

Biblical Darwinism




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Internal and External Biblical Meanings

For those who know little about Swedenborg, he was a Swede born in 1688 and who died in 1772. He was the son of a regimental chaplain who later became Bishop of Skara. The first two thirds of Swedenborg's life were spent in scientific pursuits, with a particular interest in the anatomical seat of the soul. Aged 50 or so, an intensifying dream life led to a revelation of Jesus and Swedenborg spent the last third of his life exploring the spiritual world, and writing an extensive commentary on the books of Genesis and Exodus, called *Arcana Caelestia*, which is based on his experiences in that spiritual realm.

Volume 5 of the *Arcana Caelestia* (in the English translation), which covers Genesis chapters 28 to 31, concerns itself with 2 ladders: Jacob's ladder (see Fig. 1); and the figurative ladder that is comprised of the births of Jacob's 12 sons.¹ Swedenborg sees this second ladder—the births of Jacob's sons—as a kind of spiritual ascent, corresponding

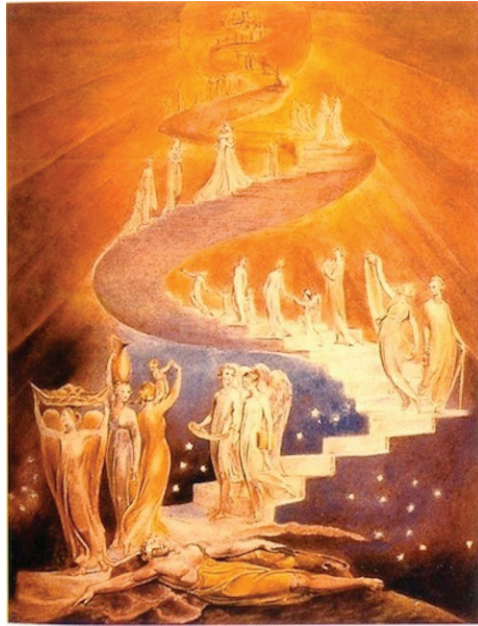


Fig. 1. William Blake's *Jacob's Ladder* (c. 1805).

to a terrestrial ladder. As he says in *Arcana Caelestia*, §3859, Reuben, the firstborn, represents the first stage of regeneration.

This talk concerns several ladders, biblical and secular, though in a certain frame of mind they all illustrate spiritual growth.

As I said just now, Swedenborg spent the first two thirds of his life in scientific pursuits and the last third frequenting the spiritual world. It is thus legitimate to believe that Swedenborg saw the purpose of life in finding its correspondence with the spiritual world, in passing through things temporal so that we lose not the things eternal. The main theme

of this address is change and evolution, of which Swedenborg's own life is a startling example. I will also illustrate change and evolution by describing several 'ladders' (or progressive series) in various contexts.

'In the beginning God created heaven and earth', begins Genesis, 'and the earth was without form and void', or *tohu wewohu* in the Hebrew. 'And the spirit of God hovered over the face of the waters', and organization and ladder building got going, so to speak, of which we, as human beings, are the top rung, holding within ourselves also many subsidiary ladders.

Darwin's famous treatise on evolution, *On the Origins of Species, by Means of Natural Selection*, can also be seen as a text concerning figurative ladders and progression. He ends the book in these words, 'from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely the production of the higher animals, directly follows'.² He left out humans as the Victorians of his day did not like to think they were ascended from monkeys.

A striking modern example of this organizing tendency on the part of the Lord is a description of the action of the Higgs boson at the Large Hadron Collider (LHC) in Geneva. As the energy increases at the LHC, driving the protons ever faster, what happens is that, when they hit each other, quarks and several other subatomic particles are produced, but also something else—the Higgs boson appears, 'a ripple of energy in the Higgs field', giving earliest matter its substance. Instead of the original fundamental particles breaking up all higgledy-piggledy they form new families of particles under the influence of the Higgs boson.

There are now four families of elementary particles, each family being produced by an increase in the energy of the LHC. The Higgs boson came into being at the first billionth (10^{12}) of a second after the Big Bang,³ superimposing order on the *tobu wevobu* ('without form and void') of Genesis.

The seasons come and go and morning follows evening as the earth spins on its axis round the sun. We go to work and return. Life is full of seemingly repeated circular processes, but spiral processes would be a better description, as nothing ever repeats itself in exactly the same way. The water over which the spirit of God hovered in the beginning held within itself the secret of life. Millions of years, trillions of evenings and mornings later, in another turn of the spiral, the same spirit of God hovered over the Lord's body as he emerged from the waters of the Jordan under the eyes of John the Baptist. Due to what we now know about the biochemistry of the water in the human body we can define many more spiral pathways. I am going to talk about biblical spirals, but also about a few of the spiral biochemical pathways found in the waters of the body, and how we understand them in the light of divine love.

