

work has brought to light the amazing habits and skills of honeybees and their interdependence with insect-pollinated plants; indeed, the reliable production of some crops would be impossible without them. Readers who know of the UK National Lottery will be aware that it is a very unlikely event to guess correctly the random selection of six numbers out of forty-nine—millions fail in the attempt every week. The very much vaster selection of possibilities that have

come together to produce a honeybee colony with its attendant supporting plant ecology must make the odds virtually impossible. We may safely see the remarkable capabilities of this little insect and its life history as fitting tributes to the genius of the Creator, Who has chosen to reveal Himself in the Bible. His words, we are assured, are “sweeter also than honey and the honeycomb” because “in keeping of them there is great reward” (Ps. 19:10,11).

## The life is in the blood\*

Mark Allfree

**U**NDER THE Law of Moses the children of Israel were expressly forbidden to eat blood. The penalty for anyone who transgressed this law was severe: “And whatsoever man there be of the house of Israel, or of the strangers that sojourn among you, that eateth any manner of blood; I will even set My face against that soul that eateth blood, and will cut him off from among his people” (Lev. 17:10). Clearly a very important principle was behind this prohibition. Whilst it may be said that such a law had good foundation purely on the basis of hygiene, this was not the reason why Israel were forbidden to eat blood. They were told why: “For the life of the flesh is in the blood: and I have given it to you upon the altar to make an atonement for your souls: for it is the blood that maketh an atonement for the soul” (v. 11).

The basis of this law was thus twofold: first, that “the life of the flesh is in the blood”; and second, that because of this God had chosen the blood to represent the means whereby atonement could be secured: “I have given it to you upon the altar to make an atonement for your souls”. The discerning Israelite would thus learn from this commandment that for him to be accepted before God he had to dedicate his whole life to God, just as the blood of the animal was poured out; but also that his sins had to be blotted out through the atoning sacrifice of an innocent victim. This of course pointed forward to Christ, “In whom we have redemption through his blood, the forgiveness of sins, according to the riches of his grace” (Eph. 1:7).

### The life of the flesh is in the blood

“The life of the flesh is in the blood”, says the Scripture. Whilst this was intended to teach spir-

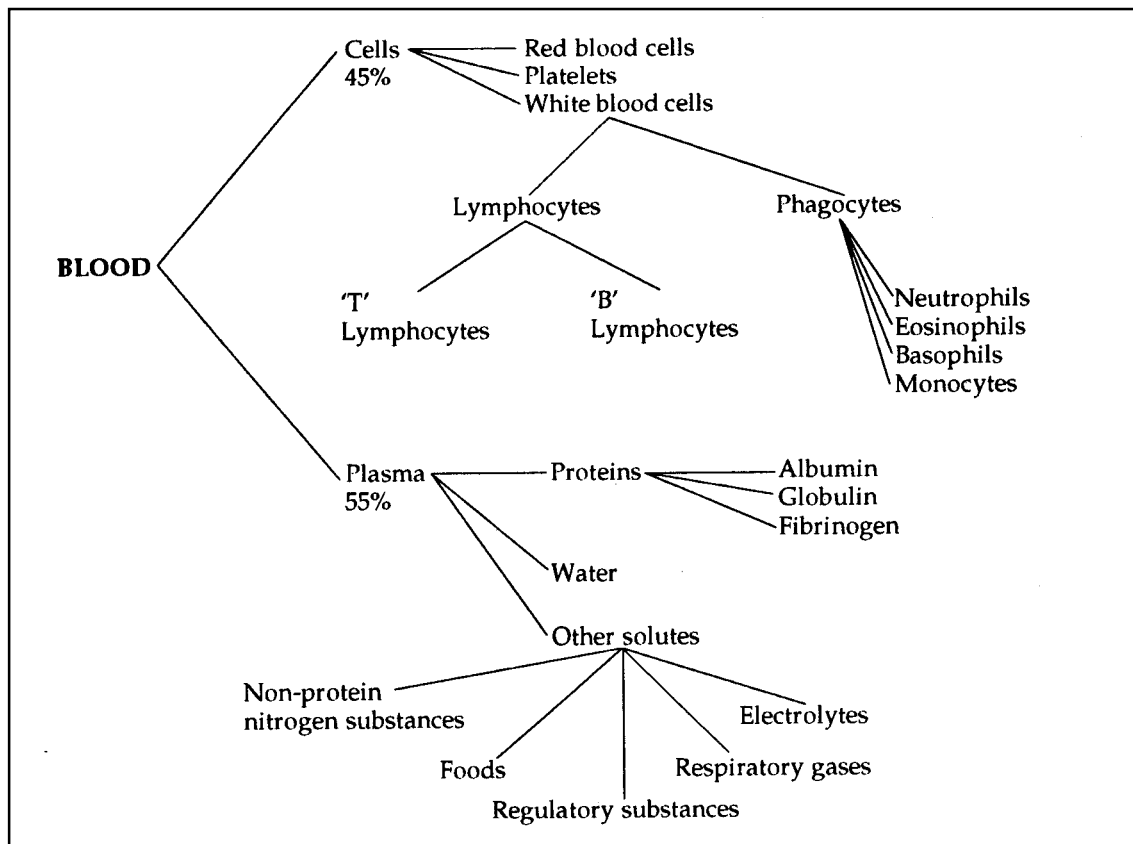
itual lessons to those with discernment, yet this statement has remarkable support in relatively modern scientific discovery. For many centuries people failed to realise the importance of the blood to the wellbeing of the human body. Even when it was discovered that the condition of the blood had an effect on health, the only practical idea they developed was to bleed patients to get rid of the ‘bad blood’. This inevitably led to death in many cases, for, as we now know, loss of blood leads to death, whilst preservation of blood and transfusion leads to renewed life. No part of the body can contrive to live without the blood. All parts of the body depend upon the regular circulation of blood. If the supply of blood is inadequate death soon results.

