# She Loves Me... She Loves Me Not

**Pure Fibonacci numbers (the sequence starting: 1,1,2,3,5,8,13,...) crop up in nature a lot – count the number of petals on a flower: "She loves, me. She loves, me not, She loves me..."**
**Whether she loves you or not, the chances are the count of petals was a Fibonacci number (Daisies usually have 34, 55 or 89 petals, for example – all Fibonacci numbers). It isn't magic, but due to the structure of the natural process that leads to their formation. The sequence crops up in the family trees of bees too, because of the way male and female bees breed – a fact that is used in the book *The Da Vinci Code*. Unfortunately author Dan Brown got the details wrong, as computer scientist, Harold Thimbleby of Swansea has pointed out (see the webzine).**

Computer scientists like the Fibonacci sequence because it is a good example of something that can be programmed easily using what is known as recursion. Recursion just means you define something using a simpler version of itself: If we write the fifth Fibonacci number (which is actually 8) as fib(5), the fourth as fib(4) and so on then we can calculate it as:

**Define fib(5) = fib(4) + fib(3)**

That tells a computer to calculate fib(5) by calculating fib(4) and fib(3) first and add them together. fib(4) and fib(3) are worked out in the same way. We can write this to work for any number (lets call it n) as:

**Define fib(n)=fib(n-1)+fib(n-2)**

We then just have to say how to do the simple cases:

**Define fib(1)=1**

**Define fib(0)=1**

You can write your own recursive programs that draw pictures based on recursive patterns. In fact the man-woman picture (right) is drawn by a program using a Fibonacci recursion, just drawing men or women instead of adding numbers...and the picture shows what happens when bees breed too. See the webzine for more detail and for how to use the free GeomLab software from Oxford University to write programs that draw like this using recursion.