From a man insatiably hungry to make sense of the curiosities of this world, Swedenborg grew and evolved into a man with equal enthusiasm for the curiosities of the spiritual world as described in his massive commentary on the Bible—the *Arcana Caelestia*.

To emphasize Swedenborg's interest in how the body corresponds to the spiritual world, I will first draw from a scientific paper entitled 'A

Note from History: Discovery of the Cerebrospinal Fluid', by Steven I Hajdu. Cerebrospinal fluid (or CSF), is the fluid inside our skulls in which the brain floats. It had largely been ignored by other anatomists before Swedenborg because, in earlier times, in post mortem examinations, the head was cut off from the body and all the CSF drained away. In a manuscript unpublished in his lifetime, written between 1741 and 1744 (that is before his revelatory period and before he started to see spiritual correspondences with the form of things in this world), Swedenborg referred to CSF as a 'spirituous lymph' secreted from the roof of the fourth ventricle down to the medulla oblongata and spinal cord.⁴ The word 'spirituous' used in this context had nothing to do with 'spirit' in the spiritual context of heaven and hell which Swedenborg explored later. This manuscript was eventually published in 1887 as *The Brain, Considered Anatomically, Physiologically and Philosophically*.⁵

Swedenborg would go on, in *Arcana Caelestia*, to interpret these anatomical findings as a metaphor, but we will also see later how the misunderstanding of metaphor led to Descartes' views of dualism.

In his concept of the 'Grand Man', Swedenborg, after his revelatory period started, saw many natural things in the light of a spiritual end. This is exemplified by a vision he had concerning the spiritual significance of the circulation of the cerebrospinal fluid, the anatomy of which he knew all about, as evidenced by his manuscript on *The Brain*. I say 'circulation' of the cerebrospinal fluid, but it is more accurate to

describe its motion as a spiral. Here is what Swedenborg says following a vision of the CSF:

There were certain spirits overhead, slightly to the front, who spoke to me. [...] I was told that those spirits correlate with the ventricles or cava majora of the brain [...] the nature of the better kind of lymphatic secretion within that province is such that it flows back into the brain, to which it therefore possesses the endeavour to go. The brain is heaven, and this endeavour is that longing and desire.⁶

Here is a modern picture of the circulation of the CSF which is coloured in blue on the diagram (Fig. 2). The cava majora that Swedenborg speaks of are what we now call the ventricles: two lateral ventricles; a third ventricle; the aqueduct of Sylvius; and the fourth ventricle. As you can see in the diagram, the chambers housing the cerebrospinal fluid consist of the two lateral ventricles, the third and the fourth ventricles, joined by the aqueduct, the CSF then flowing out of three holes in the roof of the fourth ventricle. It then fills the spaces round the spinal cord and the brain, flowing up over the top of the cerebral hemispheres to where it is reabsorbed into the blood stream in the so-called arachnoid granulations.

As we all know, Darwin and Wallace produced a description for the mechanism for the origin of species, but, unlike Swedenborg, were not particularly interested in its spiritual significance. As you know as well, Linnaeus introduced the binomial classification for genera and species

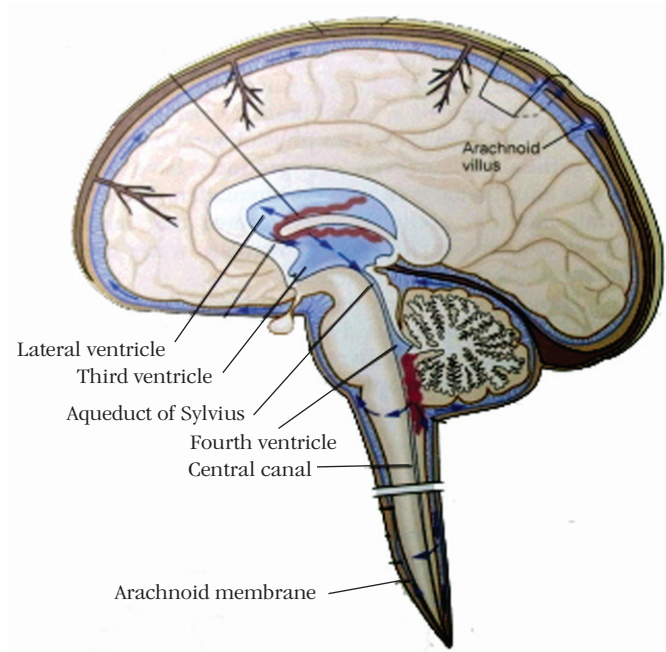


Fig. 2. Circulation of cerebrospinal fluid.

and we have families of animals and plants just like we have families of fundamental particles like quarks, leptons, muons etc., formed under the influence of the Higgs field, as I indicated earlier.