The blood is distinct from all other parts of the body. It conveys nourishment to all the body tissues, and is the principal means by which tissues communicate with one another (for example, by hormones). It is certainly true of the blood more than of any other part of the body that “the life of all flesh is the blood thereof” (Lev. 17:14).

The Bible said this three thousand years ago. It is only within the past three hundred years that scientists have arrived at the same conclusion. Surely this should testify to scientists today that the Bible really is what it claims to be: the Word of the living God. Yet men still prefer to disregard the Bible’s claims in favour of a theory which has no basis in fact: the theory of evolution. But we need look no further than the blood to see how unconvincing the theory of evolution really is. Blood is an amazing substance, which simply could not have evolved by chance. Consider the following evidence.

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A simplified diagram of how the blood is made up

### Composition of blood

The blood forms about eight per cent of man's total body weight—altogether approximately six litres. It is contained in about 100,000 miles of complex blood vessels, and is circulated around the body by the heart, which on average beats at a rate of seventy-two beats per minute—more than two billion times in a lifetime. The heart pumps enough blood in a normal lifetime to fill a large skyscraper.

Blood is a very complex substance. The diagram above (very much an oversimplification) shows this very clearly.

The two primary components of blood are the cells and the plasma. Our case in this article against the evolutionist is based solely on the cells.

### Red blood cells

The number of red blood cells in the human body is staggering; there are five million per cubic millimetre of blood. The body produces two million red blood cells every second in the

red bone marrow of the skeleton. At the same time the liver breaks down the same number of damaged red blood cells every second and salvages components from them for use in the manufacture of new red blood cells.

The function of red blood cells is to carry oxygen from the lungs to the body tissues and to remove carbon dioxide. There are two factors that make them ideally suited to this task:

- 1 **Their shape.** Red blood cells look somewhat like a doughnut. Mathematicians have proved that, for their size, this doughnut shape means that they offer the maximum surface area to their surroundings, and thus have the greatest potential for exchange of oxygen and carbon dioxide.
- 2 **Haemoglobin.** Red blood cells contain a chemical called haemoglobin. This chemical is able to combine with oxygen and carbon dioxide to transport these gases to and from the lungs. Haemoglobin is a very complex compound. Each molecule contains 9,520 atoms, and its formula is as follows:



