA).</p> <p>(2) "Physalis alkekengi". Eppo.</p> <p>(3) "BSBI List 2007". Botanical Society of Britain and Ireland.</p> <p>(4) "Physalis alkekengi". Natural Resources Conservation Service PLANTS Database. USDA.</p> <p>(5) "RHS Plantfinder- Physalis alkekengi".</p> <p>(6) Rasheed N.M.A., Shareef M.A., Ahmad M., Gupta V.C., Arfin S., Shamshad A.K. "HPTLC finger print profile of dried fruit of Physalis alkekengi Linn." 'Pharmacognosy Journal'. 2010. 2:12 (464-469).</p> <p>(7) Matsuura, T.; Kawai, M.; Makashima, R.; Butsugan, Y. (1970), "Structures of physalin A and physalin B, 13, 14-seco-16, 24-cyclo- steroids from Physalis alkekengi var. Francheti". 'Journal of the Chemical Society, Perkin Transactions' 1, 5 (5): 664-70. www.pubs.rsc.org.</p> <p>(8) Qiu, L.; Zhao, F. (April 2008). "Steroids and flavonoids from Physalis alkekengi var. franchetii and their inhibitory effects on nitric oxide production." 'Journal of Natural Products', 71 (4): 642-6.</p> <p>(9) Kawai, M.; Yamamoto, T.; Makino, B.; Yamamura, H. Araki, S.; Butsugan, Y; Saito, K. (2001). "The structure of physalin T from Physalis alkekengi var. franchetii." 'Journal of Asian Natural Products Research', 3 (3): 199-205.</p> <p>(10) The Pliocene flora of Kholmec, southeastern Belarus and its correlation with other Pliocene floras of Europe by Felix Yu. Velichkevich and Ewa Zastawiniak- Acta Palaeobot. 43(2): 137-259, 2003.</p> <p>(11) 'History of the British Flora: A Factual Basis for Phytogeography'. Sir Harry Godwin. Cambridge Univ. Press, 1st publ. 1956, 2nd ed. 1975.</p> <p>(12) Whitson, M.; Manos, P.S. (2005). "Untangling Physalis (Solanaceae) from the physaloids: a two-gene phylogeny of the Physalinae". 'Systematic Botany'. 30 (1): 216-30.</p> <p>(13) "Physalis". Integrated Taxonomic Information System.</p> <p>(14) Doctor, Vikram (4 March 2013). "Golden berry: Decoding the acid freshness and wild sweet taste of physalis". 'The Economic Times'.</p>		
<p>Chrysanthemum 'mum' (5); 'chrysanth' (5); SC: <i>Chrysanthemum morifolium</i> [50];</p>	<p><i>Yang</i> Resolution 'Four Gentlemen' (四君子 <i>Si Junzi</i>) 'Flowers of the Four Seasons' Autumn Nobility (Japan)</p>	<p>T: perennial herbaceous; bush LU: ornamental plant; houseplant; mixed beds and borders NH: Asia (originated in northern China; mostly from eastern; most diversity is in China) (6); northeastern Europe G: <genus> perennial herbaceous plant (30-90 cm/ 12-35" H/W) or subshrubs; Stem: upright; the texture of the plant is thick and leathery; many silky branches covered w/ short down,</p>



Prenn (2012)

[common Eng.: 'florist's daisy' (1);
'hardy garden mum' (2);
Chin.: 'chrysanthemum' (菊 *ju*)]

[ancient Gk.: 'gold' (*χρυσός chrysos*); 'flower'
(*ἀνθεμόν anthemón*)]

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Francisco Manuel Blanco, Flora de Filipinas, Gran edicion,
Atlas I (1880-3?)

Family: *Asteraceae*

Other genera that were once considered as
genus *Chrysanthemum* until the ruling of the
international Botanical Congress of 1999:
Glebionis, *Argyranthemum*, *Leucanthemopsis*,
Leucanthemum, *Rhodanthemum*, *Tanacetum*

which forms a dense tuft;

Leaf: broad ovate; wedge-shaped petiole; dark green
leaves (6+” L); lower leaves are plumed; deciduous
alternate, lobed pinnatifid and toothed fleshy leaves (up
to 12 cm L) w/ gray hairs, appear in the spring; the
leaves exhale a strong smell when wrinkled;
<genus> alternately arranged leaves divided into
leaflets w/ toothed or occasionally smooth edges;

Flower: compound inflorescence of several flower
heads, or sometimes a solitary head; the base of the
head are covered in layers of phyllaries; typically
having peripheral <radial/ray> florets; cultivated in a
variety of colors: white, yellow, orange, red, lavender,
and purple; female; zygomorphous, w/ ligules [Ltn.:
'tongue'; def.: thin outgrowth at the junction of the leaf
and the leaf stalk of many grasses] and a strap-shaped
extension of the corolla (ie. ray floret); floral symmetry;
tabulated; bisexual; the external bracts are herbaceous
(2);
blooming in early autumn (or mid-summer to autumn
frosts; aka. favorite flower of the month of November),
known as 'Queen of the Autumn';

Masaki Ikeda (2008)

<genus> compound inflorescence w/ layers of
phyllaries; simple row of ray florets is white, yellow, or
red; the disc florets of wild taxa are yellow; pollen (34
microns);

Fruit: <genus> ribbed achene (7);

C: parent of the many border perennials and half-hardy
greenhouse plants (ie. daisy-like flowers to huge
globular heads); grows in mounds (12-24” H);
flourishes from cutting; prefers full sun, and well-
drained and fertile soil; should be carefully shaped in
spring and summer;

pests and diseases (2): the plant is eaten by aphids,
capsid bugs, earwigs, leaf miners, nematodes, spider
mites, thrips, and white flies; diseases include- aster
yellows, botrytis, leaf spots, rust, powdery mildew,
verticillium wilt; rotting of stem and roots; viruses

<genus>

- history: China, Taiwan, Korea, Japan, Vietnam
→ China
 - accd. to legend, the chrysanthemum
originated in Nanyang (central China;
Henan), where people lived 100+ years;
this was due to the people drawing their
drinking water from a stream where
chrysanthemums grew, and seeped
their floral essences, which promoted
longevity
 - cultivation: first cultivated in China as a
flowering herb (15th c. BCE) (8); over
500 cultivars had been recorded by
1630 (7); chrysanthemum varieties are
still referred to by their original names
(ie. yellow var.- 'Heaven full of Stars';
fine petal var.- 'Pine Needles' or
'Dragon's Beard'; white streaked w/ red-
'Snow on the Ground'; large shaggy
mauve 'Drunk with Wine, made from
Peaches of the Immortals'



Chrysanthemums of the Xian'e Changchun Album of Castiglione (1688-1766)