It is ironic that one of the early criticisms of Darwin's book *On the Origin of Species* is that it seems to undermine the literal meaning about the construction of the physical world by God in the first chapters of the Book of Genesis. It was assumed that neither Darwin's book, nor

the first chapter of Genesis had any spiritual meaning and must be understood mechanically or literally and so, if they clashed, then it was a mechanical clash, like a car accident without consideration for the spiritual significance for the driver. Watching a car accident is quite a different spiritual experience from being in one. Darwin himself knew as a scientist that there was a great destruction of individuals in the evolution of different species, but that did not help his own emotional trauma when one of his daughters died and he seems to have lost his previous rather feeble faith in the goodness of God, even though the death of his daughter might be deemed as part of the evolutionary process, or as part of the Lord's plan for Darwin's world.

Darwin's account for the origin of species and the early chapters of Genesis, indeed of the whole Bible, can be understood in various ways, but literal interpreters of both systems ignore the spiritual meaning. As Pascal says, 'the heart has its reasons, of which reason knows nothing'.⁷ He might have included the heart of God in this aphorism. We cannot help but feel something, in whatever change of situation we are in, and a large part of our behaviour is guided by what we feel—what our heart says—about those situations. It's the reason why we have ended up with such expressions as 'the heart of the matter'. Even the crassest materialist sees material gain and loss as some kind of metaphorical victory or defeat.

If we introspect a little we notice that certain places give feelings, and therefore have meanings attached to them due to the emotions experienced in these or similar places in the past. Very often we make

images to convey to others the emotional significance of these feelings. Like Swedenborg, we make metaphors for them. A startling example of this, because it is so well described, is the experience of Henry James, Sr who, after a mental breakdown, was introduced to Swedenborg's writings. James was a very wealthy man who spent a good deal of time in Europe trying to get his sons educated. He suffered his breakdown while staying with his family in a house rented from the Duchess of Kent in Frogmore, near Windsor. Apparently this house reminded him of the 'little back room' in his father's house in Albany, the capital of New York State where he had spent 2 or 3 years as a teenager getting over two botched amputations of a gangrenous leg, both without anaesthetic, following a severe burn. He describes the experience in Frogmore in a book called *Society: The Redeemed Form of Man*, published three years before his death.

One day [...] towards the close of May [1844], having eaten a comfortable dinner, I remained sitting at the table after the family had dispersed, idly gazing at the embers in the grate, thinking of nothing [...] when suddenly—in a lightning-flash as it were—'fear came upon me, and trembling, which made all my bones to shake.' To all appearance it was a perfectly insane and abject terror [...] only to be accounted for [...] by some damned shape squatting invisible to me within the precincts of the room, and raying out from his fetid personality influences fatal to life. The thing had not lasted ten seconds before I felt myself a wreck [...].⁸

While convalescing from this emotional breakdown here in England, James was told by a Mrs Sophia Chichester that he was undergoing what Swedenborg describes as a 'vastation'. She told him to buy the writings of Swedenborg, a trunkful of which he then kept with him and annotated for the rest of his life. He saw a dreadful correspondence between the rottenness of the gangrenous leg before it was amputated and the rottenness of his own life. The imagery of the writings enabled him to eventually rid himself in some degree of his vast egotism and self-righteousness, perhaps by making them into a parable of his inner self by the art of correspondences. It reminds me a little of the story of Jacob, also a man of vast egotism, which I will touch on later.

One of the benefits of reading Swedenborg is that it encourages us to see biblical correspondences, although this has been more widely used in the literary and religious world than in the scientific one. The Bible is much less familiar to us now than in Swedenborg's day. Richard Lines, the Swedenborg Society secretary, reminded me of the words of Schleiermacher,⁹ a well-known teacher and preacher, and a founder of the University of Berlin in nineteenth-century Germany: 'The Sacred Scriptures became the Bible by means of their own power; they do not forbid any other book to be or to become the Bible; they would willingly allow anything written with the same power to be added'.¹⁰ I doubt he would have included a textbook on biochemistry, but I think even that can have a spiritual significance, as this lecture suggests. It is not the book which has the power; it is the neuromodulators or spirits of the

brain of the reader or onlooker which make the book or experience sacred or profane.

Swedenborg writes in *Arcana Caelestia*, §§3-4:

It is the internal man which lives and imparts life to the external. The internal man is the soul of the external man. The same applies to the Word which as to the letter alone is like a body without a soul. As long as the mind confines itself to the sense of the letter alone one cannot possibly see that its [the Bible's or, I might add, the biochemistry textbook's] contents are such [i.e., they appear dead].¹¹

Swedenborg goes on to say that the subject of the Word is presented in such a way that not the smallest part of any expression fails to have a representation, to carry a spiritual meaning, or to embody something within itself.

