

## LIFE

As in many classifications, there is no hard and fast boundary between the organic and the inorganic. An organism must be able to reproduce itself and be capable of action to make the most of its environment, but crystals of inorganic substances can do this and nobody would regard these as being alive in the conventional sense. Because there is no hard and fast boundary it scarcely matters where we choose to put it, but it is clearly the case that there is a difference of kind between the inorganic and the living higher organism, at least from the simple cell upwards.

The living higher organism can actively interface with its environment in seeking the raw materials for growth, reproduction and change. This requires a degree of mobility and this in turn requires a complex biochemistry with a specialisation of function that implies cell structure. When the biochemical mechanisms are functioning the organism is alive, but when they cease functioning due to an accumulation of toxins the organism dies. The spark of life is the functioning of the interlocking biochemical machinery of the individual that alone gives a meaning to its biological structure - without this the individual is just a complex collection of uncoordinated chemicals.

Numerous attempts have been made at explaining the emergence of higher life forms from the 'primeval soup', and some steps have been synthesized. It is recognised that the physical environment of our world must have been radically different in its earlier years, so we do not need to postulate a mechanism that could operate today. We could even move the problem further away by settling for an extraterrestrial mechanism.

The important thing is that some time during or since the Big Bang simple elements combined into chemical compounds of great complexity in which continuous self-sustaining processes could occur because of the basic characteristics of the original building blocks. Many elements are involved, but it all goes back initially to the properties of the hydrogen atom, from which we know the others were derived. The basic building blocks must have properties that

enable them in the right conditions to change to other elements and to combine into innumerable inorganic and organic chemicals. The full details of how this comes about are well on the way to being understood. The origin of the basic building blocks is another matter, and this leads us straight back to the intellectual problems of infinity.

Having gone a long way to understand what appears to be a mechanical progression from hydrogen atom to higher life forms, it is necessary to step back and consider why at least the human individual feels himself to be alive in some entirely personal sense, with numerous attributes special to himself.

One very large part of an individual's attributes are physical. Male or female; old or young; big or small; large or small brain; ugly or beautiful, large glands of one sort or another, or small glands with the same functions - let us not delude ourselves, these physical factors are of paramount importance in delineating our individual egos.

Another large part of an individual's attributes depend upon his environment. Rich or poor, literate or illiterate, cosseted or beaten in his youth, Hindu or Christian upbringing, subject to Mediterranean or Siberian climates, encouraged or forbidden to think independently - the list of environmental influences is endless, and their impact on the inherited physical body is profound.

One can be excused for suspecting that heredity and environment are the totality of the influence that makes the character of an individual. The fact that this is a slightly depressing thought is irrelevant to its validity. Even prized loyalties of one sort or another can be demonstrated as derived from inherited or acquired biological factors. It is all infinitely complex, but man relies for his success partly on his interlocking loyalties, and has been selectively bred for them.

If an individual firmly closes his eyes, shuts his ears and deadens his tactile senses what remains to him? He is adrift in darkness without a present reference point, but the biochemistry of his brain is still working and he can still think and dream,

at least while he retains his memory. Suppose that he totally loses his memory, so that his language and experience slip away. He will clearly be in an unfortunate condition, and although still conscious of himself as an individual he will, to put it mildly, not be the man he was. He may have the potential for recall, but whilst he is in this state he can only claim to be a recognisable human individual because of the individual physical make-up of his brain, activated into consciousness of self by the spark of life which is its metabolism.

The physical characteristics of an individual do seem to be paramount, and this is not really surprising in that evolution puts all its money on them.

At the end of the discussion though, there is this spark of coordinated metabolism in a finite lump of matter that is the individual, and which gives it amongst other things self-consciousness. It could be argued that the block of matter needs this self-consciousness in order to defend itself flexibly against life's numerous problems, but the question is where does it come from?

Since there is no reason to suppose that the whole chain of changes from the initial building blocks up to higher life forms is anything other than a mechanical process, two consequences follow. One is that the initial building blocks clearly include amongst their physical properties an ability to combine and interact and change to produce the physical end product. The other is that the initial building blocks must also include amongst their physical properties the proto-sparks of consciousness capable of unification by the metabolism of the lump of matter comprising the individual.

This is the most important and seemingly inescapable conclusion, important that each individual 'soul' is a temporary physical structure drawn from the matter of which he is made, which in turn we know to be drawn from the matter-bank of the Big Bang or something similar. A lot is now understood about subatomic structure, but a lot remains to be understood, and it may be predicted that a measurable physical force of proto-consciousness lies in the unknown area.

Proto-consciousness plus an ability to combine into life forms equates with proto-life, so the inference is that life is an integral part of all the matter, forces, electromagnetic waves and so on that constitute our entire surroundings, and which appear probably all to be different manifestations of the same thing anyhow.

It needs to be noted too that this proto-consciousness realises its potential not only in man, but clearly also in his dog, his horse and his cat; less clearly in fish, corals and protozoa; and not really too visibly in all plants and bacteria. What we do know is the strength of its realisation in other life forms than man. What about the gentle dolphins? Man has the biggest brain, but brain cells are just specialisation from other more generalised cells. Who can say that life form with less specialised cells do not possess the strong spark of consciousness diffused throughout them? There does appear to be some evidence for self-consciousness in plants. After all they are made of the same life matter as animals and only appear to be rather supine because they mostly obtain their food less aggressively, by photosynthesis. On a longer time scale than ourselves they move around very convincingly, intelligently interlacing with their environment.

So; if proto-life is present in all matter and becomes expressed and visible in the specialised organs of a biological entity, what is the position with regard to inorganic matter - rocks, energy, electro-magnetic waves, mountains, sunbeams? We have deduced that they all contain proto-life. And the clouds that feed the raindrops? Do all these things have their invisible life quality, invisible diffused self-consciousness? Is the whole interacting system of everything basically conscious of itself as a unity, and conscious of what it is up to? On the basis of the physical facts it seems by no means unlikely, although the mechanism remains to be quantified.

All of this may lead one to start muttering again about God being in all things. This may be a useful concept, but the system which has been described is a purely mechanical derivation from the initial building blocks cosily set in their context of infinity. All the same it is the only reasonable prospect of eternal life for ourselves, if that is what we seek.