- 'Four Gentlemen' (四君子 *si junzi*) (5th c.CE: Six Dynasties Period- Liu-Song d.): renowned as one of the 'Four Gentleman' in Chinese and east Asian art; (see 'Fragrance of Flowers' above)
- 'Double Ninth <Yang> Festival' (重陽節 *Chong yang jie*) [aka. Chung Yeung Festival; Hong Kong and Taiwan: (重陽 *Choyo*); Jap.: 'Chrysanthemum Festival' (菊の節句 *Kiku no Sekku*); Kor.: (중양절 *Jungyangjeol*); Viet Nam: *Tet Trung Cu'ul*] (mentioned in writing since before 25 CE: Eastern Han d.); annually celebrated on the 9th lunar day of the 9th lunar month; *Yijing* numerology/ cosmology: 9 = extreme *yang* number; 99 = excess *yang*; to protect against this danger, people customarily cleanse themselves by climbing a high mountain, drinking chrysanthemum liquor or tea, and wearing a species of the dogwood plant [Chin.: 'Cornelian cherry' (山茱萸 *shan zhu yu*); Ltn.: *Cornus officinalis*]; respects are paid to ancestral graves (ie. cleaning and repainting inscriptions)
- Japan:
 - cultivation (early 8th- late 12th c.CE: Nara and Heian periods); gained popularity (early 17th- 19th c. CE: Edo period): many flower shapes, colors, and varieties were created
 - Imperial Seal of Japan: the 'Chrysanthemum Throne' describes the institution of monarchy; some families cultivated chrysanthemums to signal their support and good relationship w/ the imperial family (20);
 - Autumn festivals: 'Chrysanthemum Day' (菊の節句 *Kiku no Sekku*); began when the imperial court held its first chrysanthemum exhibit (910 CE) (20);
- England (18th c.CE): the controversy over the oriental origin of the chrysanthemum, was resolved by calling it the 'Golden Flower from China' (*Chrysanthemum sinense*)
- America:
 - Col. John Stevens imported a cultivar, 'Dark Purple' (from England in 1798), intended for developments within Elysian Fields in Hoboken, New Jersey (9);
- economic uses:
 - ornamental: <genus> modern cultivars are more showy than the wild relatives; many hybrids and thousands of cultivars (colors- yellow, white, purple, red);
 - 2 types:
 - i) garden hardy: can endure northern latitudes;
 - ii) exhibition: more delicate
 - chrysanthemum imagery:
 - temple architecture and decorating
 - porcelain painting
 - hammer-shaped metal
 - brocade embroidery

		into the garden (March-April) FS: deflects harmful <i>sha</i>
Sources:		
<p>(1) "Impatiens balsamina". Germplasm Resources Information Network (GRIN). Agriculture Research Service (ARS), United States Department of Agriculture (USDA).</p> <p>(2) "Impatiens balsamina". Natural Resources Conservation Service PLANTS Database. USDA.</p> <p>(3) Huxley, A., ed. (1992). New RHS Dictionary of Gardening. Macmillan.</p> <p>(4) Impatiens balsamina. Pacific Island Ecosystems at Risk (PIER). www.hear.org/pier/species/impatiens_balsamina.htm.</p> <p>(5) Plants for a Future: Impatiens balsamina. www.pfaf.org.</p> <p>(6) Wang YC, Wu DC, Liao JJ, Wu CH, Li WY, Weng BC (2009). "In vitro activity of <i>Impatiens balsamina</i> L. against multiple antibiotic-resistant <i>Helicobacter pylori</i>". Am. J. Chin. Med. 37 (4): 713-22.</p> <p>(7) Park JH, Kim JM, Do WI (2003). "Pharmacognical studies on the folk medicine bong seon wha dae". Korean Journal of Pharmacognosy. 34 (3): 193-96.</p> <p>(8) Christopher Cumo. "Impatiens". 'Encyclopedia of Cultivated Plants: From Acacia to Zinnia'. Christopher Cumo, ed. ABC-CLIO, 2013. p. 523.</p> <p>(9) Ishiguro K., Oku H., Kato T., (February 2000). "Testosterone 5α-reductase inhibitor bisnaphthoquinone derivative from <i>Impatiens balsamina</i>". 'Phytother Res. 14 (1): 54-6. www.onlinelibrary.wiley.com.</p> <p>(10) "Naturally dyed red nails". 'JoongAng Daily'. 12 September 2004.</p> <p>(11) "Summer, the Way It Used to Be...". 'The Korea Times'. 16 June 2008.</p> <p>(12) Sakunphueak A., Panichayupakaranant P. (2010). "Simultaneous determination of three naphthoquinones in the leaves of <i>Impatiens balsamina</i> L. by reversed-phase high-performance liquid chromatography". 'Phytochem Anal'. 21 (5): 444-50.</p> <p>(13) Hua L, Peng Z, Chia LS, Goh NK, Tan SN (February 2001). "Separation of Kaempferols in <i>Impatiens balsamina</i> flowers by capillary electrophoresis with electrochemical detection". J. Chromatogr A. 909 (2): 297-303.</p> <p>(14) Calderon-Montano JM, Burgos-Moron E, Perez-Guerrero C, Lopez-Lazaro M (April 2011). "A review on the dietary flavonoid kaempferol". 'Mini Reviews in Medicinal Chemistry'. 11 (4): 298-344.</p> <p>(15) Li HJ, Yu JJ, Li P (March 2011). "Simultaneous qualification and quantification of baccharane glycosides in impatiens Semen by HPLC-ESI-MSD and HPLC-ELSD". 'J. Pharm. Biomed. Anal.'. 54 (4): 674-80.</p> <p>(16) RHS A-Z Encyclopedia of Garden Plants. United Kingdom: Dorling Kindersley. 2008. p. 1136.</p> <p>(17) Grey-Wilson, Christopher (1980). <i>Impatiens of Africa</i>. A.A. Balkema, Rotterdam.</p> <p>(18) Babler, M., et al. (1996). Springkraut- <i>Impatiens</i> L.. In: Exkursionsflora von Deutschland (Band 2- Getabpflanzen: Grundband) ["Excursion flora of Germany (Vol. 2- Vascular plants: basic volume)"]: 323 [in German]. Gustav Fischer Verlag, Jena and Stuttgart.</p> <p>(19) Lens, F., Eeckhout, S., Zwartjes, R., Smets, E., Janssens, S. (2012). "The multiple fuzzy origins of woodiness within Balsaminaceae using an integrated approach. Where do we draw the line?". 'Annals of Botany'. 109 (4): 783-799.</p> <p>(20) Fischer, E., Rahelivololona, M.E., Abrahamczyk, S. (2017). "Impatiens galactica (Balsaminaceae), a new spurless species of section Trimorphopetalum from Madagascar". 'Phytotaxa'. 298 (3): 269-276.</p> <p>(21) Abrahamczyk, S., Lozada-Gobilard, S., Ackermann, M., Fischer, E., Krieger, V., Redling, A., Weigend, M. (2017). "A question of data quality- Testing pollination syndromes in Balsaminaceae". PLOS ONE. 12 (10).</p> <p>(22) Brill & Dean. Identifying and Harvesting Edible and Medicinal Plants in Wild (and Not-So-Wild) Places. New York: William Morrow/Harper Collins Publ. 1994.</p> <p>(23) Benzie, I.F.F. and S. Wachtel-Galor, ed. <i>Herbal Medicine: Biomolecular and Clinical Aspects</i>. 2nd ed. Boca Raton, Florida: CRC Press. 2011.</p> <p>(24) Lipton, R.A. (Sep-Oct 1958). "The use of <i>Impatiens biflora</i> (jewelweed) in the treatment of rhus dermatitis". 'Annals of Allergy'. 16 (5): 526-7.</p> <p>(25) Long, D.; et al. (1997). "Treatment of poison ivy/oak allergic contact dermatitis with an extract of jewelweed". Am. J. Contact. Dermat. 8 (3): 150-3.</p> <p>(26) Motz, V.A.; et al. (2012). "The effectiveness of jewelweed, <i>Impatiens capensis</i>, the related cultivar <i>I. balsamina</i> and the component, lawsone in preventing post poison ivy exposure contact dermatitis". 'Journal of Ethnopharmacology'. 143 (1): 314-18.</p> <p>(27) Thaler, L.; et al. (2009). "Bach Flower Remedies for psychological problems and pain: a systematic review". 'BMC Complementary and Alternative Medicine'. 9 (1): 16.</p> <p>(28) Gunstone, F. D. <i>Fatty Acid and Lipid Chemistry</i>. Springer. 1996. p. 10.</p>		
Ginseng (3 species) 'American ginseng'; SC: <i>Panax quinquefolius</i> [18; 2/18 are native to N. America];	Yang Health	T: perennial herbaceous plant LU: medicinal herb plant NH: < <i>P. quinquefolius</i> > N. America [eastern and central US; southeastern Canada (7); found primarily in temperate deciduous forests of the Appalachian and Ozark regions of the US (8); found in full shade beneath hardwoods] (9); has started to become endangered in some areas (eg. <states recognized as> endangered- Maine, Rhode Island; vulnerable- New York, Pennsylvania; threatened- Michigan, New Hampshire, Virginia; special concern- Connecticut, Massachusetts, N. Carolina, Tennessee) due to its demand in commercial markets (7); cultivated in China (4)(5) (18 th c. CE: primarily exported to Asia) (6); < <i>P. ginseng</i> > mountains of eastern Asia (eg. Far East Russia, Manchuria- northeastern China, Korean