On the Origin of Species and a literal interpretation of the Bible are both mechanical processes and as dull in some ways as the workshop manual describing the workings of a motor car, or the circulation of the cerebrospinal fluid, unless their internal is appreciated.

In the same way biochemical reactions can be regarded as the literal, biochemical way in which the body works; the machinery. The Bible can be a dull series of words on the pages of paper, unless, like the number and letters on the registration plate of a car, it has been 'personalized'. One needs to learn to read and after that you are on the way to getting to the letters' internal meaning, just as a lion learns that

the smell of a deer means a good meal, and for the deer the smell of the lion means a good meal in a different sense!

The Chemical Pathway of Sugar

Swedenborg says that heaven is created from the human. It is we who see heaven in a grain of sand, or in the sweetness of sugar. In the Bible, honey was a substitute for sugar, and the Israelites left Egypt for a land flowing with milk and honey. Milk and honey feed the internal as well as the external man, and sugar is dealt with in the body in a process which resembles a ladder.

Here (in Fig. 3) is a diagram of the chemical reactions in which, with the aid of many hormones or enzymes, honey or sugar is broken

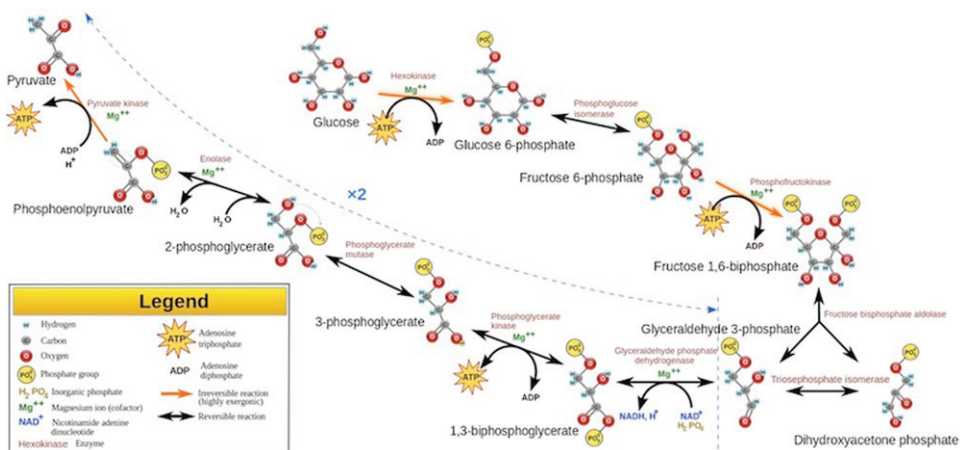


Fig. 3. Diagram of glycolysis.

down in a series of steps in the body. Hydrogen ions are produced along with their counterparts, high energy electrons. Hydrogen is a fundamental particle that was created just after the Big Bang and it carries the energy on which the body works. This can be seen as one result of the spirit hovering over the waters of our body.

Here we start off with glucose, the honey of the Bible, and the diagram shows the steps by which it is broken down or translated into substances (including electrons) that are useful to the body, ending in pyruvate. In

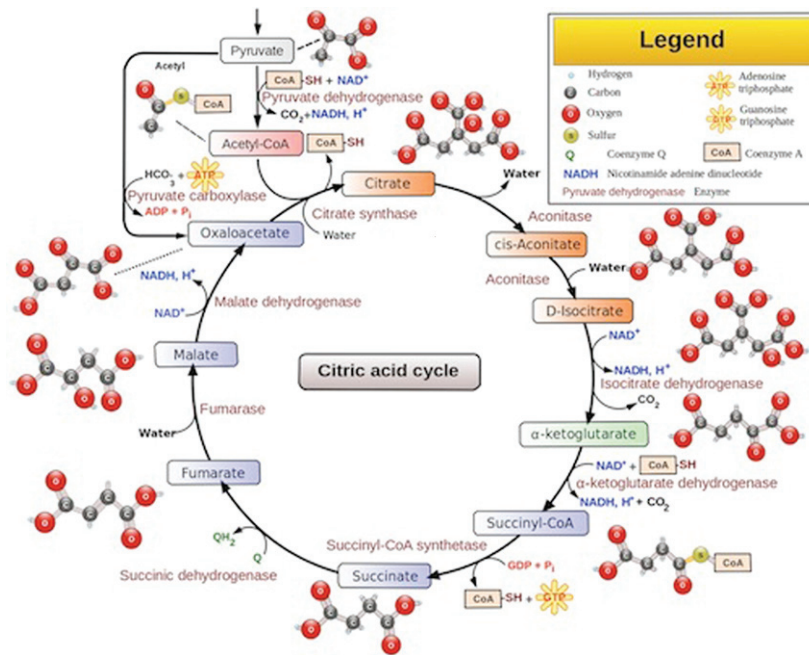


Fig. 4. Diagram of the citric acid cycle.