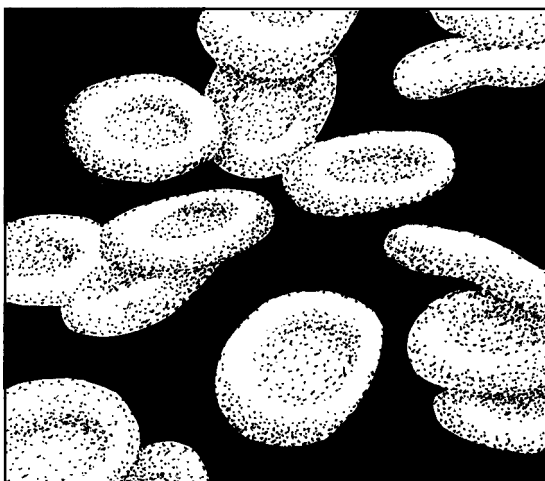
It has been estimated that there are 280 million molecules of haemoglobin in each red blood cell.

Consider the problems that red blood cells create for the evolutionist:

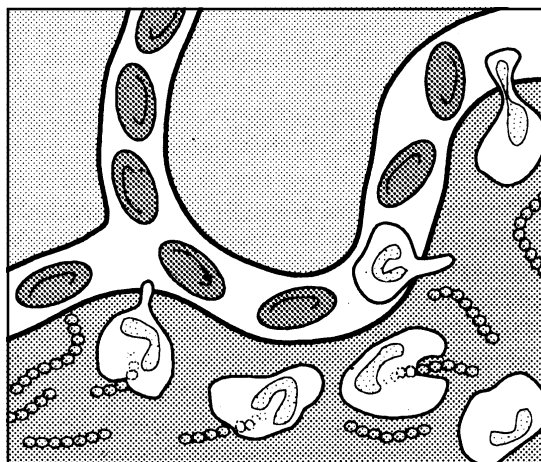
- 1 First of all, the sheer number of cells, all perfectly formed for their role in the blood. That so precise and reliable a mechanism, delivering two million cells every second, should have come about by chance is incredible.
- 2 The fact that the rate of production and the rate of breakdown of red blood cells has to correspond means that the red bone marrow and the liver had to evolve at exactly the same time.
- 3 Haemoglobin poses an enormous problem. For haemoglobin to be effective all the atoms have to be connected in the correct sequence. The probability of 9,520 atoms arranging themselves in correct sequence just once is virtually nil, but for the process to be repeated 280 million times for one red blood cell by chance is just not credible by any stretch of the imagination.

#### White blood cells

There are two basic types of white blood cell: the lymphocytes and the phagocytes. This is in fact very much an oversimplification, because there are at least two types of lymphocytes and four types of phagocytes. They all have different, very specific functions, but their key role is in the destruction of foreign material that may get into the body, such as bacteria.



