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‘And God saw that it was good’

God smiled when he made trees. They were perfect; he looked and could find no fault. Yet they appear so ungainly if it was not that we are so used to them—rooted to the ground, but seeming to stretch with abandon in all directions. They are top heavy like a child’s toy tree, but endure storms and floods. Some trees live longer than Methuselah. Indeed, some still living today were alive from before Abraham: others are so tall that they would over-top every Egyptian pyramid bar two.

Trees are peculiar in other ways. Some bear flowers of only one sex like the great spreading terebinth (*Pistacia atlantica*), under which the Israelites would come to commit so much idolatry, so both male and female terebinth trees are needed to set fertile seed. Other trees, such as that most prized of all in the eastern Mediterranean, the cedar of Lebanon (*Cedrus libani*), bear flowers of both sexes at once as, indeed, most conifers do. Yet others bear male flowers some years and female ones in others such as our English ash. The wood of trees is similarly variable. It can be more durable than iron or so strong for its weight to be able to make aircraft. We could go on, but this is not a sentimental book. Our journey is tracing trees, forests, timber and wood in scripture to illustrate

and magnify God’s wisdom and love. But God has not always smiled. For central to the Bible’s story is His Son dying on a tree¹ (1 Pet. 2:24). He was the object of God’s own wrath to undo for us all the disobedience that plucking that first fruit from a tree led to (Gen. 3:6).

The chapters loosely follow the Bible’s chronology and the order of its books with remarks and observations added rather like a commentary. As we come across an identifiable reference to a specific kind of tree, we include its Latin name usually at its first mention, as above for terebinth and cedar of Lebanon, and then stay with the English thereafter. When appropriate we try to place the tree in its setting geographically and, as far as we can, culturally and socially. Some additional notes for each tree species are provided in the compendium. We try to address, too, the following questions. Is there a forest or woodland practice being described or alluded to? How might this help our understanding of the Bible verse? Is there symbolism or deeper meaning? We hope this book is both factual and, to a small degree, devotional, to add interest and to display the beauty and wonder of trees in scripture.

FACING PAGE: *Beautiful Tuscany countryside of cypress and oak, pine and poplar, i.e. conifer and broadleaved intermingled. Though to the north of Rome, perhaps a little like the landscape the Apostles Paul and Peter saw. Photo: S. Evans*

Seed bearing plants

Genesis 1

Trees are first mentioned, along with other seed bearing plants, in the middle of the Bible's opening chapter (Gen. 1:11–13). The Hebrew word for tree (*ets*) is used throughout the Old Testament and is a broad term including stick, wood and timber as well as tree. In one place we have the Aramaic for tree (*ilan*) in Nebuchadnezzar's dream which Daniel interprets (Dan. 4). Compared with the many names of thorns, thistles and spiny plants and shrubs, the Hebrews simply called a tree a tree unless they identified it by name with the difficulties for us of sometimes not being sure of the exact translation species by species.

The trees of the third day of creation have added the special provision that they reproduce after their kind. This reflects the wonder of the ancients that plants grew, dropped seed, and more of the same appeared and could be turned to advantage as the amazing basis of food production.² Botanists identify two great classes of seed bearing plants, called angiosperms and gymnosperms, which, for trees, equate with broadleaves and conifers or hardwoods and softwoods. Incidentally these last terms tell us nothing about how hard or dense the wood actually is: strictly speaking balsa is a 'hardwood' and yew is a 'softwood'! The important point, as the Bible asserts, is that pine seed will not give rise to a poplar tree nor a palm nut to a eucalypt.³ This is an important principle. Continuance of life is not random, the young are as they are because of what their parents were like. We all know this of course, but it reveals order in the universe. This fact impressed many biblical writers. For example, James, in his letter near the end of the New Testament, questions how is it possible that man made in God's likeness can both praise him and curse him with the same lips? (Jas. 3:12). He pressed home his point by observing, 'My brothers, can a fig-tree bear olives, or a grape-vine bear figs?'

In this faithfulness of successive generations, we find in these verses (Gen. 1:11–13) the germ of another biblical principle—the coexistence of young and mature, of the newborn and the elderly, indeed, of family. While there are many forests comprising trees of the same age, both arising naturally as well

as, obviously, planted forests, the bulk of woodland and forest is like a family. Of course large mature trees do not in an anthropomorphic sense 'care' for their offspring, the young seedlings, but in many situations the environment of the woodland glade, sheltered from extremes of high winds and desiccating sun, is ideal for seed germination and initial growth. This is well seen in tropical rain forest where recolonisation of a gap left when some giant of the forest crashes down follows a well-defined succession of different species—early colonisers thriving in the new influx of light, secondary species, and then slower growing, long-lived ones. At each stage the trees both thrive in and modify the environment leading, if undisturbed, to the type of forest that there was before. Break this cycle or destroy the orderly succession such as by forest clearance, still so worryingly extensive in the tropics, and irretrievable damage can be done. So too, perhaps, the family unit, but the analogy must not be pressed.

The beautiful picture from the Tel Dan Nature Reserve, through which the Dan River flows as bubbling brooks and gushing torrents from the waters of Mount Hermon, illustrates this diversity. Many kinds of trees and shrubs of many ages are growing together. It is a little bit of paradise, almost 'A Garden of Eden', through which Israel's main tributary to the River Jordan flows.

Verses 11 and 12 of the Bible's first chapter (Gen. 1:11–12) are careful to use the plural emphasising variety and numbers of trees and plants. Trees, which we generally define as plants with a woody stem capable of growing unsupported to 6m (20 ft), form only a small proportion, less than 10 per cent, of the 400,000 or so kinds of flowering plants in the world. In the Mediterranean region as a whole the tree flora is not particularly rich with around 290 indigenous tree species,⁴ and in this book we will only be considering 30 or so in any detail. What is interesting, though, is the diversity of plant life not only in the actual Mediterranean region but where its climate, well known by its alliterative 'warm wet winters with westerly winds', occurs elsewhere around the world. Mediterranean type climates are only found in parts of California, central Chile, South Africa's Western Cape Province, and south



ABOVE: *Dan tributary in spate*

and south-western Australia, just two per cent of the world's land surface. But this two per cent has nearly twenty per cent of the world's plant diversity.

Trees and plants are the first things made to inhabit the land God had formed and, as with all creation, God saw it was good. What a masterly and blessed understatement.

But we can say something else unique amongst creation—well almost—about trees and woodland. There are two sides to their benefit. Not only do they provide an astonishing range of products and benefits—posts, poles, paper, timber, firewood, fruits, fodder etc., but the presence of trees and forests protects the soil, modifies the local climate, provides shelter, stores carbon and provides numerous niches for wildlife. Unique among the world's resources, there is a duality: trees offer countless products to enjoy and countless benefits to confer for our and our planet's well-being.