yeast, pyruvate is turned into alcohol, but animals (including humans), with the aid of oxygen, use pyruvate in a different way. And you can see this process in the next diagram (Fig. 4), where pyruvate enters at the top and continues to be broken down in a process called the citric acid cycle—a cycle because it is a circular process, never stopping as long as enough raw materials in the way of food and oxygen are fed in to it; and it is a cycle which provides the energy which keeps the body going. We all know intuitively what energy is because we know what it is like to push against something; and we all know what feeling tired and having no energy is all about. It was the genius of Newton who produced a mathematical and mechanical way of dealing with this intuitive feeling for energy, just as biochemistry has elucidated the chemical pathways by which energy is produced and felt in the human body. In the process, however, the universe has come to be perceived as a piece of clockwork, wound up by God who then left the scene to let it run gradually down. And the life-giving spiritual significance was lost in the so-called Age of Enlightenment and today's age of the machine.

As soon as something is felt in the human body we tend to apply the metaphors of language to it, to make it possible to communicate our concepts to others or write it down. We take words with a known meaning and so weave a metaphor for some new thing which needs explaining. I am fascinated, for example, that the word 'Lord' comes from the Anglo-Saxon *blaford* or *blafweard*, which meant 'loaf ward' or 'loaf-keeper'. The word 'lady', meanwhile, comes from *blafdige*, with *dige* meaning 'dough'.¹²

'And the spirit of God hovered over the surface of the waters.'
Evolution of the Brain, and why there is salt in our CSF and blood.
In Hebrew the word translated as 'hovered' is a present participle of *Rakaph, merakepeth*, meaning 'hovering', as if the process is still continuing today.



Fig. 5. Tiger salamander.

We think that life first developed, long ago, in water. For example, the ancestors of today's tiger salamander (Fig. 5), an amphibian creature that lives both in water and on land, lived 450 million years ago, and one can see how the simple elements of its brain and body correspond to ours. Brains in all creatures are specialized organs for extracting meaning, or metaphors, from the environment. Our own ancestors

also existed in some form all those years ago even if we are not descended directly from the tiger salamander. A tiger salamander is an amphibian that reminds us that life started in the oceans which were a good deal less salty than they are today. Like the cerebrospinal fluid, our blood contains about 0.9 mg of salt per hundred ml, which was the same salinity as the oceans when our distant ancestors emerged from them. Fishes which live in the sea today have to deal with living in a fairly strong salt solution which is toxic if drunk in large quantities.

The water of our oceans may have come from the early earth being bombarded by meteorites containing ice, which makes an interesting association with the waters lying above the firmament spoken of in Genesis. Meteorites also contain amino acids, the building blocks of hormones. This has been discovered by examination of what is called the Murchison meteorite in Australia (Fig. 6). Amino acids, one of the constituent elements of life, may have therefore originated in outer space, finding their end or meaning on this earth. If we think of the other planets and stars, we find unorganized chemical and physical processes going on. Only on this world have such processes become organized to make life as we know it. Like the Murchison meteorite, other meteorites contain the ingredients of life, but only when they hit this world does God's spirit organize them into recognizable lifeforms. I have this information from a book called *The Serpent's Promise* by Steve Jones, a former Professor of Genetics at UCL.¹³

These organizing powers involve some amazingly complicated processes. As I said, the CSF and the blood contain 0.9 mg of salt per 100



Fig. 6. A fragment of the Murchison meteorite. The whole meteorite weighed about 100 kg.

ml. This has to be kept at a constant level to enable life to continue in each of our bodies. We need to regulate the amount of salt and water in our bodies to keep the salt concentration like those ancient oceans. There is a hormone or chemical messenger produced in the brain called vasopressin, also produced by a ladder of reactions, which

regulates the amount of urine we make, i.e., it regulates the amount of fluid in which the salt of our body is dissolved, so keeping the salt concentration constant. Without vasopressin we would make about 20 litres of urine a day and our blood would become much too salty. Another hormone that is structurally very closely related to vasopressin is called oxytocin. It is also produced in the brain and without oxytocin animal reproduction (including human reproduction) would not take place. This is another form of expression for the formation of families. Just as the Higgs boson formed families of fundamental particles out of the hotchpotch of matter produced by the Big Bang, so oxytocin arranges the hotchpotch of people into families as we know them.