(2006)

[Ltn.: 'cure-all' (*panax*); der. from Gk.: 'all-healing' (*panakes*); same origin as the name of the Greek goddess of 'universal remedy,' *Panacea* (Πανάκεια *Panakeia*), the daughter of *Asclepius* and *Epione*; or a panacea for its reported aphrodisiacal and medicinal uses; named by Carl Linnaeus who was aware of the wide use of panax in Traditional Chinese medicine; Ltn.: 'five-leaved' (*quinquefolius*)]



Jacob Bigelow (1786-1879), 'American medical botany being a collection of the native medicinal plants of the United States, containing their botanical history and chemical analysis, and properties and uses in medicine, diet and the arts' (1817-20)

[Chin.: 'American ginseng' (西洋参 *xi yang shen*); Cantonese Yale: 'west ocean ginseng' (*saiyuehngsam*); other names- (花旗参 *huaqishen*); Cantonese Yale: 'flower flag ginseng' (*fakeihngsam*); the term 'flower flag' ref. to the early US flag (of 13 stripes and 13 stars), which was brought to Canton (Guangzhou), China (1784) by the merchant ship 'Empress of China,' which also carried a cargo of ginseng]

Original source species of ginseng:
SC: *Panax ginseng* (18);

peninsula) (1);

G: size (6-18" H);
chemical components: *P. quinquefolius* contains dammarane-type ginsenosides (a steroid) (sim. *P. ginseng*), as the major biologically active constituent (10);

<genus> characterized by the presence of ginsenosides and designated as gintonin [def.: a glycolipoprotein fraction isolated from ginseng; gin = ginseng/ ton = tonic/ in = protein];

Root: <*P. quinquefolius*> the aromatic root resembles a small parsnip that forks as it matures;

<*Panax* uses: traditional medicine>

- o Native Americans used the root and leaves of *P. quinquefolius*;
- o TCM:
 - a) <*P. quinquefolius*> the roots have been collected by "sang hunters" for sale to China and Hong Kong traders (since 18th c.CE), who often pay high prices for old wild roots (11); originally, *P. quinquefolius* was imported to China via the subtropical seaport of Guangzhou; *P. quinquefolius* is classified as *yin* b/c it generates fluids (12); there is no conventional evidence that *P. quinquefolius* is effective against the common cold (13)(14);
 - 'American ginseng root' (西洋参 *xi yang shen*); [Pharm. Ltn.: *Radix Panacis Quinquefolii*]; <actions and indications: chronic fever, weakness, cough, wheezing, voice loss>
 - tonifies energy, generates fluid, nourishes stomach and *yin*: chronic fever; aftermath of febrile diseases w/ weakness, irritability, and thirst
 - benefits lung and clears lung fire: chronic wheezing and coughing, hemoptysis
 - clears heat in the intestines, stops bleeding: hematochezia
 - conventional adverse effects (13): individuals on anticoagulants (eg. warfarin) should avoid use; not recommended for individuals w/ impaired liver or renal function, during pregnancy or breastfeeding; other adverse effects- headache, anxiety, insomnia, upset stomach;
 - many cultivation procedures have had contaminating effect on the crop (eg. fungal molds, pesticides, various metals and residues), which are considerably insubstantial, but may pose health concerns (eg. neurological problems, intoxication, cardiovascular disease and cancer) (15)
 - b) <*P. ginseng*> cultivated in China, Korea, and Russia; slow growing perennial; roots are usually harvested in 5-6 yrs; (3)

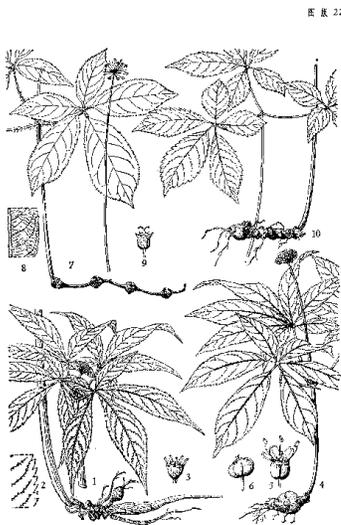
'ginseng root'; 'Asian ginseng root'; 'Panax' (



Katharina Lohrie (2006)

[Chin.: 'Asian ginseng' (aka. 'Panax ginseng,' 'Chinese ginseng,' 'Korean ginseng'); (人參 *ren shen*); <'man/human health (homophone)> (人身 *ren shen*); Kor.: (인삼 *insam*)] (1)(2)

SC: *Panax notoginseng* (18);



中国科学院植物研究所 - 《中国植物志》(1959)

[Chin.: 'notoginseng'; 'pseudoginseng' (田七 *tianqi*); or 'three-seven root' (三七 *sanqi*); b/c the plant has 3 petioles and 7 leaflets each; and "mountain plant"; "Chinese ginseng" (21)]

Family: *Araliaceae* (ivy)

- 人參 *ren shen*); [Pharm. Ltn.: *Radix Ginseng*]: <actions and indications: lethargy, anorexia, shortness of breath, diabetes>
- tonifies *yuan qi*: extreme collapse of *qi*, *yin* and *yang*- dyspnea or shallow breathing, cold limbs, profuse sweating, almost imperceivable pulse
 - tonifies spleen and stomach *qi*: lethargy, anorexia, chest and abdominal distention, chronic diarrhea, prolapse of stomach, uterus or rectum
 - tonifies lung *qi*: wheezing, dyspnea, labored breathing on exertion
 - generates body fluids, stops thirst: wasting and thirsting or type 2 diabetes (消渴 *xiao ke*) and high fevers w/ profuse sweating (which injures *qi* and fluids)
 - tonifies heart *qi*, calms the spirit: palpitations, anxiety, insomnia, forgetfulness, restlessness
 - treats impotence: <w/ kidney *yang* tonics>
 - tonifies *qi* w/ exterior conditions: exterior disorder w/ interior deficiency

