

Elisha would succeed him (1 Kgs. 19:16), this was not something he could freely give, since it was not his power, but God's.

Though Elijah could not personally bequeath the "double portion" to Elisha, he responded positively, albeit with one final test: "nevertheless, if thou see me when I am taken from thee, it shall be so unto thee; but if not, it shall not be so" (2 Kgs. 2:10). Most probably Elijah was Divinely instructed to give Elisha a sign by which his young successor would know whether his request had been granted by heaven. But the only

way he would receive such a blessing was if he kept his eyes fixed upon his master, which again is an exhortation in its own right.

Therefore, if we too desire our prayers to be answered, to be given a "double portion" in that great day, then we must keep our eyes permanently on our Master and friend, "Looking unto Jesus the author and finisher of our faith; who for the joy that was set before him endured the cross, despising the shame, and is set down at the right hand of the throne of God" (Heb. 12:2).

(To be concluded)

"Behold the fig tree"

David Burges

ALL BIBLE READERS are familiar with the fig tree, both as a characteristic tree of the Holy Land and also as an eloquent symbol of God's chosen nation of Israel. The fig and its inferior cousin the sycamore fig both played an important part in daily life in Bible times. But probably many readers will be unaware of the remarkable and complex reproductive system of the trees of the fig genus, which speaks powerfully of 'intelligent design' by the Great Creator.

An ancient tree

There are several hundred species of fig tree, spread throughout the tropics. The common fig (*Ficus carica*) is the first specific tree to be mentioned in the Bible, when Adam and Eve used its broad palmate leaves to hide their shame (Gen. 3:7), and figs have been cultivated from ancient times. Dried figs dating from the Neolithic Age were discovered in the excavation of Gezer, and they were also grown in ancient Egypt.¹ The fig tree is a characteristic Mediterranean species, and it is recognised in Jewish tradition as one of the 'seven fruits' of the Promised Land (Deut. 8:8).²

The sycamore fig (*Ficus sycomorus*) is an African tree, larger and sturdier than the fig. However, its fruit is inferior in both taste and sugar content and hence they were only widely consumed in ancient times by the poor,³ as implied in the avowal of the prophet Amos to his persecutors that he was simply "a herdsman and dresser of sycamore figs" (Amos 7:14, ESV). They were once common in the Land (1 Kgs. 10:27), and it was one of these trees that Zacchaeus climbed in order to see Jesus (Lk. 19:3,4).

Fig tree pollination

A great many plant species are pollinated by insects, which are attracted by colourful flowers, scent and a supply of nectar. Fig trees are unique, however, in that their flowers are completely concealed within a body called the *syconium*. Fig 'fruits' are actually inside-out flower clusters (known as inflorescences). These are hollow, fleshy structures composed of modified stem tissue, lined on the inside with hundreds of minute male and female flowers, completely inaccessible to normal insects.

However, at one end of the syconium, opposite the stalk, is a small opening (the *ostiole*) lined with dense, overlapping scales. Careful, patient observation of figs has revealed that they are completely dependent for their propagation and survival on tiny wasps, only a couple of millimetres long, which alone are able to penetrate the ostiole. These fig wasps are the sole pollinators of fig trees, and, in turn, fig wasps can breed nowhere else but inside figs, a relationship that is a classic example of *mutualism* (where neither party can survive without the other). Furthermore, in general each species of fig is pollinated by a unique species of wasp.

Figs come in two natural sexual forms: wild figs, called *caprifigs*,⁴ with both male and female

1. M. Zohary, *Plants of the Bible*, p. 58.
2. Wheat, barley, vine, fig, pomegranate, olive and date palm (honey).
3. *Op. cit.*, p. 68.
4. Literally 'goat-figs', because it was believed that only goats would eat them.



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Developing figs. The one on the right shows the ostiole at the end through which the female fig wasp enters to lay her eggs and fertilise the flowers.

flowers; and cultivated or edible figs, having only female flowers. Fig wasps grow within caprifigs, and, when mature, they mate. At this time the male flowers inside are shedding copious pollen, and the scales of the ostiole are loose and passable. The female fig wasp (already inseminated by a male) becomes dusted with pollen as she crawls out of the caprifig syconium and flies away to find another tree.

When she finds one she instinctively forces her way through the ostiole of a receptive syconium. As she squeezes through the pore her wings often break off and protrude from the opening. Only in small syconia, which are ready for pollination, can the female wasp enter the ostiole and push through the inner layer of closely overlapping scales. After this stage the ostiole becomes virtually impervious to insect entry. If the syconium is another caprifig, she is able to lay an egg inside the ovary of each female flower by inserting her ovipositor (egg-laying device) to lay her eggs in the base of the female flowers, which have short styles (ovary tubes), at the same time dusting them with pollen. Thus the figs are fertilised and the insects are able to reproduce; the eggs hatch into either female or wingless male wasps. Caprifigs are thus considered inedible, being filled with the bodies and debris of the wasps.