Without water there would be no life. Vasopressin regulated the concentration of salt in our bodies. Without love, the organizing principle first suggested by modern science as the meaning for the Higgs boson that produces the families of early elementary particles, we would have no animal or human families. Oxytocin is the hormone, the organizing principle, which makes us feel loving and organizes us into families.

I mentioned the circulation of the cerebrospinal fluid and the spiritual significance given it by Swedenborg. In another memorable relation in the *Arcana*, Swedenborg describes the infundibulum, a part of what we now call the midbrain hypothalamus (Fig. 7). It is in this part of the brain where vasopressin is produced, controlling the concentration of salt in our blood and CSF among other things; oxytocin is also produced there, helping us fall in love. Swedenborg writes:

Here is a clearer picture of the third ventricle with the **infundibulum**, the pituitary gland and the isthmus. The **hypothalamus** makes the walls of the infundibulum.

You can see a bit of the **fornix** leading from the hypothalamus to the hippocampus.

The **isthmus** is also shown. In AC, §4051, Swedenborg makes clear that other spirits come from here. We now know that it is the source of adrenaline, noradrenaline, serotonin and acetyl choline.

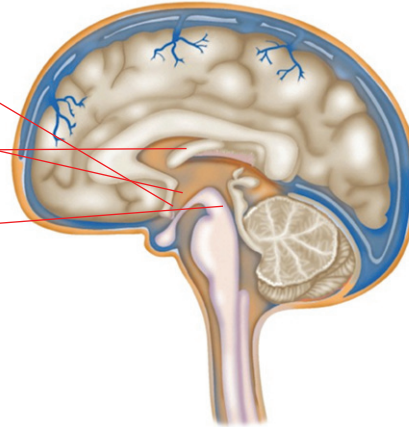


Fig. 7. Saggital view of the brain showing the infundibulum.

A certain face was first of all visible to me above a skylight and then presently withdrew inside [...] Then I saw some walls without a roof [...] and lastly I saw what looked like a starry sky. [...] I supposed that something hideous would be displayed for me to see. But shortly the wall disappeared, and also the starry sky, and a well appeared from which a brilliant cloud or vapour emerged. [...] I asked what those things meant and represented, and was told that this was a representation of the infundibulum within the brain, above which was the brain itself, meant by the sky [...] while the cloud or vapour which emerged from it was the lymph which passes through and is pumped out of it.¹⁴

Swedenborg then goes on to describe this vapour as ‘lymphs’ or what we would call nowadays hormones or neuromodulators, both good and bad. For those not medically qualified, lymphs are clear watery fluids found in many parts of the body. Swedenborg, in his vision, saw these lymphs as personified men and describes them as ‘running about this way and that [...] paying attention to everything, and reporting to others the things they heard. They were disposed to be suspicious, impatient, and restless [...] Their reasonings are the fluids there which they represent’. Some belong to married love and some to ‘whoredom and adultery’.¹⁵ Swedenborg also describes CSF as a lymph. What Swedenborg called the infundibulum is now known to contain the hypothalamus, the chief hormone producer and controller of the body.

I interpret the ‘reasonings’ of these fluids as their biochemical influence on the body, such as married love which we now know to be due to the ‘fluid’ or ‘lymph’ called oxytocin.

Oxytocin could be seen as an angel of His presence, the intense feeling it brings of love between adults; of adults for children; of mothers for their offspring; and, in a regenerated person, the love he or she finds in his or herself in a relationship with God. It is only in recent times that we have discovered the biochemical and emotional function of hormones, but at the same time we have lost their spiritual significance. Following on from Descartes’ investigations, humans were regarded as possessing a soul which communicated with the brain via the pineal gland. Swedenborg repeats something similar in *Conjugal*

Love, §315. Animals were regarded as machines in this Cartesian sense, Descartes wrongly saying that they have no pineal gland and therefore no souls. Descartes went on, in his theory of dualism, to suggest that humans have a pineal gland to bridge the gap between soul and body. I don't think Descartes understood the fact that the soul lives in the land of metaphors, and it is the effect of hormones which impels us to describe emotional effects, mistakenly attributed to the soul, but really just metaphors based on earthly feelings.

Hormones have been around much longer than the human race, but it is regenerated humans who turn them into angels. They only exist as hormones until they are glorified by becoming creations of the regenerated human brain and body. Most scientists see no spiritual meaning in hormones, making Swedenborg really unique in this regard.