(4) <*P. notoginseng*> both cultivated and gathered from wild forests; wild plants are most valuable; traditionally harvested between 3-7 yrs after planting

'notoginseng root'; 'pseudoginseng root'; (三七 *san qi*); [Pharm. Ltn.: *Radix Notoginseng*; *Radix Pseudoginseng*]: <actions and indications: bleeding, trauma pain and swelling, sores and carbuncles, chest and abdominal pain> (12)

- stops bleeding, transforms blood stasis: internal and external bleeding <topically apply *tianqi* powder directly on open wounds/cuts, or sores w/ pus and ulceration, to immediately stop bleeding>- hematemesis, epistaxis, hematochezia, metorrhagia, bloody dysentery, menorrhagia, hematuria, dizziness, pain
- reduces swelling, alleviates pain, removes extravasated blood: traumatic injury w/ swelling and pain- fractures, contusions, sprains, stabs/puncture wounds <topical application>, pain, dizziness and post-natal blood retention
- invigorates blood: chest and abdominal pain, joint pain (due to blood stasis); sores, carbuncles, snake and animal bites, conjunctivitis; cancer

<chemical components:> contains dammarane-type ginsenosides (22);

Leaf: <*P. quinquefolius*> usually bearing 3 dark green leaves, each w/ 3-5 leaflets (2-5" L)

Flowers: pale purple w/ filaments resembling untwisted silk

Fruit: stem w/ a red cluster of berries in the middle

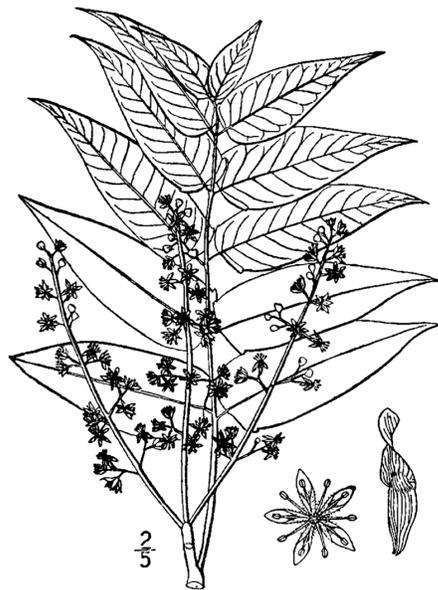
		<p>C: ornamental tree in parks and gardens; grown for its fine leaf texture, attractive “silken” flowers, and picturesque and broad horizontal canopy: can be planted in March; rapid growth rate; low water requirements; has the ability to thrive in full sun in hot summer climates, as well as grow in poor soil; frequently planted in semi-arid areas (eg. Texas, Oklahoma); although the tree can survive drought, the growth will be stunted or look sick; thus, infrequent deep waterings during the summer will benefit growth and flowering; (2) the broad crown of the mature tree is useful for providing patchy shade;</p> <p><varieties:></p> <ul style="list-style-type: none"> o <i>A. julibrissin</i> var. <i>julibrissin</i>: o <i>A. julibrissin</i> var. <i>mollis</i>: differs in the shoots being densely hairy <p><invasive species:> in the wild, the plant typically grows in dry plains, sandy valleys, and uplands; the plant is considered an invasive species in some parts of the U.S. (ie. has spread from southern New York, New Jersey, and Connecticut, west to Missouri and Illinois, and south to Florida and Texas, Hawaii, and other Pacific is.), and Japan; (see also ‘Seed’ above); breeding work is being done in the U.S. to prevent the plant from bearing/setting seeds; in the eastern U.S. the tree is short-lived due to being susceptible to mimosa vascular wilt (def.: a fungal disease caused by a species of <i>Fusarium</i>; seemingly has not impacted its populations) (3); b/c of invasive tendencies and disease susceptibility, the plant is rarely recommended as an ornamental plant in the U.S.; however, it is still widely planted in parts of Europe;</p> <p><genus></p> <ul style="list-style-type: none"> o uses: forage (eaten by grazing livestock), timber, medicinal plant (7)(8); food plants used by larvae and moths; o hazard: branches may easily break in high winds <p>FS: symbolic representation of the silkworm; helpful to people who work at home; the flowers and leaves are good conductors of energy; creates a fine shading element for a patio; ensures a smooth flow of energy</p>
<p>Sources:</p> <ol style="list-style-type: none"> (1) Juan-Alberto Rodriguez Perez, Flore exotique dans les iles Canaries, Leon, Espangne, Editorial Everest, 1990. (2) Kathleen Norris Brenzel (ed.) (2007). ‘Sunset Western Garden Book’. p. 178. (3) Fusarium Wilt of Mimosa (<i>Albizia julibrissin</i>). Virginia Cooperative Extension. (4) <i>Albizia adianthifolia</i>. South African National Biodiversity Institute. (5) Lowry, J.B. 2008. ‘Trees for Wood and Animal Production in Northern Australia’. Rural Industries Research and Development Corp. Indooroopilly, Queensland. (6) Singh, Gurcharan (2004). Plant Systematics: An Integrated Approach. Science Publishers. p. 445. (7) Lowry, J.B.; Prinsen, J.H. & Burrows, D.M. (1994): 2.5 Albizia lebbeck- a Promising Forage Tree for Semiarid Regions. Gutteridge, Ross C. & Shelton, H. Max (eds.): ‘Forage Tree Legumes in Tropical Agriculture’. CAB International. (8) Joycharat N, Thammavong S, Limsuwan S, Homlaead S, Voravuthikunchai SP, Yingyongnarongkui BE, Dej-Adisai S, Subhadrirasakui S (2013). “Antibacterial substances from <i>Albizia myriophylla</i> wood against cariogenic <i>Streptococcus mutans</i>”. ‘Archives of Pharmacal Research’. 36 (6): 723-30. 		
<p>Tree of heaven ‘ailanthus’; SC: <i>Ailanthus altissima</i> [6-10];</p>	<p>Yang Protection</p>	<p>T: deciduous tree LU: ornamental tree NH: northern and central China (3), Taiwan (12), and Korea (13); temperate climates; the fossil record indicates that the plant was present in North America during the middle Miocene era (14); the tree prefers moist and loamy soil, but is adaptable to a wide range of soil conditions (and pH values); drought-hardy, but not tolerant to flooding; intolerant to</p>



Darkone (2005)

[der. Ambonese Malay: 'heaven tree,' 'tree of the gods,' or 'tree reaching for the sky' (*ailanto*) (39);

Ltn.: 'tallest' (*altissima*)]



Britton, N.L., and A. Brown (1913). Illustrated flora of the northern states and Canada. Vol. 2: 446. USDA PLANTS Database.