Stewardship

Genesis 1:30

As the creation account of Genesis 1 draws to a close, trees with fruit are given for food (Gen. 1:30) and, along with all else that fills the Earth, the charge that we are to 'subdue' what God has made. Probably

approaching half of all trees provide food or some other use for humans or their domestic animals. Consider how goats and camels browse semi-arid scrub as well as our enjoyment of the familiar apples, pears, citrus or olives. But it is the word translated 'subdue' or 'rule over', or 'have dominion' as it is in the Authorised version, which has raised so many questions. Some see this as licence to exploit and hence explain man's ravaging of the Earth's precious resources. Certainly such exploitation has happened. For me as a forest scientist one of the clearest examples is destruction of Ethiopia's forest cover from forty per cent in the 1850s to less than four per cent of the land today. My visits there with Tearfund showed the consequences: widespread soil erosion, land degraded, and poor crops. No wonder when drought struck, the famine was 'biblical' to quote BBC commentator Michael Buerk as he reported the shocking scenes from the Korem camp in October 1984. As Bob Geldof lamented of the starving children, 'Do they know it's Christmas?'

The Mediterranean region has not escaped. The great savanna forests of North Africa known to the Romans and Carthaginians have long gone. Harbours once used by the Apostle Paul, for



ABOVE: Looking west from Ephesus. The old harbour is now far inland owing to siltation because of deforestation

example Miletus and Ephesus in western Turkey, have long silted up and are now miles inland telling of years of muddy rivers and centuries of erosion from deforestation of distant hills inland. When Richard I led the crusade in 1191 at Wadi Felik near Tel Arsuf (Apollonia just north of modern day Tel Aviv) the Saracens lay in wait hiding in forests. A thousand years before, the Jewish historian, Josephus, described another battle in these woodlands. Today they are gone. And today clearance continues. Thirty years ago in northern Iraq one of Saddam Hussain's military tactics against the Kurds was to deforest the hills and so remove cover.

These accounts could be replicated again and again. Russell Meiggs⁵ devotes a chapter to Mediterranean deforestation while J V Thirgood's entire book⁶ about *Man and the Mediterranean Forest* has the subtitle, 'A history

RIGHT: *Great beauty because of great care over many generations (Bedgebury National Pinetum)*

of resource depletion'. Probably three-quarters of the pre-civilisation forest cover has gone.⁷ We abrogated our God-given position and neglected environmental imperatives because of disregard and greed. But the words translated 'subdue' and 'rule' contain more the idea of civilised government of land under control rather than pillage or rape of resources. Joshua (Josh 17:18 & 18:1) has it exactly—wild, including forested, country being brought under control where it was needed. One aspect of development, including those fostered by Christian organisations, is care for and restoration of land qualities. Thus good land husbandry is an integral part of farming, forestry and rural development.

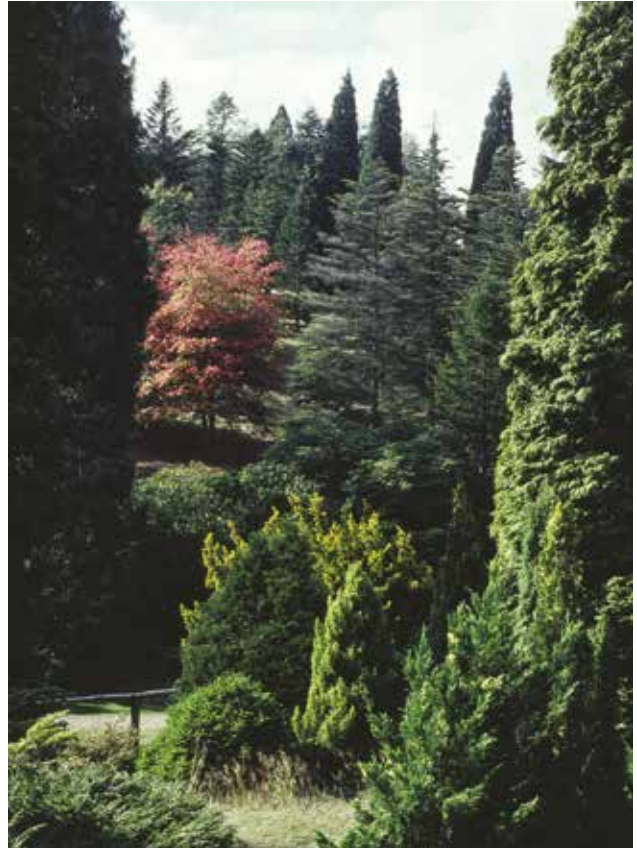
The first garden

Genesis 2 & 3

Gardens are significant places in the Bible. A mention of Gethsemane or where Christ was buried (John 19:41) and straightaway the Christian is transported to the heart of the gospel. The Bible presents the Garden of Eden (Gen. 2:8–25) not as an imaginary or mythical paradise lost in times long past, but a real place in 'Eden', with real trees, and plenty of 'real' work to do. A garden God planted for man to enjoy and to tend. Moses gives precise, although not now adequately identifiable, details of its location: somewhere in the well watered low lying region of Mesopotamia is the best guess.⁸ Much about the Garden foreshadows the rest of the Bible story, but the picture of the Lord God lovingly creating it, planting it, surely delights. The image Genesis conveys is of, 'an enclosed designed landscape planted with trees, a kind of arboretum that was both pleasant to look at and useful as a food supply.'⁹

Gardens were important elsewhere and from the earliest times we meet them and how they are the root of the word 'paradise' in Chapter 5.

The account of the Garden of Eden has a



particular resonance for foresters. God planting it and Adam working it pictures what foresters mostly do: they take over for a time the care and management of woodland and forest that another created and then pass it on to their successors. Rarely does the same person regenerate or plant a forest and then live to see all its benefits. We see ourselves as stewards of what we have inherited and, as my old professor would say, 'must pass it on in better shape than when we received it'. Of course it's not only foresters who have this sense of being custodians: those caring for orchards or a pedigree herd of cattle built up over the generations, or the great plant collections, botanic gardens, and arboreta such as Kew in England or the Arnold in America know the same sentiment.

Pleasing to the eye

Genesis 2:9a

The great variety of trees and their value as good for food is reiterated in the second creation account of Genesis Chapter 2. But what excites me is the

remark God reserves for trees—and trees alone—in all his creation (Gen. 2:9): *trees that were pleasing to the eye*. God saw they were good (Gen. 1:12), but here aesthetic appreciation, beauty and loveliness is declared good and desirable in its own right. Usefulness is important to God, but God shares our appreciation of the aesthetic or, rather, our capacity to admire the sunset or be thrilled by magnificent scenery or take pleasure in an evening stroll is a mark of His image within us. Humans, set apart from animals, are truly closer to God because we both like trees to be around! Thus it is almost to be expected that, later on, part of what tempted Adam and Eve to take the forbidden fruit was that they found its appearance appealing (Gen. 3:6).

This visual appreciation is actually therapeutic, it does us good. It is now well established that recovery from illness or surgery is aided when a patient can look out on greenery as opposed to a brick wall or just the interior of a ward. The converse has also been found. An American study of 18 years data across fifteen states found significantly increased mortality and ill-health in the population where the insect emerald ash borer had killed ash trees and turned once tree-lined streets treeless.¹⁰

So important today is the visual and aesthetic that in many countries laws protect trees of high amenity value. In Britain there are tree preservation orders with this intention uppermost. A tree evokes strange and powerful emotions, even passions—just consider how we respond to a threat to a much-loved tree, yet it is hardly surprising if God, in fact, made them for us to enjoy with all of our senses. So there is much more than even duality. Trees have uses, they confer benefits and they are lovely to behold: as our creator said, they are both good and pleasing.