Swedenborg's memorable relation about the infundibulum comes from volume 5 of the *Arcana*. In the same volume we find Swedenborg's analysis of the meaning of Jacob's dream of a ladder with the angels ascending and descending upon it (Gen. 28.12-15) and, later on, the description of the births of 11 of Jacob's sons and his one daughter. The comments of each child's mother as it was born represent a spiritual progress, a sort of ladder, illustrating a spiritual evolution towards a celestial state. Jacob's 11th son was Joseph, whose name, according to Swedenborg, means 'salvation'.¹⁶ So we can interpret the first 10 sons as a kind of metaphorical progression to a heavenly state of salvation which is reached at the eleventh son, Joseph. Rachel, Joseph's mother,

was the only wife whom Jacob loved, and therefore the only marriage where both he and she experienced a good dose of oxytocin.

I will not go into the details, as Swedenborg divides the meaning of each child's name as given to it by their mother into three levels—highest, internal and external—and it gets too complicated. One needs to mull it over privately, and it will signify different things to different people. The names of these 11 sons also illustrate a spiritual evolution towards a celestial state, which reminds us of the meaning of Swedenborg's interpretation of his vision of the CSF circulation.

Like chemical formulae in the breakdown of glucose, here are the names of the 12 sons of Jacob written in Hebrew, along with their translation into English and metaphorical comments on their meaning made by their respective mothers, as explained by Swedenborg (Fig. 8). There is a kind of metaphorical evolutionary ascent, like Jacob's ladder (Genesis 28.12), from Reuben to Joseph, with Benjamin as an addendum at the end, at the moment when Rachel dies near Bethlehem. You will notice that God is always given as the source of the feeling each mother has for her newborn baby, which is not the usual reaction of modern man who thinks that these feelings are somehow due to the baby. We say how sweet he or she looks, not how sweet God looks.

Swedenborg divides the meaning associated with the names each child received from its mother into highest, internal and external categories. I have taken Swedenborg's external categories and you can see how we get warmer and warmer, like playing hunt the thimble, as we

progress towards Joseph, which means ‘salvation’. As you can see, conjugal love, which is a love as found in a conjugal marriage, is a pattern for love for God, which is salvation, for which Joseph stands. There are so many shades and nuances of meaning differing from reader to reader that it is impossible to lay down any rules as to the precise meaning these categories have for any individual.

Name of son	Name in Hebrew	Name of mother	Meaning	Biblical verse
1. Reuben	רְאוּבֵן	Leah	Foresight	Gen. 29:32
2. Simeon	שִׁמְעוֹן	Leah	Providence	Gen. 29:33
3. Levi	לֵוִי	Leah	A joining together	Gen. 29:34
4. Judah	יְהוּדָה	Leah	The Lord	Gen. 29:35
5. Dan	דָּן	Bilhah	Righteousness and mercy	Gen. 30.6
6. Naphtali	נַפְתָּלִי	Bilhah	Resistance in natural	Gen. 30.7
7. Gad	גָּד	Zilpah	Works of charity	Gen. 30.10
8. Asher	אָשֶׁר	Zilpah	delight of affection	Gen. 30.12
9. Issachar	יִשָּׁכָר	Leah	Mutual love	Gen. 30.17
10. Zebulun	זְבֻלֹן	Leah	Conjugal love	Gen. 30.19
11. Joseph	יוֹסֵף	Rachel	Salvation	Gen. 30.23
12. Benjamin	בְּנִימִין	Rachel	Spiritual from celestial	Gen. 35.17

Fig. 8. Table showing the twelve sons of Jacob as spiritual evolution.

If you look at the names of Jacob's children in Hebrew, and do not know the Hebrew alphabet, they mean nothing, like chemical formulae to a non-chemist. I have coloured the table (Fig. 8) to indicate the increasing spiritual warmth of the climb at each stage, like the game of hunt the thimble.

Swedenborg's comments on the circulation of the CSF imply that it corresponds to this evolutionary urge which we observe in ourselves, the unconscious desire we imagine animals to have to keep themselves or their children alive, to find a suitable ecological niche free from competitors, to propagate their species, and the conscious desire we as humans have that both we and our children may be happy by whatever means. Of course, because we are also animals, these two driving forces are found in us together. It corresponds to a desire to reach heaven.

The Lord said to his disciples 'You are the salt of the earth. If the salt has lost its savour wherewith will it [the food] be salted'. This is the spiritual result of the hypothalamus trying to make sure that we include an adequate amount of salt in our food to keep our blood and the CSF in the same state of salinity as the ancient oceans. Food without salt is insipid. The hypothalamus has no feeling so the feeling is expressed by the salt taste receptors of the tongue, and the brain then turns it into a metaphor for thirst, just as oxytocin turns on a romantic feeling to describe the action of oxytocin.

In the diagram opposite (Fig. 9) you can see that the amino acid sequences of vasopressin and oxytocin are extraordinarily similar.

Vasopressin

H-Cystine-Phenylalanine-Glycine-Aspartine-Cystine-Proline-Arginine-Glycine-NH₄—S

Oxytocin

H-Cystine-Tyrosine-Isoleucine-Glutamine-Aspartine-Cystine-Proline-Leucine-Glycine-NH₄-S-S.