[taxonomy (5): first scientific descriptions of *ailanthus* were made shortly after its introduction to Europe, by the French Jesuit Pierre Nicholas D'Incarville, who had sent seeds (he had identified incorrectly as the Chinese varnish tree, *Toxicodendron vernicifluum*) from Peking via Siberia to his botanist friend, Bernard de Jussieu (1740s); Jussieu planted a few seeds in France, while sending others to England; confusion of naming occurred when the all seed recipients gave differing names; (5)

deep shade (4); often found in limestone-rich areas (in China) (15); the plant is found in a wide range of climatic conditions (4)- high altitudes (Taiwan) (16), low lands (China) (5), arid regions (Great Plains, US), wet regions (southern Appalachians, US), cold regions (lower Rocky Mountains, US), California (3); prolonged cold and snow cover can cause dieback, but the trees can resprout from the roots (4); earliest introductions of *A. altissima* outside its native range were to southern Korea and Japan (17); and China (Qinghai, Ningxia, Xinjiang) <genus> native to east Asia, and Australasia (15);

G: medium-sized deciduous tree (15 m/ 49' H in 25 yrs; can reach 17-27 m/ 56-89' H; 1 m/ 29" dia.) (4), w/ strong ascending branches bearing a tall irregular dome, and bright, deep red leaves which unfold in mid-June; the tree can endure urban pollution and poor <cold> weather; short-lived: rarely lives more than 50 yrs (some specimens have lived for 100+ yrs) (1); suckering (ie. linked to the mother tree; suckers are less vulnerable than seedlings, and grow faster) ability which enables indefinite self-cloning (2);

Bark: young trees have smooth, light gray-brown bark, patterned w/ white angular streaks, or light tan fissures; older trees have dark gray bark w/ dark streaks; the bark scales finely w/ age;



Kurt Stuber (2004)

- twigs: stout, smooth, and reddish or chestnut in color;
- lenticels [def.: a porous tissue consisting of cells with large intercellular spaces in the periderm/bark of the secondarily thickened organs and bark of woody stems and roots of dicotyledonous flowering plants; function- a pore, providing a pathway for the direct exchange of gases between the internal tissues and the

<ul style="list-style-type: none"> ○ Philip Miller (superintendent at Chelsea Physic Garden, London): <i>Toxicodendron altissima</i> ○ Philip C. Webb (Busbridge, England): <i>Rhus Sinese foliis alatis</i> ○ Carl Linnaeus (Paris): <i>Rhus succedanea</i> ○ Rene Louiche Desfontaines cleared the taxonomic confusion of ailanthus (1788) after he observed the samaras of the Paris specimens, and concluded that the plant was not a sumac; his published article with an illustrated description gave it the name, <i>Ailanthus glandulosa</i> (ref. to the glands on the leaves; this name persisted until- ○ Walter T. Swingle (1957) derived the current name, <i>Ailanthus altissima</i>, by combining Miller's old species name (<i>altissima</i>) w/ the genus of Desfontaines (<i>Ailanthus</i>) (10)] <p>[Chin.: 'tree of heaven <heaven tree>' (天木 tian mu; 椿 <i>chun</i>; literary metaphor: 'father'); <lit.: 'foul smelling tree'> (臭椿 chouchun); people of the lower Yellow r. know it as: 'spring tree' (椿樹 chunshu); ref.: <i>A. altissima</i> is one of the last trees to come out of dormancy- indicating the true end of winter (5)]</p> <p>Family: <i>Simaroubaceae</i></p>		<p>atmosphere <through the bark (which is otherwise impermeable to gases)>], as well as heart-shaped leaf scars (after it falls) w/ many bundle scars around the edges;</p> <ul style="list-style-type: none"> ○ buds: finely pubescent (ie. downy), dome-shaped; hidden behind the petiole (5-12 mm/ 0.20-0.47" L) (6), although the buds are completely visible in the dormant season at the sinuses of the leaf scars (5); ○ branches: light to dark gray in color, smooth, lustrous; contain raised lenticels, which become fissures w/ age ○ odor: all parts of the plant have a distinctively strong odor that is similar to rotting/rancid peanuts, and/or cashews (6); <p><uses:></p> <ul style="list-style-type: none"> ○ TCM 'tree of heaven bark' <ailanthus bark or root bark> (椿皮 <i>Chun pi</i>); 'white bark of spring' (椿白皮 <i>chun bai pi</i>) [Pharm. Ltn.: <i>Cortex Ailanthi</i>]; <actions and indications:> cooling; astringent; diarrhea, dysentery; tinea-like rashes, kills roundworms; has an anti-malarial agent (ailanthone) <ul style="list-style-type: none"> → clears heat, astringes intestines, dries dampness, clears damp-heat, stops diarrhea and stops bleeding: diarrhea and dysentery (damp-heat), esp. w/ hemafecia, intestinal hemorrhage; chronic vaginal discharge (damp-heat), menorrhagia (excessive menstrual bleeding); spermatorrhea → kills parasites: roundworms; pruritic tinea-like rashes (topical) → caution: only a low dosage (4-10 g) should be used since it is poisonous, or mildly toxic; → 18 recipes using the bark ('Compendium of Materia Medica,' by Li Shizhen; 684 CE) (5) → <w/in formula> 'Turtle Shell and Ailanthus Pill' (龟椿囊 <i>Gui Chun Wan</i>): low back pain → fermented medicinal drink [732 CE; recorded work]: chopped ailanthus root w/ young boy's urine, and fermented soybean (豆豉 <i>douchi</i>); after allowing the liquid to sit for a day, it was then strained, and given to the patient over the next few days; used to treat mental illness; (5) <p><Western herbal remedies></p> <ul style="list-style-type: none"> ○ bark tincture (19th c.CE: American herbalists): treating heart palpitation, asthma, epilepsy ○ bark extract (Western; sold as <i>A. glandulosa</i>): internal remedy to treat cancer <p>Leaf: large, odd/even pinnately compound, arranged alternately on the stem; a leaf (sz. range: 30-90 cm/ 0.98-2.95' L) contains 10-41 leaflets, organized in pairs, w/ the largest leaves found on young sprouts; the leaves are bronze when emerging in spring, then quickly change color to medium-dark green during growth (7); the rachis [Gk.: 'backbone/spine' (ράχις <i>rhakhis</i>); def.: <main axis/ shaft>] is light reddish-green w/ a swollen base; the leaflets (5-18 cm/ 2.0-7.1" L; 2.5-5 cm/ 0.98-1.97" W) are ovate-lancelolate, somewhat asymmetric and sometimes not directly opposite to each other; has a long tapering end w/ 2-4 teeth (ea. tip contains 1+ glands; which distinguish the plant from similar looking sumac species) at the bases</p>
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 <p>a alamy stock photo <small>CRKYWE www.alamy.com</small></p> <p>[South America: <vernacular name for this cultivated bamboo> (<i>Chusquea</i>); der. from <i>Chusque</i> (Columbia, Equador); Ltn.: 'short <little> hull/husk' (<i>breviglumis</i>)]</p> <p>Family: <i>Poaceae</i> (grass); (aka. <i>Gramineae</i>)</p>		
<p>'Umbrella bamboo' (1)</p> <p>SC: <i>Fargesia murielae</i> [80-90];</p>  <p>IKAI (2007)</p> <p>[initially published as <i>Arundinaria sparsiflora</i>; the name <i>Fargesia</i> was given in honor of the French missionary and amateur botanist Pere Paul Guillaume Farges (1844-1912); French missionary P. Farges collects a herbarium specimen of an unknown flowering bamboo in Szechuan p., China (1892); the name <i>murielae</i> (Gamble) is the Latinized form of the personal name of Muriel, the daughter of Ernest Henry Wilson, who introduced the plant from the Shennongjia mts., Hubei p. (1907); and asked G.S. Gamble to name it] (4);</p> <p>[Chin.: <genus <i>Fargesia</i>> 'arrow bamboo' (箭</p>	<p>(see above)</p>	<p>T: woody perennial grass; LU: ornamental; <genus> ornamental NH: native to the mountains (elev. 6500-10000'/ 1981-3048 m H) of central China (most common in Southeast Asia, China, and Japan) (5); introduced to the West (along w/ c. 2000 other Asian plant species) by Ernest Henry Wilson (1913), and named after his daughter; the "umbrella" name describes the plant's weeping characteristic; <genus> China, Vietnam, eastern Himalayas; alpine conifer forests</p> <p>G: large, clump-forming evergreen bamboo (3-4 m/ 10-14' H; 0.5" dia.); (sim. to <i>Fargesia nitida</i> but w/ yellow canes) (2)(3); hardy (-15 °C/ 5 °F); (4)</p> <p><genus> small to medium mountain clumping bamboos, not spreading vigorously; <i>Fargesia</i> are some of the world's hardest bamboos, but are very susceptible to changes in the weather; (30 m/ 100' H); sometimes called "timber bamboo" used in construction of buildings and furniture;</p> <p>Rhizome: the plant forms a dense clump of canes and is relatively slow spreading, but can be rather extensive and quite competitive w/ surrounding plants; (4) <genus> has no running rhizomes, they require no containment to prevent spreading; because genus <i>Fargesia</i> is non-invasive, it can be used as a screening, or ground cover in landscaping;</p> <p>Culm: new shoots are light blue w/ tan culm sheaths, aging to a yellowish-green; spray (3-4 m/ 10-14' H; 4</p>