Two very special trees

Genesis 2:9b

In the same verse (Gen. 2:9) we are introduced to the first of two kinds of trees singled out by title, the tree of life and the tree of knowledge of good and evil. Regarding the first there is no tree today which can claim to be such an elixir though many healthy foods come from trees, and, as we've noted, forests themselves protect soil and help restore or



ABOVE: A young African baobab (*Adansonia digitata*) in the foreground with older, larger ones on the horizon: almost a 'tree of life', it's so useful

heal degraded land. Nevertheless, some trees do symbolise life in the abundance they provide. The olive (*Olea europaea*) is a well-known example, but so too is the great baobab of the dry African bush. It is only in leaf for a few months, but this occurs in the dry season when most other trees have dropped theirs. The leaves themselves are edible, tasting a bit like spinach; the seeds are refreshing to suck and when soaked will make a palatable drink somewhat like coffee; the bark is soft and fibrous and can be used for making cloth, ropes and matting; and, in the crown of the tree, water can be found in tender shoots. During droughts elephants prise up the bark to get at water within. Legends abound about the wonderful baobab, not least that God planted it upside down! In contrast to the baobab's grotesquely

fat and stubby appearance is the slender *Leucaena*, once the wonder tree of tropical development. It grows very fast, it enriches the soil, its foliage and pods make excellent fodder, and its woody stem is good for firewood or furniture. Sadly over-reliance on a few clones—trees propagated using the same genetic material—exposed this tree to a devastating pest and its use today is much curtailed.¹¹

These remarks are very Western and factual about trees. What intrigued and what puzzled those in ancient times was how can a tree sustain life for hundreds even thousands of years?¹² Human awe at the seemingly immortal ‘tree of life’ was seen all around in field and forest leading to their worship and reverence. As we find later, even the Israelites succumbed both in what they began to worship, wooden idols, and where, ‘beneath every spreading tree’.

Many living trees might rightly claim the title ‘tree of life’ though none has the abundance and variety or the ‘healing’ powers of the tree of life we meet at the Bible’s end (Rev. 22.3). Almost unique among natural resources is that a tree’s usefulness does not stop at death. Indeed, life after death is not putting it too strongly when we consider the years and years of benefit and pleasure an oak table gives or the strength beams and rafters afford in supporting a ceiling or roof. Today we would add that such use of wood keeps the carbon stored. And, for a Christian, the singular importance of the paper of the pages of our Bibles in which are recorded the very words of life and, symbolically, Christ’s cross itself as ‘the tree of life’.

We return to the tree of life in Chapter 6, as well as in the final chapter. However, it is not only in Genesis and the Bible that we find the idea. Many ancient Near East civilisations from early times portray a tree being honoured or paid homage, though it is not always clear quite what or how. The 9th Century BC reliefs in the British Museum of the Assyrian King, Ashurnasirpal II, show such a tree with an eagle headed spirit—the model for C S Lewis’s Tash in the Narnia stories—appearing to offer it a pine cone. This is odd since the tree, albeit stylised, suggests a broadleaf not conifer. With no explanatory text we are left guessing, but it is just one example of the tree motif so common

BELOW: A mythical, sacred tree paid homage by an eagle-headed spirit, and

BELOW, LOWER: by King Ashurnasirpal in ritual robes. (British Museum)





in Assyrian and Egyptian imagery and religious life

The tree of knowledge of good and evil we meet only in Genesis. Such super ethical food did not really exist, but by taking fruit that was forbidden the guilt generated by this first act of disobedience would reveal the existence of good and evil to Adam and Eve and hence the fact of alternatives. The revealing of an alternative to what Adam and Eve had known brought new knowledge about the very goodness of the sinless paradise from which they were about to be ejected.

That this knowledge comes symbolically from a tree, seems fitting. Compared with an animal or flower, there is something permanent, solid, immutable about a tree, just as there is about the fact of good and evil: a fact that Adam and Eve could not hide from, just as the trees of the Garden of Eden could not hide them, and their guilt, from God. Fitting too is something negative about trees that planners and the police both know. They can provide cover harbouring criminals. So consideration of where best to site groups of trees and shrubs amongst housing, as well as the provision of lighting, all has to be part of the mix in developing the built environment. Though today society is abandoning absolutes for tolerance, reasonableness, compromise and flexibility in much of life, recognising right from wrong and good from bad remains every functioning community's foundation. Otherwise, we lose our way. The towering stature and spreading umbrella of a tree over us pictures this superior principle that God's absolutes are, for us, larger than life.

Figs

Genesis 3:7

The first identifiable tree (just) is in Genesis 3:7.¹³ Adam and Eve sewed fig leaves to cover themselves because they were naked. In the Bible two kinds of fig tree are mentioned, the widely cultivated fruit (probably implied here because even today the large hand-shaped leaves of the common fig (*Ficus*

carica) are still sometimes sewn together) and the sycomore-fig (*Ficus sycomorus*) which we remember from Sunday School as the tree the diminutive Zacchaeus climbed to see Jesus (Luke 19:4) on his way through Jericho. The sycomore-fig¹⁴ also produces edible fruits which are not as nutritious or sweet and were known as the poor man's figs. It is a common tree and we meet it again.

The common fig is described as the third classical fruit, after the olive and grape-vine, associated with the beginnings of horticulture in the eastern Mediterranean and south-west Asia.¹⁵ It has a very ancient lineage and history of cultivation and, as with most fruit crops, the key for the grower is to domesticate productive or specially sweet cultivars (genotypes) that arise. Usually this is done by taking cuttings i.e. by means of vegetative propagation. Unusual about the fig is that a single mutation leads to cultivars that produce delicious fruits without requiring pollination and fertilisation, a characteristic called parthenocarpy. Propagation of such desirable forms would have been achieved of old, and still is today, by rooting cuttings of dormant twigs taken in winter.

Adam and Eve used fig leaves to cover themselves. As well as large size, the heavily veined and ribbed leaves sew quite well, not tearing too easily. Ancient Midrash literature¹⁶ suggests a pun or play on words here in that the Hebrew for fig (*t'ainah*) sounds very similar to grief or trouble (*to-anah*). Having to sew fig leaves was the beginning, was the first of all the troubles Adam and Eve had begun!

Cursed and expelled from the Garden

Genesis 3: 17–18

We end this first chapter with the scene of Adam and Eve doing wrong by a tree, picking what had been forbidden, and being expelled from the Garden of Eden. It continues: doing wrong by trees and forests which are cut down unnecessarily, whether pristine tropical forests for palm oil or English hedges and hedgerow trees for rape oil. There is plenty of



already degraded land suitable for the former, and happily less destruction of the latter than hitherto. But the point remains that, like the first sin, we reap a harvest of toil as soil erodes, floods come, wildlife dies and living becomes more arduous. The cursed ground of Genesis 3:17–18 is an apt description of much degraded land today where forest had been destroyed, soil fertility lost, and often bush and unproductive scrub all that is left.

The beginnings of farming

Genesis 4

The account of Cain and Abel's offerings of their produce in Genesis Chapter 4 not only betrays their contrasting faith in God, but also presents the two sides of farming: arable and livestock. Archaeology has shown that the Middle East was the cradle of agriculture. In Neolithic times the first evidence of domestication of plants is found in the Fertile Crescent and the Levant (Israel, Lebanon and Syria).¹⁷ The place of trees and their early

management, beyond forest clearance or gathering fruits, is unclear, but without doubt the olive was cultivated from a very early time with figs and date palms not far behind.