Fig. 9. The amino acid sequences of vasopressin and oxytocin.

The reasonings of these ‘lymphs’, as Swedenborg calls them, or hormones as we would now say, is better described by their actions in a modern sense. Jesus said to Nicodemus, ‘man is born of water and the spirit’. So vasopressin will remind you of that. Vasopressin perhaps corresponds to the steady devotion to the humdrum duties of life, the constancy of a steady *milieu interieur*, which life needs between the interludes of love.

The difference between the internal and external can be illustrated by the difference between an arranged marriage and a true love affair. In a marriage where love exists, the internal man triggers the outlook of the external man and makes it alive, and it becomes reasonable to propose marriage. In an arranged marriage the external man remains, so to speak, dead; and the reasonings have quite different and external motives. There is not a similar flow of oxytocin as in a love match. The flow of metaphors in praise, say, of the beloved is also much stunted. There is lack of spirit as we say.

I will end with a remark I read several years ago by Steve Jones, whom I have quoted above concerning the Murchison meteorite. Jones is a retired Professor of Genetics at University College London who writes every now and then in the *Daily Telegraph* on scientific matters. He once visited a theological seminary in Botswana where he discussed evolution with one of the students. He says:

Years ago I taught an evolution course at the University of Botswana, a devoutly Presbyterian place with a strong creationist tradition. At the end I asked one of the students how he reconciled what I had said about the immense antiquity of mankind with his belief in a universe 6,000 years old. He gave me a perfect answer: 'It is very simple, sir; you evolved—but we were created!' ¹⁷

To my mind creation happens when you know God loves you. Whether that was what the student had in mind I do not know, but it describes for me very well the difference there is between the two words. Evolution is converted to creation when you know that God loves you.

Once you have been created in the biblical sense then the internal man can evolve. No creative evolution or biblical Darwinism takes place unless you have been created in this sense.

THE END.

Notes

¹ Admittedly, Benjamin, who is the topmost rung of this ladder, so to speak, is not born until Genesis 35, which Swedenborg covers in volume 6 of *Arcana Caelestia* (in the English translation).

² Charles Darwin, *On the Origins of Species, by Means of Natural Selection*, 3rd edition, with additions and corrections (London: John Murray, 1861), p. 525.

³ Katherine Sanderson, 'Matters of Substance', in *Cambridge Alumni Magazine*, no. 69, Easter 2013, pp. 20-3.

⁴ Steven I Hajdu, 'A Note from History: Discovery of the Cerebrospinal Fluid', in *Annals of Clinical & Laboratory Science*, vol. 33, no. 3, 2003, pp. 334-6.

⁵ Emanuel Swedenborg, *The Brain, Considered Anatomically, Physiologically and Philosophically*, tr. and ed. R L Tafel, 2 vols. (London: James Speirs, 1882-7).

⁶ Swedenborg, *Arcana Caelestia*, tr. John Elliott, 12 vols. (London: Swedenborg Society, 1983-99), vol. 5, §4049, p. 291.

⁷ Blaise Pascal, *Thoughts of Blaise Pascal* (Boston: Gould, Kendall and Lincoln, 1849), no. LXII, p. 340.

⁸ Henry James, Sr, *Society: The Redeemed Form of Man* (Boston: Houghton, Osgood and Company, 1879), pp. 44-5.

⁹ Friedrich Schleiermacher (1768-1834) was a pioneer of modern theology. He was brought up by Moravians, even though his father was a Reformed (Calvinist) pastor and Chaplain in the Prussian army. Schleiermacher himself was a pastor, being Chaplain to the Charité Hospital, and he was also involved with the founding of the University of Berlin.

¹⁰ Schleiermacher, *Discourses on Religion*, fifth discourse, quoted in, Henry Corbin, *Swedenborg and Esoteric Islam*, tr. Leonard Fox (West Chester: Swedenborg Foundation, 1999), p. 134.

¹¹ Swedenborg, *Arcana Caelestia*, vol. 1, §§3-4, p. 5.

¹² Walter W Skeat, *A Concise Etymological Dictionary of the English Language* (Oxford: Clarendon Press, 1976).

¹³ Steve Jones, *The Serpent's Promise* (London: Hachette Digital, 2013).

¹⁴ Swedenborg, *Arcana Caelestia*, vol. 5, §4050, p. 291.

¹⁵ Ibid., p. 292.

¹⁶ Ibid., §3969, p. 246.

¹⁷ Steve Jones, 'The Greatest Show on Earth: the Evidence for Evolution by Richard Dawkins: review', in *The Daily Telegraph*, 19 September 2009.