<p>(1) Makino, Tomitaro ex Nakai, Takenoshin. 1925. Journal of the Arnold Arboretum 6(3): 150. www.biodiversitylibrary.org. (2) Kew World Checklist of Selected Plant Families. www.wcsp.science.kew.org.</p>		
<p>'Kew beauty'</p> <p>SC: <i>Thamnocalamus crassinodus</i> [4] (1);</p>  <p>http://www.uk-bamboos.co.uk/Detail-B/thamnocalamus_crassinodus_%27Kew_Beeauty%27.htm</p> <p>[Ltn.: 'bushy reed' (<i>Thamnocalamus</i>); 'solid <thick; fat; dense> knot' (<i>crassinodus</i>); genus <i>Thamnocalamus</i> is closely related to genus <i>Fargesia</i>, and thus the 2 genera are sometimes regarded as belonging to the same genus]</p> <p>[Chin.: 'bamboo <genus <i>Fargesia</i>>' (箭竹 <i>jian zhu</i>)];</p> <p>Family: <i>Poaceae</i> (grass); (aka. <i>Gramineae</i>)</p>	<p>(see above)</p>	<p>T: woody perennial grass; LU: ornamental NH: eastern Himalayas (Tibet); Madagascar; southern Africa; various altitudes</p> <p>G: hardy clumping bamboo (3-5 m/ 10-15' H; 18' H; 1" dia.); hardiness: -10 °C/ 14 °F; <genus> hardy clumping bamboo</p> <p>Culm: slender and delicate looking; new shoots are bluish gray; culms age to a brownish red in good sunlight</p> <p>Leaf: small, w/ feather-like texture, sparse delicate leaves drape from burgundy/wine widely spaced branches;</p> <p>C: should be planted on the east side of house w/ a half day of direct sunlight, or partial shade; when the temperature drops below 15 °F, <i>T. crassinodus</i> will lose most of its foliage, but should grow back in spring</p> <p><cultivars:></p> <ul style="list-style-type: none"> o 'Dwarf': (8' H; 0.5" dia.); new culms are pale blue; hardiness (10 °F); arching habit o 'Gosainkund': (18' H; 1" dia.); hardiness (15 °F); blue-gray culms o 'Lang Tang': (10' H; 0.8" dia.); hardiness (15 °F); new canes are blue that fade into green o 'Mendocino': (16' H; 0.8" dia.); hardiness (5 °F); blue-green drooping leaves
<p>Sources: (1) "Thamnocalamus crassinodus". Bamboo Identification. www.bamboo-identification.co.uk/html/crassinodus.html.</p>		
<p>Aquatic Flowers</p>		
<p>American white waterlily (1) 'fragrant water-lily' (2); 'beaver root'; 'fragrant white water lily'; 'white water lily'; 'sweet-scented white water lily'; 'sweet-scented water lily' (3)</p> <p>SC: <i>Nymphaea odorata</i> [34];</p>  <p>SanctuaryX (2015)</p> <p>[Gk.: (νυμφαία <i>nymphaia</i>); Ltn.: 'water lily' (<i>nymphaea</i>); inspired by the <water> nymphs in Greek/Roman mythology (10); <i>Nymphaea</i> is not related to the legume genus Lotus or the Chinese and Indian lotuses of genus <i>Nelumbo</i>; however, <i>Nymphaea</i> is closely related to <i>Nuphar</i> lotuses;</p>		<p>T: aquatic plant; <genus> hardy and tender aquatic plants; LU: ornamental plant NH: N. America (4)(5); Brazil and Guyana (6); shallow lakes, ponds, and permanent slow moving waters; considered invasive and weedy on the west coast of N. America; <genus> cosmopolitan distribution (10)</p> <p>G: the plant is rooted from branched rhizomes which give rise to long petioles which terminate into smooth floating leaves; <genus> aquatic rhizomatous perennial herbs; sometimes w/ stolons (ie. runners; horizontal connections btwn. organisms);</p> <p>Leaf: round w/ waxy upper coating which is water-repellent (7); <genus> the leaves (most floating on the surface of the water) grow from the rhizome on long petioles; the blades have smooth or spine-toothed edges, and can be rounded or pointed;</p> <p>Flower: float; radially symmetric w/ prominent yellow stamens and many white petals; the flowers open each day and close each night; very fragrant; once the flower is pollinated, the developing fruit is pulled back under water for maturation (8); <genus> rise out of the water, or float on the surface, opening during the day or night (10); many species display protogynous flowering (ie. changes its gender from female to hermaphrodite)- the temporal</p>