The long years of toil had begun. The principle of hard work to earn reward was well in place. Trees were both a hindrance, if land had to be cleared, and a hope, offering some of the most useful crops of all to cultivate and resources to have available.

Perhaps we should add, too, that Cain and Abel's offerings remind us of something else. Throughout biblical times society was predominantly agrarian, not industrialised. Most of us today are distant, literally and figuratively, from the countryside and what goes on on the farm or in the forest. Looking at these, which are also distant back in time, adds a further challenge just as do the many biblical metaphors, analogies and allegories that draw on the rural and the pastoral with which we are unfamiliar.

FACING PAGE: *Severe erosion in Ethiopia owing to deforestation. The land has lost its farming value and is costly to rehabilitate*

Notes

- 1 This is the familiar translation. The Greek in 1 Pet. 2:24, and also Acts 5:30 and Gal. 3:13, is *xulon*, not *dendron* the usual word for tree, and it has the wider meaning of wood, pole, timber as well as tree. Most modern English translations have 'pole'.
- 2 **Walton, J H** (2009) *The Lost World of Genesis One—Ancient cosmology and origins debate*. IVP Academic, Downers Grove, Illinois.
- 3 The inheritance or passing on of characteristics from generation to generation is more or less fixed in every living cell by a complex pattern of chemicals in the nucleus, the DNA molecules. They make up the genes. DNA has the remarkable capacity to replicate and communicate its structure so that the right kind of growth occurs. The way chemicals (bases) are ordered in the DNA determines that acorns become oaks and that a leaf becomes a leaf and not, say, a root in the wrong place. We have the ability today to intervene in this process (genetic modification or GM) by adding or changing the DNA at certain points to create new characteristics. Also study of DNA in humans shows that we are all descended from one 'super mother' an 'Eve' though the timeline accorded by evolutionary biologists may differ from the biblical.
- 4 **Fady, B** and **Medail, F** (2004) Mediterranean Forest Ecosystems. In **Burley, J, Evans, J** and **Younquist, J A** (eds) *Encyclopedia of Forest Science* (Oxford: Elsevier Ltd), 1403-1414.
- 5 **Meiggs, R** (1982) *Trees and Timber in the Ancient Mediterranean World*. Clarendon Press, Oxford
- 6 **Thirgood, J V** (1982) *Man and the Mediterranean Forest—A history of resource depletion*. Academic Press, London
- 7 **Fady, B** and **Medail F** (ibid)
- 8 **Eveson, P H** (2001) *The book of origins—Genesis simply explained*. Evangelical Press, Darlington
- 9 **Usher, G B** (2012) *Places of Enchantment—meeting God in Landscapes*. SPCK, London.
- 10 **Donovan, G H, Butry, D T, Michael, Y L, Prestemon, J P, Liebhold, A M, Gatzliolis, D** and **Mao, M Y**. (2013) 'The Relationship Between Trees and Human Health', *American Journal of Preventive Medicine*, 2013; 44 (2): 139
- 11 **Evans, J** and **Turnbull, J W** (2004) *Plantation Forestry in the Tropics*. 3rd Edn. Oxford University Press
- 12 **Hareuveni, N** (2006) *Tree and Shrub in Our Biblical Heritage*. Neot Kedumim Ltd, Lod, Israel. (Transl. by **Helen Frenkley**).
- 13 **Zohary, M** (1982) *Plants of the Bible—a complete handbook*. Cambridge University Press, Cambridge
- 14 Not to be confused with sycamore (a species of maple (*Acer*)), or sycamine, another name for black mulberry.
- 15 **Zohary, D, Hopf, M,** and **Weiss, E** (2012) *Domestication of Plants in the Old World*. 4th Edition. Oxford University Press.
- 16 **Hareuveni** (ibid)
- 17 **Zohar y, et al.** (2012). (ibid).



ABOVE: The first mention of olive in the Bible is the freshly plucked leaf the dove brought back to Noah as a sign that the floodwaters were receding. As a fruit tree it may well have been the first to have been brought into cultivation providing, principally, food and oil – the latter for cooking, lighting, anointing and cleansing – symbolic of a tree of life. The symbolism of olive for peace and prosperity continued through history.

From ark to ark

Of all human undertakings Noah's Ark stands out pre-eminent. Not because of grandeur, nor because it worked, nor even that so vast a structure was built so early in history, but because it was constructed in the face of all reason. Noah's neighbours could not and would not see the purpose of it. Yet the ark was completed, and on time, and without sea trials and commissioning, to do the job required because of Noah's faith—that what God said was true and was going to happen.

Noah's Ark

Genesis 6

We are told the ark was made of wood (Gen. 6:14). It is the first article so described in the Bible, though presumably the harps and flutes (Gen. 4:21), farm implements and many of the buildings in Cain's city (Gen. 4:17) were also. Exactly what kind of wood Noah used we cannot be at all sure: the Hebrew word translated 'gopher wood' in the King James version could be cypress (*Cupressus sempervirens*), and this is what the 2011 NIV has but it footnotes the uncertainty. Some have suggested that the word 'gopher' refers to the way the ark was constructed, with squared or planed beams, or that it is the use of pitch as a sealant for caulking that it signifies. We really don't know. It is possible, too, that the timber is not even available today having been lost in the destruction a flood lasting for months would have wrought. We do

know that in later classical times pitch was a valued and traded commodity not only by the shipwright, but for lining jars, amphora, for storing wine and even, when in liquid form, for flavouring it!¹ The best source of pitch is from tapping pine trees and other resinous conifers though the small turpentine tree (*Pistacia terebinthus*) was a prized source of a resin like substance. However, we really know very little about the ark and can only speculate.

The word 'ark' literally means 'box' or 'chest'. Although the same English word is used for the 'ark' of the covenant (Exod. 25–38), the Hebrew for Noah's Ark only occurs again for the basket bearing little baby Moses among the rushes of the Nile (Exod. 2:2–3). The ship-like designs we find adorning so many children's bibles owe much to the artists' colourful imagination, while the famous flood story in the epic of Gilgamesh indicates simply a box structure. The carefully recorded dimensions of the ark (Gen. 6:15–16) clearly suggest a vessel which would be stable and plainly seaworthy. Beyond this we really can't say. It is only in the choice of the same English word that allows the preacher to exhort: that one 'ark', Noah's Ark, saved a few from the destruction brought by sin while the other 'ark', the ark of the covenant, contained the law which exposes what sin is.

Making things out of wood was not as easy as today's ready access to the timber yard and DIY

shops might suggest. Trees have to be selected, felled, debranched, and then taken to where they are to be used or processed. Without modern machines, Noah would have dragged logs to a saw or laboriously cut them up on site. It is unlikely they would have been used in the round (as foresters say) like an American log cabin, simply because it is nigh impossible to make their joints watertight. Trees are heavy and felling them is dangerous. A 30 m (100 ft) cypress, perhaps of 50 cm diameter (60 in girth) would weigh 4–5 tons. Felling by axe (made of stone?) would take at least a day and unless direction of fall was guided by ropes, there must have been accidents. Millennia later ‘The Teacher’ highlights the dangers of splitting logs (Eccles. 10:9). Even today, with numerous safety devices available, forestry work has one of the highest industrial accident rates. We do not know whether Noah began building the ark where the trees were in the middle of a forest or whether he selected a good site, perhaps specially flat and even near a river such as the Tigris or Euphrates, and dragged or floated logs to it. Whichever, it was long, arduous and hard work.

