GINKGO BILOBA - A LIVING TREASURE

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The *Ginkgo* tree is the sole survivor of an ancient line of Gymnosperms, reaching back almost 200 million years; a period of time difficult for the human mind to grasp. Yet, according to the fossil records, trees very similar to the *Ginkgo* once ranged across most continents of the earth - even to Australia and New Zealand.

Today it is not certain if the species still exists in the wild, although there have been reports of it growing in south-eastern and far western China. This much revered tree was planted by Chinese Buddhist monks around their temples and by emperors around their palaces. Buddhist monks are also thought to have introduced it in Japan.

The first European to study the *Ginkgo* was Kaempfer, a surgeon-naturalist with the Dutch East Indies Company in Japan, in 1690. The first recorded planting of the *Ginkgo* in Europe was in the Utrecht Botanical Gardens in Holland about 1730. The first tree planted in Britain was at the Kew Gardens in 1754.

Ginkgo biloba is a handsome tree, known to reach 30-40 metres in height. It has a regular pyramidal shape, becoming usually roundheaded with age. It may live for 1000 years or more. The bark is greyish-fawn, rough, and deeply furrowed in older trees.

Commonly known as the maidenhair tree, the ducksfoot tree in Japan, and the sovereign tree in France, the *Gingko* has several unusual botanical features not found in "modern" trees. Let's take a closer look at some of these. The fan-shaped, long-stalked leaves have a dichotomous system of veins; that is, each vein forks into more veins, which in turn fork again as they grow towards the leaf margins. A feature of older trees is the downward growing peg-like structures which, on reaching the ground, may form roots and subsequently new trees.

Like many other trees the *Ginkgo* possesses both long shoots (branches) and much shorter spur shoots, both of which produce leaves, but it is only the spur shoots that bear the male and female reproductive structures. The species is dioecious; the male and female parts are borne on separate trees. The catkin-like male cones appear each spring as do the ovules on the female trees. The ovules, usually in pairs, are carried on slender stalks.

Pollination occurs when windblown pollen from the catkins reaches the ovules of nearby trees. Pollen-grains enter the ovules through a tiny pore. However, the process of fertilisation begins when a pollen-grain germinates, sending out a pollen-tube. This may occur while the ovule is still on the tree or after it has fallen to the ground. The pollen-tube, containing two motile sperm cells, continues to develop and grow until it reaches the egg cell. Here the motile sperms are released, but only one of these penetrates and fuses with the egg cell; thus fertilisation is achieved. Now the embryo of a new tree may develop.

The ripe seed (not fruit) of the *Ginkgo* has an outer fleshy coat, giving it a plum-like appearance. As this coat decays, it gives off a most offensive odour of rancid butter. For this reason, it is usually the male trees which are planted in parks and gardens. Despite its unpleasant smell, the seed is considered a delicacy in China and Japan. The kernels are roasted. It is claimed that they are "good" for the digestion and counter the effects of too much wine.

Horticulturally, the *Ginkgo* is a wonderful street tree and of course eminently suitable for parks and larger gardens. No other tree has quite the same clear, brilliant-yellow colouring in Autumn. At least three cultivars are recognised:

cv 'Fastigiata' - semi-erect
cv 'Pendula' - spreading and weeping; and
cv 'Tremonia' - a conical form

Another attribute is its apparent resistance to disease and the effects of urban pollution.

Propagation from seed is easy, provided it is properly stratified and kept at 5°C for 65 days. Cuttings, 12 cm long, should be taken from last Spring's growth. Ensure good root development as plants may die in their first winter.

Ginkgo is indeed a living treasure from which scientists have gleaned much knowledge of the Earth's botanical past. May this great survivor long continue to grace our planet.

REFERENCES

Foster, A.S., Gifford, E.M. 1959. Comparative Morphology of Vascular Plants. Freeman, San Francisco

Hora, B. (ed) 1981. The Oxford Encyclopaedia of Trees of the World. Oxford University Press, Oxford

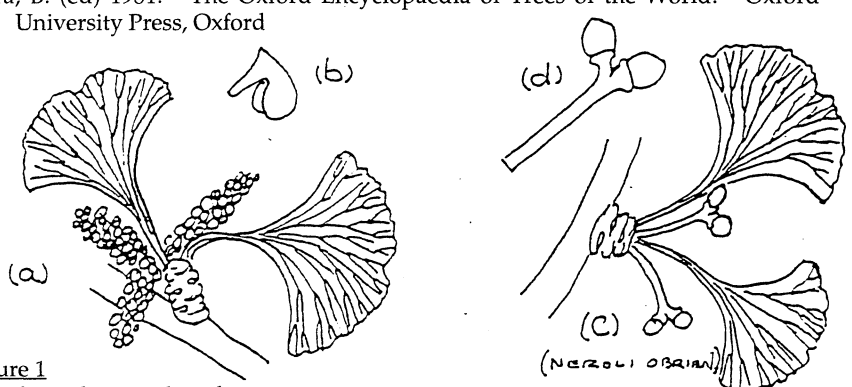

Figure 1
(a) Spur shoot with male cones
(b) Paired pollen sacs from male cone
(c) and (d) Spur shoots with young ovule-bearing structures
Note - usually only one of the pair of young ovules reaches maturity