<p>Ltn.: 'perfumed; fragrant' (fem. <i>odorata</i>)</p> <p>Family: <i>Nymphaeaceae</i></p>		<p>separation of female and male phases is physically indicated by flower opening and closing, so the first opening flower displays a female pistil and then closes at the end fo the female phase, and reopens w/ male stamens (11); each flower has at least 8 petals in shades of white, pink, blue, or yellow; many stamens are at the center (10); water lilies are entomophilous (ie. pollinated by insects, often beetles; petals are much larger than the sepals (opposite w/ genus <i>Nuphar</i>);</p> <p>Fruit: <genus> berry-like; born on a curving/coiling peduncle (10); <i>Nymphaea</i> fruit sinks under the water immediately after the flower closes (while <i>Nuphar</i> remains above the surface)</p> <p>C: <uses: edible and medicinal></p> <ul style="list-style-type: none"> o edible parts: seeds, leaves, flowers, rhizomes o medicinal: rhizomes- coughs and colds; stems-toothaces (topical directly on the tooth) (9); <p><genus></p> <ul style="list-style-type: none"> o uses: <ul style="list-style-type: none"> → decorative; → provide shade, which helps reduce algae growth in ponds and lakes (12); → several edible parts: <ul style="list-style-type: none"> ▪ young leaves and unopened flower buds can be boiled and served as a vegetable; ▪ seeds are high in starch, protein, and oil, and may be popped, parched, or ground into flour; ▪ potato-like tubers can be collected (<i>N. tuberosa</i>) (13); o many hybrids and cultivars <ul style="list-style-type: none"> → cultural significance: <ul style="list-style-type: none"> ▪ Egyptian: Nile lilies were revered as lotuses; feature in temple column architecture; symbol of cosmic creation- represents the emergence of the Sun from the primordial sludge; symbol of fertility deities and the upper Nile as the giver of life; (14) symbol of deity division and of death and the afterlife- the blue water lily (<i>N. caerulea</i>) opens in the morning, then sinks underwater at dusk; conversely, the white water lily (<i>N. lotus</i>) opens at night and closes in the morning; ▪ Roman: the belief of drinking the liquid of crushed <i>Nymphaea</i> in vinegar for 10 consecutive days turned a boy into a eunuch ▪ Syrian: assoc. of lotus blossoms w/ <i>Asherah</i> (14-13th c.BCE: terra-cotta plaque); assoc. w/ <i>Horus</i> seated on a lotus blossom flanked by 2 cherubs (9-8th c.BCE: ivory panel) (15); ▪ French: Claude Monet (1840-1926) in his many paintings of water lilies in the pond at Giverny (16); ▪ Bangladesh (17) and Sri Lanka (18): national flower (<i>N. nouchali</i>); ▪ indigenous Australian: major food source- flowers and stems eaten raw,
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<p>[described by Irish botanist and phycologist (study of algae), William Henry Harvey (1811-1866)] (3)</p> <p>Family: <i>Hydrocharitaceae</i></p>		
<p>Sources:</p> <p>(1) Global Invasive Species Database- "Lagarosiphon major". www.iucngisd.org. (2) "Plants Profile for Lagarosiphon major (oxygen-weed)". www.plants.usda.gov. (3) Harvey, William Henry. 1841. Journal of Botany, being a second series of the Botanical Miscellany 4: 230-231. www.biodiversitylibrary.org. (4) World Checklist of Selected Plant Families: Royal Botanic Gardens Kew". www.apps.kew.org.</p>		
<p>Lotus 'Indian lotus'; 'sacred lotus' (1); 'bean of India'; 'Egyptian bean'; aka.: "Rose of India"; " Sacred water lily of Hinduism and Buddhism"</p> <p>SC: <i>Nelumbo nucifera</i> [2 extant; 6 fossil]</p>  <p>T.Voekler (2008)</p> <p>[der. Sinhala (Sri Lanka): 'lotus <<i>Nelumbo nucifera</i>>' (<i>nelum</i>) (43); genus <i>Nelumbo</i> is not related to genus <i>Lotus</i>; even though very distant, genus <i>Nelumbo</i> outwardly resembles water lilies in the family <i>Nymphaeaceae</i>; lotus is often confused w/ true water lilies of genus <i>Nymphaea</i> (esp. <i>N. caerulea</i>, the 'blue lotus'; several older classification systems refer to the lotus by its old synonym, <i>Nymphaea nelumbo</i>); Ltn.: 'nut bearing/producing' (<i>nucifera</i>)]</p>	<p>Balance, integrity, and incorruptibility of the 'gentleman' (君子 <i>junzi</i>); (Confucianism)</p> <p>Radiant Purity; Seeking knowledge; (Confucianism)</p> <p>Friendship, peace, unity</p> <p>Openness and wisdom (Taoism)</p> <p>'Flowers of the Four Seasons'</p> <p>Summer</p>	<p>T: eudicotyledonous perennial aquatic plant; LU: ornamental plant NH: central and northern India, southern Himalayas (up to 1400 m/ 4600' H elev.) (3), northern Indochina, E. Asia, isolated locations at the Caspian s. (4); currently-southern India, Sri Lanka, Southeast Asia, New Guinea, northern and eastern Australia (4); <genus> Asian lotus- (<i>N. nucifera</i>); 'American lotus'- N. America and Caribbean (<i>N. lutea</i>); horticultural hybrids have been created with the 2 allopatric [Gk.: 'other' (<i>ἄλλος allos</i>) + 'fatherland' (<i>πατρὶς patris</i>); ref. geographic speciation; dumbbell model; the isolation of populations of the same species prevents or interferes w/ genetics] species; 6 fossil species are known from Cretaceous, Paleogene, Neogene aged strata throughout Eurasia and N. America;</p> <p>G: an individual lotus can live 1000+ years; and has the unique ability to become active after stasis (see 'seed' below); <genus> aquatic plant w/ large illustrious flowers;</p> <p>Root/Rhizome: in the soil of a pond or river bottom; yellowish white to yellowish brown, smooth w/ nodes and internodes; size (14-60 cm/ 5.5-23.6" L; 0.5-2.5 cm/ 0.20-0.98" dia.);</p>  <p>FotoosRobin (2008)</p> <p><uses:></p> <ul style="list-style-type: none"> ○ TCM: 'lotus rhizome node' (藕節 <i>ou jie</i>): [Pharm. Ltn.: <i>Nodus Nelumbo Rhizomatis</i>; <i>Nodus Nelumbo Nuciferae</i>]; <actions and indications: diuretic, antidiabetic, anti-obesity, hypoglycemic, anti-inflammatory; anti-oxidant; psychopharmacological> → stops bleeding, removes blood stasis: hematemesis and hemoptysis (due to lung and stomach heat)



Romain Guy (2006)

[Chin.: 'lotus' (荷 *he*); (蓮 *lian*); 'lotus flower' (荷花 *he hua*); (蓮花 *lian hua*);
homophones for 'lotus' names: 'unite' (聯 *lian*);
'harmony' (和 *he*); Ltn.: (*Nelumbo nucifera*)]

Family: *Nelumbonaceae* (water lily)
[*Nelumbo* leaves/pads, which are peltate (fully circular), can be distinguished from those of the family *Nymphaeaceae*, which have a single characteristic notch from the edge to the center of the lily pad; genus *Nelumbo* also has a distinctive seedpod]

→ eliminates heat from blood

Stem:

<uses:>

- TCM: 'lotus plumule <young shoot of the plant embryo>' (蓮子心 *lian zi xin*): [Pharm. Ltn.:
Plumula Nelumbinis]: <actions and indications:>
 - drains heart/pericardium fire (*ying* stage): high fever, mental confusion or delirium; insomnia or irritability
 - stops bleeding, astringes essence-*jing*: hematemesis, spermatorrhea; (as a powder)

Leaf: stalks or petioles allow the plant to grow in water to the depth of their length (200 cm/ 6-7" L) (5) and spread horizontally (1m/ 3'-3" W) (6); leaves may be large (80 cm/ 31" dia.) (7);



Derek Ramsey (Ram-Man) (2007)

<uses:>

- TCM: 'lotus leaf' (荷葉 *he ye*): [Pharm. Ltn.:
Folium Nelumbinis]: <actions and indications: hematemesis, epistaxis, hematuria>
 - relieves summerheat and dampness: fever, irritability, excessive sweating, scanty urine, diarrhea
 - ascends and lears spleen *yang*: diarrhea (esp. in aftermath of summerheat)
 - removes stagnation, stops bleeding: bleeding in the lower warmer (due to heat or stasis); hematemesis