The Bible tells us the ark’s dimensions and it was the largest vessel built in the history of the world until the mid 19th Century. It probably had a displacement of around 40–50,000 tons. Several thousand tons of logs would have been used, not to mention all those needed for houses and other infrastructure facilities. If Noah was in the business of clearfelling forests, hundreds of hectares would have been cut while the ark was under construction. If only selected trees were taken then a much larger area of forest would have been stamped with the efforts of the man’s labour with all the tracks and trails along which to drag the logs or the pits dug to saw logs to shape. Then there were the shipwright skills, carpentry, administration and even catering to consider. It is staggering to ponder the scale of industry required as Noah obeyed God’s instructions .

We are told that when rain began to fall it beat upon the ark’s roof incessantly for 40 days. Would Noah’s life’s work float according to plan? Would they all be safe? Did they have enough food including for all the animals and livestock? Was

the caulking of pitch inside and out sufficient or would the ark spring leaks? We can only surmise the thoughts of this man of faith, but he had on his side a unique characteristic of wood. Even if his pitch application wasn’t perfect, after a week or so afloat any leaks the ark had would be fewer or perhaps have disappeared altogether because wood is hygroscopic. Wood absorbs or releases moisture depending on its surroundings—hence paper towels and toilet rolls made from wood fibres work. As water is absorbed, wood expands slightly, as sticking doors in damp weather remind us! This ‘movement’ is the bane of the joiner and furniture maker, but a blessing to the shipwright who sees joints tighten and fit more snugly—the water itself makes the boat more watertight. Though perhaps the long years building the ark and the drying out of the great timbers would have made a leaky vessel, the rain God used to judge mankind was also His own finishing touch to make sure that the few inside the ark were safe and dry.

The verses 7 and 18 of Genesis 6 seem to suggest that trees were not singled out for judgment though obviously prolonged submersion and strong currents would leave few if any alive. Small seedlings, fruits and seeds might have floated on mats of vegetation. Was that where the dove found an olive leaf (Gen. 8:11) though it is described as freshly plucked? Some tree species such as mangroves can grow in water, others, for example, alders, are tolerant of very wet conditions, and some, such as willows (*Salix* spp.), have structures able to transport oxygen molecules to the submerged parts to survive the period of anaerobism. Total submerging for six months as the Bible indicates is quite another thing.

There is another narrative too. Many have thought it, but few articulated it as well as the ‘grandfather’ of forestry in England, John Evelyn. In his famous *Silva*,² presented to the fledgling Royal Society in 1662, and first published in 1664, he writes:

In a word, and to speak a bold and noble truth, trees and woods have twice saved the whole world; first by the ark, then by the cross; making full amends for the evil fruit of the tree in paradise, by that which was born on the tree in Golgotha.



ABOVE: *Hadrians' Wall. Many of the stones have found their way into other buildings. Wouldn't Noah's Ark have been similarly raided for its timbers?*

Might we find remains of the ark?

Various groups have claimed to have found remains of the ark usually on the Mt Ararat complex in the eastern Turkey, Armenia, and southern Russia region. One such investigator, Fernand Navarra,³ during an expedition in 1955, obtained wood samples from what he thought might be the ark embedded in a glacier. The pieces appeared to be from timbers that had been fashioned by primitive tools, were of oak (*Quercus* spp.) and probably around 5000 years old though carbon dating gave a younger age. Even 5000 years is not as old as many would expect, and suggesting the wood might have come from the ark is speculation. Many other expeditions have been mounted and many claims made as a quick google of Noah's Ark reveals. Evidence for the ark and the flood is attested by reference to them in many mythologies. Josephus, the Jewish historian writing in the 1st Century, asserts that, 'all writers of barbarian histories

make mention of this flood and this ark' and that local people collect pieces of bitumen from it.⁴ Most importantly, Jesus speaks of them as plain fact (Matt. 24:37-39; Luke 17:26-27).

But are remains of the ark really likely to be discovered? Wouldn't Noah and his family have raided the great wooden structure for building materials, for fuel and for countless other purposes? One generation is always pilfering the efforts of a preceding one—the gleaming white facing stones gone from the great Egyptian pyramids, the beautifully fashioned blocks comprising Hadrian's Wall now supporting Northumbrian farmhouses, and many a ship's timbers throughout history. We know that in ancient Egypt timber was carefully husbanded. When contemporary buildings were abandoned, the woodwork, flooring, rafters, door and window frames were usually removed and used again.⁵

'Pilfering' is perhaps ungenerous, recycling is a



ABOVE: *The great terebinth at the hill top lookout in Tel Dan Nature Reserve. Probably the great tree at Moreh was one.*

better sentiment. Surely the ark would not have been left untouched where it came to rest?

The story of Noah does not end with the ark landing on Mt Ararat. Indeed, Noah is held up throughout the Bible as an example of faith and the flood as a reminder of God’s judgment of sin. The account itself in Genesis concludes with Noah planting a vineyard. Then as now planting is an act of confidence in the future.

From Ur to angels with Abraham

Genesis 10–12

Chapters 10 and 11 of Genesis cover long periods of history. The use of wood and timber must have massively increased as villages, towns and cities grew as domestication and settled farming became increasingly established.⁶ Archaeologically wooden artefacts don’t often survive because they decay or are perhaps used for fuel when broken or no longer wanted. But with the next great man of faith, Abraham, we find uses and benefits of trees

in the environment which are appreciated by every generation.

What is recorded of Abraham are trees as landmarks, as property, as objects commemorating events, and as providing much needed shade in a hot, dusty land. Indeed, after leaving his home town of Ur, Abraham’s first resting place in the promised land of Canaan was at the site of the great tree of Moreh at Shechem (Gen. 12:6). It was probably a magnificent spreading terebinth, or a group of trees, which may have been a striking feature by fact of their size or great age. They are present over several centuries of biblical history: it’s where Jacob probably hid the gods and jewellery of his wives (Gen. 35:4), where Joshua set up the witness stone to record the covenant the people made to be true to their God (Josh. 24:26), and where Abimelek had himself crowned (Judges 9:6) though by this time, 600–700 years after Abraham, the wording (pillar) could suggest that only a great hulk is left as is typical of very, very old oaks.



ABOVE: A solitary tamarisk helping shade visitors to Masada

Trees for commemoration

Genesis 14, 21 & 23

Both a tree's size and the ability of some kinds to live for hundreds, and in a few cases, thousands of years, and so long outlast our three score and ten, has attracted veneration. In England we find trees, and especially oaks, becoming memorials like the Knightwood Oak in the New Forest or the Wilberforce Oak in Kent under which William Wilberforce, the great Christian social reformer, pondered the evils of the slave trade. And, like Abraham of old who planted a tamarisk tree, (probably the 'leafless tamarisk' (*Tamarix aphylla*)), to commemorate the treaty of Beersheba and the place where he called on the name of the Lord, the Eternal God (Gen. 21:33), we still plant trees to mark an occasion, celebrate a coronation, or honour someone special.