Red blood cells



Phagocytes migrating to 'eat' foreign particles

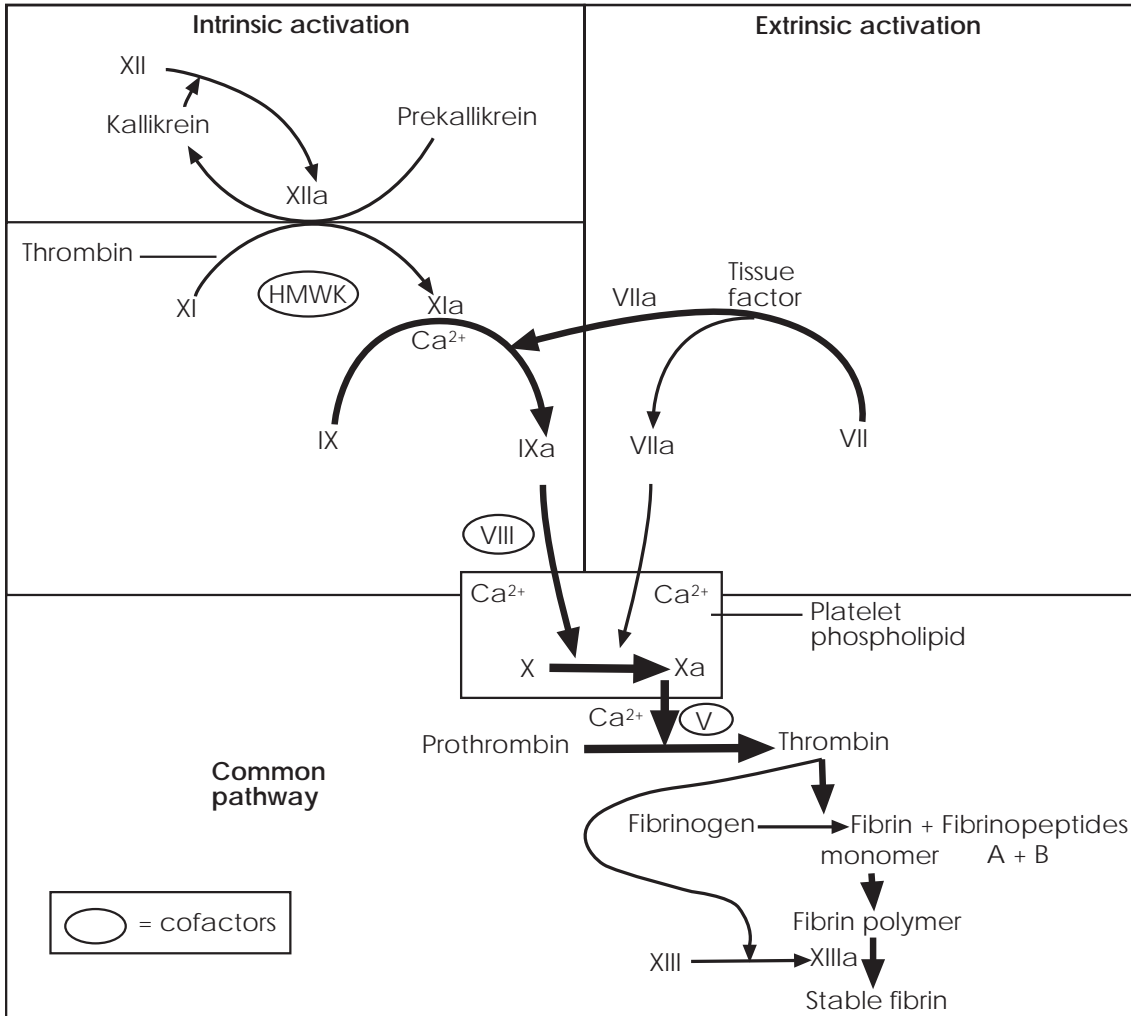
**Lymphocytes** do this by producing special proteins called antibodies, which attack foreign particles. The antibodies are produced in such a way that they 'match' the foreign particle concerned—similar to a lock and key. The antibodies attach themselves to the foreign particles and deactivate them.

The 'cleaning up' process is then performed by the **phagocytes**. These blood cells actually have the ability to move. They are attracted to the area where they are needed by special chemicals produced by inflamed tissue. They then effectively 'eat' the foreign material that the lymphocytes have killed.

Effective defence against foreign particles such as bacteria thus requires that both lymphocytes and phagocytes are present at the same time. In evolutionary terms the chances of both types of specialised cells developing simultaneously must be extremely small. Furthermore, how did phagocytes 'learn' to eat foreign particles? How did lymphocytes 'learn' to produce antibodies that would fit the foreign particle concerned? How many times did lymphocytes produce non-fitting antibodies before they learned how to do it correctly? Surely failure to perform their function correctly right from the beginning would result in death, and extinction of the developing species.

#### Platelets

Platelets are another group of highly specialised blood cells. They are disc-shaped, and there are 400,000 platelets per cubic millimetre of blood. They are involved in blood clotting. This function of blood is absolutely essential to the survival



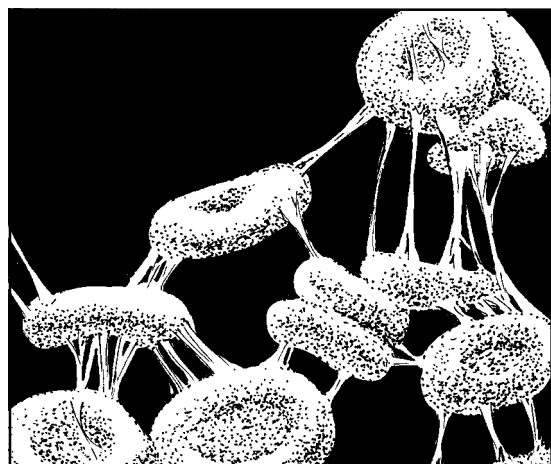
A simplified diagram of the process leading to the formation of a blood clot

of the human body. If there is no clotting then death occurs due to loss of blood.