<genus>

- ultrahydrophobicity: the *Nelumbo* leaves are highly water-repellent, or exhibiting ultrahydrophobicity [involves 2 criteria: i) a very high water contact angle between the droplet of water and the leaf surface; ii) and a very low roll-off angle (45)], resulting in having self-cleaning properties, or the "lotus effect," (44) meaning that if a water droplet contacting the leaf surface at one small point, will roll off the leaf, if there is any manipulation of the leaf angle (45); ultrahydrophobicity (or essentially, the reduction of contact area between the water droplet and the leaf) is enabled through the dense layer of papillae on the surface of the leaf, and the small, waxy tubules protruding off the papillae (46);

Flower: usually found on thick stems rising above the surface of the water (several cm); flamboyant flowers

can be large (30 cm/ 12" dia.);



Frank "Fg2" Gualtieri (2005), Lotus bud

<genus>

- thermoregulation: *Nelumbo* has the ability to regulate the temperature (ie. generate or produce heat (47); lotus flowers can maintain a temp. of 30-35 °C/ 86-95 °F, even when the air temp. dropped to 10 °C/ 50 °F; Adelaide Botanic Garden, Australia) of its flower to within a narrow range (sim. warmblooded animals), which it accomplishes through the use of alternative oxidase pathway (AOX) [def.: involves a different/alternative exchange of electrons from the usual pathway followed by electrons while generating energy in mitochondria] (48); thermoregulation could be innately happening to attract cold-blooded insect pollinators; (8)(47)

<uses:>

- TCM: 'lotus stamen' (蓮鬚 *lian xu*); [Pharm. Ltn.: *Stamen Nelumbinis*]: <actions and indications: spermatorrhea, vaginal discharge, epistaxis, hematemesis, uterine bleeding; diarrhea, cholera, fever, hyperdipsia>
 - stabilizes deficient kidneys, astringes essence-*jing*, and clears heat in the heart: nocturnal emission, premature ejaculation, enuresis, vaginal discharge; heart *yin* deficiency
 - stops bleeding: epistaxis, hematemesis and profuse uterine bleeding

Seed: in favorable circumstances, the seeds remain viable for many years- the oldest recorded lotus seed germination (1300 yrs.; dry lakebed in NE China) (2); mostly oval or spherical; size varies according to variety (gen.: 1.2-1.8 cm L; 0.8-1.4 cm dia; wt.: 1.1-1.4 g) (36);



KENPEI (2007), *N. nucifera* seed head

<uses:>

- TCM: 'lotus seed; nelumbo' (蓮子 *lian zi*); [Pharm. Ltn.: *Semen Nelumbinis*]:
 <actions and indications: diarrhea, anorexia, spermatorrhea, uterine bleeding, insomnia; high blood pressure, diabetes, gallstones; enhances immune system>
 - tonifies spleen, astringes diarrhea: chronic diarrhea, loss of appetite
 - tonifies and stabilizes the kidneys, astringes essence-*jing*: premature ejaculation, spermatorrhea; excessive uterine bleeding, vaginal discharge
 - nourishes heart, calms the spirit: palpitations w/ anxiety and irritability, insomnia (assoc. w/ deficiency)
 - nourishes the viscera (臟 *zang*) of the triple warmer system (ie. lower- kidney; middle-spleen; upper- heart)

C: common; long history of cultivation (c. 3000 yrs)- for edible seeds (4) and water horticulture (3); grows in water range of depth (30 cm/ 12" to 2.5 m/ 8' D), which depends on the climate (ie. shallow water will heat up quickly in colder climates, which is helpful for better growth and flowering); lotus will germinates in moderate temp. (13 °C/ 55 °F) (9); most varieties are not cold-hardy (10); during the growing season (N. hemisphere: April-September), a warm avg. daytime temp. is required (23-27 °C/ 73-81 °F) (11); in regions w/ low light level during winter, the lotus is dormant; the tubers can resist cold temp. (0 °C/ 32 °F) if covered w/ an insulating cover (eg. water, soil) (12); in winter, the roots must be free from frost (13)(5);

<planting:>

- lotus requires nutrient-rich loamy soil (10);
- propagation methods: i) during summer (from March-May; N. hemisphere) (14) the rhizome w/ at least eye can be either planted in a pond (15) or into a flooded field (16); ii) via seeds or buds (12); iii) tissue culture (17)
- process: i) plough the dry field; ii) one cycle of manure is applied after 10 days; iii) flood the field; iv) for quick initial growth- hold water level low (16), then increase once the plants start growing; v) plant a max. of approx. 4000 rhizomes per hectare (10000 per acre) (17), in the mud, below (10-15 cm/ 3.9-5.9") the soil surface (18);

<harvest (time after planting):>

- stolon (2-3 months): before flowering; pulling and

		<p>shaking the young leaves in the shallow water, the stolon is pulled out of the water manually (16);</p> <ul style="list-style-type: none"> ○ first leaves and flowers (3 months): flowers can be picked every 2 days during summer and every 3 days during fall or winter; flowers reach their climax in 4 months, and are usually harvested (3-4 months) by hand; (16) ○ seeds and seed pods (4-8 months): when they turn black; after sun drying for 2-3 days, they are mechanically processed to separate seed coats from embryos; (16)(12) ○ rhizomes (6-9 months) (18): ready for eating; early varieties (July-Sept); late varieties (Oct-March), after the ponds or fields are drained (12)(13)(16)(18); <p><cultivars:> lotus varieties are classified accd. to their use in 3 types;</p> <ul style="list-style-type: none"> ○ rhizome lotus: culinary; have the highest yield of rhizomes over the other lotus cultivar types; cultivars are classified by harvest time and rhizome depth; (production area in China: 200,000 ha/ 490,000 acres) (19); <p><harvest time cultivars:></p> <ul style="list-style-type: none"> → pre-mature (early): harvested before the end of July; these rhizomes can be harvested earlier, and therefore can be sold for a higher price (19); → serotinous (late): harvested from September on → mid-serotinous/ mid-matutinal: harvested in between end of July and September <p><depth cultivars:></p> <ul style="list-style-type: none"> → adlittoral (10-20 cm/ 3.9-7.9" D): often premature; develop fast due to high temperature in the surface soil layers; when harvested in July (but not September), these cultivars have higher yields than deep; these are crisp and good for frying → deep (more than 40 cm/ 16" D): often serotinous; can harvest high yield (19); starch-rich → intermediate <ul style="list-style-type: none"> ○ seed lotus: culinary; cultivar characteristics include- a large number of carpels and seed sets, and large seeds w/ better nutritional properties; seed lotus cultivar roots are thin and fibrous (17); (production area in China: 20,000 ha/ 49,000 acres) (19); ○ flower lotus: ornamental; produce a large number of flowers, and the lowest plant height (19); seed production is poor; flower types differ in petal number (eg. single, double, multi-), and color (eg. single- white, yellow, pink, red; bi-color- white w/ pink tip or highlights) (17); <p><farming systems: (19)> China produces about 70% of the lotus used for human consumption; the majority of lotus production w/in managed farming systems occurs in ponds or flooded fields;</p> <ul style="list-style-type: none"> ○ crop rotation: w/ rice and vegetables; applicable if the propagule (ie. small piece of rhizome) can be planted early in the year; lotus rhizomes are harvested in July; followed by planting rice, which is harvested in October; from November until March, the field remains free, or a terricolous vegetable (eg. cabbage, spinach) can be planted; alternatively, vegetables can be planted after the lotus is harvested;
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