Several tamarisk species occur around Beersheba, all are slow-growing, hardy, and long-lived. Only the 'leafless' tamarisk achieves tree size and grows

as odd individuals in the plains and wadis.⁷ An old saying had it that you never planted a tamarisk for yourself but for later generations. It was possibly a tamarisk under which the ejected and disconsolate Hagar placed Ishmael (Gen. 21:15) though a white broom (*Retama raetam*) bush is more likely. Abraham's action of planting may not only have marked a treaty, but perhaps was implying that one day we, my people, will return.

The choice of tree Abraham planted, tamarisk (*eshel* in Hebrew), is explicit in the Bible. It was a good one. The greyish-green clumpy foliage is visible from afar and to sit in its shade, especially in the morning, is pleasant and unusually cool. Tamarisk foliage exudes tiny, very salty droplets (by a process similar to gutation) which, as the droplets evaporate, cool the air. Abraham 'chose the tree whose shade is cooler than that of any other trees'.⁸

Although we no longer use trees to identify legal title—stones, fences, walls and ditches have

traditionally been used to delineate boundaries—laying claim to land identified by its trees still occurs. Something very like this Abraham probably did when buying the field near Mamre, specifically with its trees (Gen. 23:17), doubtless because of its past associations for him. It was where he first settled (Gen. 13:18), where he was blessed by Melchizedek, King of Salem (Gen. 14:13); it was where the Lord appeared to him and, perhaps very especially, it was where he first heard the prophecy that at last his ageing wife would conceive the child God had long promised. There is a warmth, too, that Abraham was able to purchase, to repossess as it were, the very field and cave near Mamre with all its trees where such portentous events had occurred, and where to bury his beloved Sarah (Gen. 23:17–20). Such kinds of affections and associations can be found today.

One example of trees used in this way is found in Papua New Guinea, where I worked in the 1970s, and is also the case elsewhere in the South Pacific. Claim to land and identity of ownership among tribal groups often relates to the trees an ancestor planted. The act of tree planting itself is seen as staking a claim. This customary ownership practice and the deeply held commitment to the land it represents, raises all sorts of issues when, say, governments want to carry out afforestation which, of course, usually means planting large numbers of trees! If all the trees our Queen has planted in her long reign were staking a claim, far more than our allegiance would she get! Another example is in my own wood, part of which is a pightle (a medieval word meaning enclosure and pronounced ‘pie—tell’). The pightle is square, about five acres, and is bordered by great English oaks (*Quercus robur*), one of which is nearly 300 years old. It is the finest tree in all of our small wood and we’ve named it ‘Mum’s Oak’ to commemorate my late wife.

Rest and comfort

Genesis 18

Earlier in the account of Abraham and Sarah one other benefit of trees is recorded: resting in their shade (or sheltering from the rain). Three visitors, the three angels, turned up unannounced and Abraham was quick to welcome them and show hospitality by first ushering them under the trees



ABOVE: *Even in England livestock needs the shade when it's hot!*

(Gen. 18:4) for rest and comfort after their journey. Perhaps they were the only trees in the vicinity, perhaps they were becoming scarce in the semi-arid land, though we do find Abraham standing under another tree at a polite distance, and surely consumed with curiosity as he watched them eat (Gen. 18:8).

Shade and shelter is stressed because throughout the Mediterranean region trees serve this purpose. And not only around the Mediterranean; providing this comfort, this amenity, where it has been lost is one of the drivers of social or community forestry—tree planting and woodland management specifically to benefit a village and villagers—in many tropical and sub-tropical countries alongside providing firewood, fodder and building materials. Not only does shade make work more congenial for humans, but even in the heat of the day cattle can graze contentedly whereas in the open grazing is confined to early morning and late afternoon. The barren landscapes of the Middle East, of the Sudan or the Sahel zone of West Africa—a barrenness often of man’s making—are all the worse for not only the absence of firewood or protection for the

soil, but also for how little shelter and shade there is for the hapless villager who calls the place home.

Three surprises and a request

Before concluding this chapter with the other wooden ark, the ark of the covenant, there are four intriguing episodes between the time of Abraham and the Israelites' exodus from Egypt which involve wood. Of course, many other references to wood and trees occur such as Aaron's staff, the stripping of trees by hail in the plagues, and the wooden door posts and lintels daubed with blood so the angel of death would pass over the firstborn of the Hebrews. These are touched on in another chapter, but here we cannot pass by what Jacob got up to to increase his flock, or his request concerning where he wanted to be buried, and we certainly cannot pass by the burning bush as Moses couldn't, or ignore how Moses made sweet the bitter waters of Marah.

Jacob's sheep and where he wanted to be buried

Genesis 30 & 31

The first surprise occurs when Jacob is in charge of his father-in-law Laban's flocks. Jacob had been tricked into working twice as long for Laban, for 14 years not the agreed seven, to marry his love, Rachel. Now the tables were turned: Jacob rapidly builds his flocks in a surprising way. Laban allowed him to have all the coloured, speckled and spotty sheep and goats and Jacob managed to increase the proportion of these that were born by encouraging mating in front of peeled branches of poplar (*Populus euphratica*), almond (*Prunus dulcis*) and plane (*Platanus orientalis*) trees⁹ (Gen. 30:37–43)! The sticks, with the exposed white wood, were placed near or in the drinking trough where the animals would mate. It formed a central part of Jacob's ruse to increase his flock at the expense of Laban's. How we explain it remains a mystery since we know that external factors do not influence what is inherited.

Perhaps we don't need to explain it. Even though Laban had allowed Jacob first to remove (and keep as his wages) all the existing spotty and speckled animals so Jacob only had pure white sheep to work with, the genes for colour would still be in the flock

and something like a quarter of all the offspring would be coloured. Also because Jacob deliberately selected the strongest and healthiest sheep to breed from (and be given this patent treatment), the spotted and speckled ones he was allowed to keep would be robust. So, just laws of inheritance working as if to confirm what was clearly a custom of the time. Jacob had been treated harshly and the clear implication of Genesis 31:12 is that God was allowing the increasing proportion of spotted and speckled animals as a way of recompense.

Many experiments have sought to find out whether outside influences directly affect the nature of offspring—known as the inheritance of acquired characteristics. Apart from a few special cases it is clear that offspring are directly the result of what is passed on (inherited) from their parents which recalls, of course, Genesis Chapter 1 and the refrain of, 'after or according to their kind'. [A pseudo-example of factors influencing progeny occurs in human reproduction where the pH (acidity) of the fluid through which male sperm swims to reach the female egg to fertilise it affects the proportion of male gene-carrying to female gene-carrying sperm. Similarly, gender in some turtle species is influenced by the temperature the egg is incubated.]

The request of Jacob comes at the end of his life. It happens several years after Joseph has been reconciled with his brothers and his ageing father, Jacob, again embraces his beloved son and brings his extended family, the Israelites, to settle in Egypt. He asks before he dies, 'Do not bury me in Egypt, but when I rest with my fathers, carry me out of Egypt and bury me where they are buried' (Gen. 46:29–30). He wants to be buried in the same cave as his fathers in the field Abraham bought (Gen. 49:29–32). As father of the second highest person in the land—his son Joseph was in effect Pharaoh's prime minister—his body would have been embalmed and presumably kept in a coffin.