However, if she enters the syconium of a cultivated fig it proves impossible for her to lay her eggs because the styles are all much longer than her ovipositor. She withdraws her ovipositor and moves from one flower to another. In her attempt to lay eggs she inadvertently pollinates the flowers. Eventually she dies and her body is broken down by a protein-digesting enzyme called *ficin*,

inside the fig. These figs are thus fertilised and produce fruit with seeds but without wasps inside. In fig-producing areas, caprifigs containing mature wasps are cut off and tied into edible fig trees in the summer in order to ensure pollination, a process called *caprifigation*.⁵

When a caprifig ripens, another caprifig must be ready to be pollinated. Tropical figs bear continuously, enabling fruit-eating animals to survive the time between other crops. However, in temperate climates, wasps hibernate within figs, and there are distinct crops. Caprifigs have three crops per year; edible figs have two. Some varieties of edible figs do not require pollination at all, and will produce a crop of figs (albeit without fertile seeds) in the absence of caprifigs or fig wasps, a process known as *parthenocarpy* (literally, 'virgin fruiting').

The sycamore fig

The life cycle of the sycamore fig is no less remarkable than that of the cultivated fig. Again, the only insect capable of performing the operation is a specific fig wasp, which itself is totally dependent on the host plant for food and reproduction. In this case the true marvel of the process is in the timing, the way in which the reproductive cycles of fig and wasp are perfectly synchronised.⁶

The sycamore fig is found throughout Tropical Africa, and provides a food source for a wide range of animals, birds and insects. It bears its immature fruit, containing the internal flowers, in clusters directly from the main limbs of the tree. The female fig wasps, having already mated and become loaded with pollen, are attracted by the scent of the receptive syconia and force their way through the narrow, spiral ostiole. They pass over the male flowers, which are not yet mature, in order to reach the emerging female flowers, which mature first. They lay their eggs in the base of the flowers, which develop into small chambers, known as galls, protecting the eggs. Finally the female wasps unload their burden of pollen onto the female flowers from special sacs on their bodies, enabling the figs to set seed.

The tree uses many defences to protect its fruit with their hidden wasp eggs. They exude

5. Until the late 1800s, Californian growers were puzzled that their figs would not set fruit; the problem was solved when wasp-bearing caprifigs were imported from Asia Minor.
6. David Attenborough, *The Secret Life of Plants*, BBC Books, 1995, pp. 140-144.

a foul-tasting, sticky latex to discourage animals and other insects from eating the flesh. They also support colonies of ants that attack intruders, including parasitic wasps that prey on the fig wasps. Within the fig, the grubs hatch and grow rapidly. After two months the wingless males emerge first, from their galls within the figs, and immediately begin to search for females. They are equipped with powerful jaws, and bite their way into the galls in order to impregnate and then free the females. They then chop down the anthers of the male flowers, which have just matured, releasing the pollen for the females to store in their sacs.

The males' final task before dying is to join in a team to chew a hole in the outer layers of the fig to allow the females to escape and begin the cycle again. In one hour, millions of females may emerge from the figs of a single tree. They have only a few hours to find another tree and its figs before they will die. They can, however, be carried by the winds up to a hundred kilometres to find a new tree.

Meanwhile, the pollinated sycamore figs ripen and fall to the ground, providing a feast for many creatures, especially fruit bats. The tree is using these guests for its own purpose, however, because the seeds pass through them undigested and end up being dispersed over a wide area, ensuring that future generations of fig trees will

flourish, thanks to the essential assistance of their tiny insect partners.

An extraordinary partnership

In the fig tree and its tiny pollinators we have an example of an amazing partnership, between a tree which may live for hundreds of years and a minute insect which lives for only a few hours. Yet each is totally dependent upon the other for its continued existence.

Scientists claim that the intimate relationship between fig tree and fig wasp has evolved over a period of 90 or so million years. Indeed, it is referred to as a classic case of 'co-evolution'. However, we look in vain for any credible, detailed explanation as to how such a complex arrangement could have developed in tiny stages, and where the fossil evidence is to be found.

The careful design of each part of the fig fruit, with its narrow entrance and unique internal flowers, the way in which the alternate maturing of the male and female flowers and of the male and female wasps are perfectly synchronised, all speak of forethought and intelligence. Here truly is yet another graphic example of design in nature by the great God of heaven. The tree chosen by Him to represent His people (Hos. 9:10), and as a symbol of the fruitfulness of His Kingdom (Mic. 4:4), bears the unmistakable imprint of His design.

Your Letters



An attack on the Bible

I would like to comment on Brother Rees' letter (Feb. 2006, p. 45) as follows.

Richard Dawkins' recent media attack on Scripture may well reveal his deepening concern for the growing threat to his cherished belief in evolution, mainly due to recent quite devastating criticism from such highly qualified microbiologists as Denton and Behe. Dawkins now knows that at the biochemical level evolution cannot be defended, hence the familiar ploy of attacking the Bible to deter some of his adherents from reconsidering Intelligent Creation. Thus, as our Lord did with his own adversaries, we could respond: "Please give us your answer to swimming *Flagellums* and

the *Cilliums*,* and we'll answer your Biblical questions". But we shall provide answers anyway.

The questions about Divine severity are only difficulties to people such as Dawkins, whose conception of God is based entirely on human concepts. They have no godly fear. It is the clay advising the potter. Fear of God in Scripture is

* These are referred to in my review of Michael Behe's book, *Darwin's Black Box: The Biochemical Challenge to Evolution* (May 2005, p. 146), which draws attention to the remarkable way in which these cells are able to swim. There is also a video/DVD available from the USA which could be shown at a public lecture on Creation. Try a Google search on 'Darwin's Black Box video'.