The clotting mechanism is very complex. It involves a multitude of different chemicals, some produced by the platelets, some present in the blood plasma. The simplified diagram above demonstrates the process that leads to the formation of a blood clot.

This diagram speaks for itself. A very intricate interaction of many different substances has to take place before blood will clot. What happens if just one factor is missing? The clotting mechanism does not work, and diseases such as haemophilia ensue. For the process to work all factors have to be present at the same time.

What are the chances of all these chemical factors being produced by blind chance, all at



Fibrin threads forming a blood clot

the same time? Remote, to say the least. This is not something that the developing primate could have 'learned' by trial and error, since one 'error' would result in failure of the clotting mechanism, and death due to loss of blood.

### Conclusion

The evolutionist has no answers to questions such as these. But to avoid responsibility to the commandments of God he holds on to his theories. Surely any logically thinking individual must be led to the same conclusion as the

psalmist: "I will praise Thee; for I am fearfully and wonderfully made: marvellous are Thy works; and that my soul knoweth right well" (Ps. 139:14).

What then of *our* responsibilities? Surely the same lesson that was impressed upon the mind of the Israelite, when he poured out the animal's blood on the ground, is enjoined upon us also. It is our duty to dedicate our whole lives in service to God, and to give Him thanks for the provision He has made for the remission of our sins through the shed blood of the Lord Jesus Christ.

## Can a computer simulate evolution?\*

John Watts

**A** NUMBER of scientists engaged in a field called artificial life claim to have produced computer programs that simulate evolution. One such scientist<sup>1</sup> described how, at the first attempt, "A single computer-generated 'creature' mutated into a complex community seething with sex, parasitism and other social behaviour". He claimed accordingly that "It seems easy to create life, according to the definition of life as something that self-replicates and evolves in an open-ended way". Such simulations "could provide insights into life on Earth and how life may evolve elsewhere in the universe".

The 'digital life' started as a little piece of computer code. To survive, it had to spend time in the central processing unit (CPU) of a computer, its equivalent of eating. As it multiplied, it mutated. In the competition for food—CPU time and memory in the computer—only the fittest mutations survived. It was claimed that the single simple code within the computer-metaphor—the original digital organism—was found to "evolve" into an astonishing diversity of digital "life". It developed into thousands of different self-replicating creatures, and after a few thousand generations it was found that the smaller the creature, the better it was at winning time and memory in the computer.

### How does artificial life begin?

There is nothing new in the use of mathematical models to persuade us that evolution is plausible, but the advent of computers has allowed the

modelling to become increasingly sophisticated. This report is yet another attempt to persuade us that time and chance, together with natural selection, are enough to produce the amazing diversity of life found on earth. It is difficult to make specific comments on reports of this sort. It is possible, however, to make some general comments on the use of this approach to support the plausibility of Darwinian evolution.

Richard Dawkins wrote an article for *New Scientist* in September 1986 describing an earlier computer program to simulate evolution. The letters published a few weeks afterwards were rather more enlightening than the original article. One noted that the 'life form' was created initially and then left to 'evolve', begging the vital question of how life began. Another thought the degree of intervention by Dawkins himself was rather excessive, and suggested that if Dawkins had just switched the computer on and left it, nothing would have happened—it depended entirely on Dawkins' program, and only incidentally on 'chance'. Even the cartoon accompanying the letters (9 Oct. 1986) transferred the argument about Creation or evolution to Dawkins' computer creatures, one of whom has just been roughly treated because he does not 'believe in Dawkins'!

\* Adapted from an article originally published in April 1992.

1. Reported in the *Daily Telegraph*, 2 Dec. 1991.