We know from archaeological excavation in Egypt that coffins were made out of both local and imported timbers. Local timbers were cut mostly from the sycamore fig, tamarisk, and sometimes acacia trees. The trunk would be sawn lengthways—so tedious and tiresome with the tools of the day—and then smoothed with an adze



ABOVE: Outer casing of an Egyptian coffin made from expensive imported cedar wood c. 1850 BC (British Museum)

and finished off with a rubbing (sanding) stone. The resulting planks were often rough and ready because of all the knots and the crooked shape of the indigenous trees themselves. Thus high ranking officials wanting the best would have expensive coffins made from imported softwood notably cedar of Lebanon, but occasionally of cypress or juniper (*Juniperus excelsa*). These fine, tall conifers produce long straight planks and are readily crafted to a high finish to create an altogether superior product. Did Jacob have a cedar coffin: a coffin fit for a patriarch as well as a Pharaoh?

The burning bush and bitter water

Exodus 3 & 15

The phenomenon of the burning bush (Exod. 3:1-3) which appeared not to be consumed, caught Moses'

attention. He knew the wilderness and desert well, from all his years in Midian tending Jethro's flocks, and he had never seen a bush like it. It was how God caught his attention to commission him to return to Egypt to free the enslaved Hebrews. But what was it Moses saw?

There has been much speculation among botanists, one of the more plausible being that a desert acacia tree was covered in the semi-parasitic, scarlet-flowered mistletoe, *Loranthus acacia*, with its arresting fire-red blossoms. Other suggestions are the shrub known as the gas-plant (*Dictamnus albus*) which exude oils that vaporise and can ignite, or the Sinai hawthorn (*Crataegus sinaica*). But as has been pointed out,¹⁰ if we can identify a botanical explanation surely the desert hardened Moses would know it. The account emphasises Moses's



ABOVE: *Hawthorn aflame with berries. A possible, but unlikely explanation for the 'burning bush'.*

surprise and his being kept at a distance. This has led to the interesting explanation that Moses saw a mirage of a fire centred on the bush in the way that images are refracted through the atmosphere from tens of miles away. This would be remarkable, is feasible, and would surely catch one's attention like a striking rainbow does, and it would account for the midrash¹¹ observation that only the upper part of the bush was seen to be aflame. It would also allow the Hebrew for the bush '*sneh*' to be the blackberry bush (*Rubus sanctus*) that ancient tradition, Jewish and Christian, has long identified as the burning bush.¹²

Years later something else caught Moses's attention: after crossing the Red Sea the Israelites found the waters of Marah to be bitter (Exod. 15:22–25). It was their very first resting place away

from Egypt and it was no good. Everyone started complaining and Moses cried out to the Lord and he was shown a piece of wood (or a tree) to throw into the water. The water became sweet. There is a similar occurrence in 2 Kgs. 2:19–22 where some salt not a piece of wood is added to turn the brackish to drinkable. In this case might the salt have been the conventional coagulant alum which is still used in purification today? We don't know, but what that passage emphasises is God's specific intervention, 'I have healed this water, says the Lord' (2 Kgs. 2:21). But in the case of the wells at Marah it is God who instructs Moses how to purify the water by showing him a piece of wood (or tree) to throw in to turn bitter waters sweet? Is this conceivable: if not, why have the comment about wood or tree?

The surprising answer is 'yes'. One tree of



ABOVE: *Moringa tree at Ein Gedi Nature Reserve. Its long pods are just discernible at top left. Were they what Moses used to turn the bitter waters of Marah sweet?*

the desert has this property, the moringa, where turbid water can be cleared and made drinkable by adding powdered seeds. Moringa seeds contain proteins that act as chemical coagulants which cause impurities, suspended solids and 98 per cent of bacteria to settle out (floculate) rather as alum does.¹³ The best known is *Moringa olifeira* and one tree can provide sufficient seeds to treat 30,000 litres (7000 gals) of water: it is currently recommended for use by rural communities without access to clean running water.¹⁴ What is remarkable is that it only takes a couple of hours at most to give tap-quality water. However, the 14 or so kinds of moringa tree mostly occur in India and the Horn of Africa, but there is one species, *Moringa peregrina*, that is found in the Middle East in Egypt, the Sinai Peninsula, Saudi Arabia, Oman, Israel, Jordan and Syria. It is now scarce and endangered, achieves tree size of up to 10 m, and its seeds possess this water purifying ability. In Israel it is the ben-oil or

bean tree, in Jordan the mazur. Was this the tree God directed Moses to use to clear Marah's turbid waters? We can't be sure. Nevertheless, it is fact that the undrinkable can become drinkable with the help of a tree, and we know there was one such tree species occurring naturally in the Desert of Shur where Moses and the people of Israel made their first halt three days after crossing the Red Sea.

The Israelites next stop (Exod. 16:27) is well provisioned with plenty of springs and seventy palm trees. It must have been good because even the name of the place, Elim, means 'large trees'!

The Ark of the covenant

Exodus 25–27 & 35–39

The ark of the covenant was the wooden chest or box to house the law that God had imparted to Moses on Mt. Sinai.

The construction of the tabernacle or tent, including the precious ark, occupies all of the remaining chapters of the book of Exodus from Chapter 25. All the articles and trappings made from wood, the ark itself, the poles and posts, the table and the two altars, and the upright frames and crossbars of the tabernacle are fashioned out of acacia, 'shittim' in Hebrew. Shittim is also a place-name where, presumably, acacia trees abounded (Josh. 2:1). There are several acacia species that occur in the semi-arid conditions of the desert wadis of the Sinai including the extremely hardy desert acacia (*Acacia raddiana*). None is a large tree but are widely available and provide wood that is durable, hard, strong and would take a good finish; just the features required for the skilled craft work and joinery. Sometimes, too, they grow tall enough with substantial enough trunks to provide the longer lengths required by the measurements spelt out e.g. Exod. 26:15–16.¹⁵

Acacia wood has another valuable property. It shows relatively little 'movement', that is the tiny changes in shape that cause warping and twisting that occur when wood absorbs and loses moisture—the property that helped Noah's Ark to become more watertight the longer it was in the water. This lack of movement was significant because virtually the whole of every article was overlaid with beaten gold except the altar for burnt offerings



ABOVE: *Desert acacias in the Negev (with Arabian oryx). Photo: F. Leung*

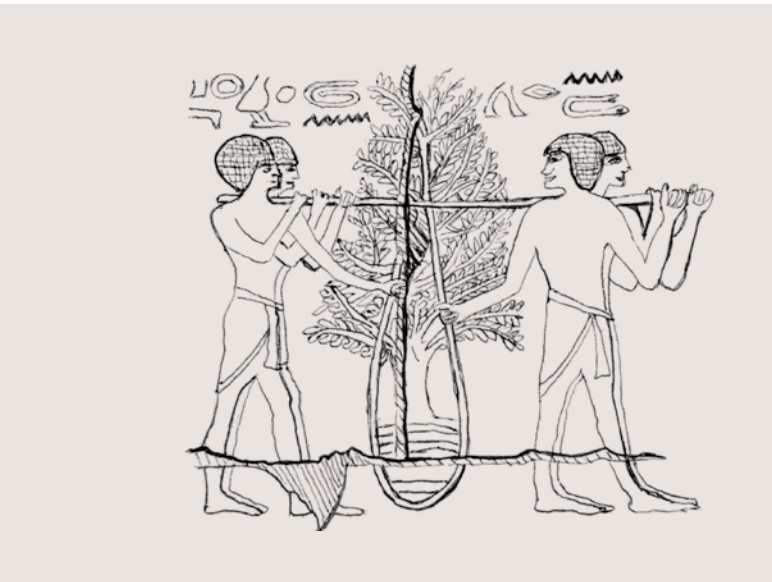
where bronze was used. While in their wilderness wanderings acacia wood was probably the only feasible choice, it was still well chosen.

The details of construction were given by God to Moses (Exod. 25:9 and 27:8). They were not a general vision of the kind of thing to make, but a complete set of plans, a blueprint, though how Moses remembered every instruction, along with the laws and commands, greatly impresses. Perhaps it shouldn't. As Jesus promised his disciples that the Spirit would bring all that He had said back to mind after He had gone (John 14:26), Moses was specially blessed of God who not only commands and instructs, but provides enabling gifts as well.

We see this very especially when it comes to whom actually fashioned the ark, the table and the altars. God revealed to Moses that He was going to bless Bezalel with the gift of craftsmanship; his Spirit would come upon him specifically for this work. Bezalel not only worked with wood, but was gifted to undertake all the fine artistry, the cabinet making. He was not alone, he was supported by a right hand man, Oholiab, to oversee the work and who God blessed with the ability to teach others

the necessary skills (Exod. 35:34). Thus everyone would do exactly what was required (Exod. 36:1–2). Although all these gifts were God-given they were not to be exercised on the sabbath. No work was to be done that day, not even such evidently God ordained tasks, and that is a challenge as I write this book in my spare time!

These chapters of Exodus teach something else about working for God, even with things as humble as pieces of wood: the value placed on free giving and willingness. The tabernacle and ark were to be made from materials voluntarily provided by the people as offerings or as their contribution to the work, and this included everyday acacia wood (Exod. 25:5; 35:4; 36:3). In the right spirit nothing is too menial. As we read the actual record of the work (Exod. 35–39) willingness is no less essential for those doing the nitty-gritty (Exod. 36:2) than for those in office. These verses also suggest that the gifts came from what the Israelites may have already had with them in their tents, they were that precious, rather than needing to scour the wilderness for suitable trees and branches.



TOP: Drawing of a slightly damaged relief of a tree (frankincense or myrrh) being transported with a large rootball to help ensure it survived the uprooting, journey to Egypt and transplanting. (redrawn from a drawing by E. Nigel Hepper – used by permission)

ABOVE: Iron cage claiming to protect the stump of a tree brought back by Queen Hatsepsut's expedition

Oil, incense, almonds and pomegranates

Exodus 25, 30, 31 & 37

In the next chapter (Exod. 37) we go to the heart of the sacrificial system, but the latter part of Exodus makes frequent reference to two tree products that are to be used again and again—oil for the lampstand and for anointing, and the burning of incense (Exod. 30: 22–38 and 37: 25–29). Reference is made too to the symbolic importance of form and decoration in the articles used in worship, namely the explicit requirement that the cups of the lampstand be shaped like almond flowers (Exod. 25: 31–36 and 37: 17–22) and the hem of the priest's robe of the ephod decorated with pomegranates (*Punica granatum*) (Exod. 28: 31–34 and 39: 22–25).

Olive oil literally and figuratively oiled the functioning of religious and social life. It was useful for almost everything—lighting, cooking, eating, cleaning, healing and as a cosmetic. Details of how olives were pressed and how different qualities of oil produced are readily available¹⁶ and beyond the scope of this book. What is so understandable is what great store was placed upon olive groves, why they were (and are) so widely cultivated, and what a great crime cutting down or clearing living olive trees was (and still is, in the West Bank for example). The olive, the symbol of faith, hope, mercy and peace, appears by name in almost half the books of the Bible.

Incense was a traded commodity and came mainly from the frankincense tree (*Boswellia*¹⁷ *sacra*). It is not native to Israel or indeed Egypt where it was much used, but to the Horn of Africa. As every forester ought to know, Queen Hatsepsut's famous expedition to Punt (probably modern day Somalia or Eritrea) is the first recorded example of a deliberate tree introduction from one country to another¹⁸ though the Assyrians were doing so not long after.¹⁹ It took place in about 1465 BC with the intention of bringing this, myrrh (*Commiphora myrrhi*) and other trees to cultivate in Egypt. Reliefs on one of the walls of the Queen's huge and beautiful mortuary temple, just over the hill from the Valley of the Kings, depict the journey, the boats, the wrapped and cradled tree roots, and the requirement of four men to carry each carefully supported tree slung between two poles. At the foot

of the grand entrance to the temple are two twisted metal fences, one on each side, purporting to protect one of the original trees(!)—all you see is a dried up stick. When Moses was growing up in Pharaoh's palace was this famous expedition still fresh in everyone's minds? Were tales of fabled lands far to the south the gossip of the day? Did he even see the incense trees established and growing? There are certainly other records in ancient Egypt recalling this most famous of expeditions.

Other plants of the *Commiphora* genus may also have been used for incense. We return to both the above in Chapter 9 being two of the three gifts the Magi brought to the infant Jesus.

The symbolism of almond flowers and pomegranates recalls the lost fruitfulness of the Garden of Eden, but also the promise held out of prosperity in the promised land. The Israelites

would find the almond to be the first tree to flower in spring when for a week or two in February the fertile landscape was be-spangled with white blossom, just like blackthorn in March in the English countryside. Pomegranates with their long season of fruitfulness, their perfect shape, striking orange-red colour, and their sweet seeds so refreshing to eat in summer are all that a fruit should be.

Both arks raise lots of questions, but for me the remarks in this chapter about them and other episodes relevant to our theme, perhaps more than in other chapters, introduce plausible explanations for phenomena. It removes them from being consigned to myth, legend and fairy tales, to facts and history, albeit often hazy in detail and tantalising in what our Western scientific minds long to ask about.

Notes

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- 9 **Hepper** (ibid)
- 10 **Hareuveni** (ibid)
- 11 Midrash is a collection of early rabbinic writings commenting on the Old Testament.
- 12 **Hareuveni** (ibid)
- 13 **Jahn, S A A, Musnad, H A and Burgstaller, H** (1986) The tree that purifies water: cultivating multipurpose Moringaceae in the Sudan. *Unasylva* **152**: 23-28.
- 14 **Scharwz, D** (2000) Water clarification using *Moringa oleifera*. Technical Information W1e Gate Information Service, GTZ, Germany.
- 15 **Musselman, L J** (2012) *A Dictionary of Bible Plants*. Cambridge University Press, New York. [He cites research that makes the point that the tabernacle may not have used solid acacia which would have been very heavy for the oxen and carts (Num. 7:1-9) that transported it, but thin boards.]
- 16 **Hepper** (ibid)
- 17 The genus *Boswellia* is named after John Boswell, uncle of James, the famous 18th Century biographer of Dr Samuel Johnson—the conservationist and critic but notably lexicographer creating effectively the first English dictionary.
- 18 **Evans, J** (2009) *Planted Forests—Uses, Impacts and Sustainability*. CABInternational, Wallingford/UN Food and Agriculture Organisation, Rome.
- 19 **Dalley, S** (2013) *The mystery of the Hanging Garden of Babylon*. Oxford University Press, Oxford.