

VI. The Role of Bone and Muscle in Breathing

In earlier parts of this series it has been found that when correspondences given in the Writings are based on natural knowledges which now seem to be incorrect, the use of more recent knowledge often shows the correspondences more clearly and gives a better picture of spiritual things. The same applies when more details are added to those natural knowledges in the Writings which seem to be correct but capable of extension. These things provide the joy of confirmation and lead us to proceed with hope to examine the process of breathing in order to see how present-day knowledge confirms the spiritual teachings.

The filling and emptying of the lungs occurs at a rate which is quite independent of the pulse rate. It is said that this is possible because the lungs are supplied with blood through two independent sets of arteries, the bronchial and the pulmonary [DLW 405]. The reasons for this conclusion are not given, and it is difficult to think of any natural ones. A possible explanation of the conclusion was suggested in an earlier part,¹ where the correspondences of the arterial supplies were studied. As we cannot see the connection between the arterial supplies and the rate of breathing, it remains to consider the mechanisms of breathing as now understood.

It is important first to know that the lungs are masses of spongy tissue with no power of their own to inflate themselves. This is in agreement with what is said later, namely, that from correspondence with the lungs it can be seen that the understanding does nothing of itself [DLW 412]. We see the helplessness of the lungs by themselves most clearly in victims of poliomyelitis whose destroyed nerves can no longer stimulate the muscles of the chest and diaphragm but whose lungs work perfectly well in the misnamed "iron lung." The misnomer itself tends to suggest that the popular understanding of the word *lung* is "breathing apparatus," and although it is not normally used in the Writings in this way, this meaning fits the sense better in those cases where the lungs are said to breathe — as though they were able to breathe by their own efforts. It is clear, however, that the lungs can only function by the

¹ *The New Philosophy*. Oct.-Dec. 1979, p. 443

expansion and contraction of the chest cavity and that this expansion is effected by the diaphragm and other muscles attached to the ribs. We are thus led to consider the correspondences of bone and muscle, of which the chest principally consists. A detailed study of bone and muscle would however take us too far afield. For our present purposes a general account will probably suffice.

In many passages of the Writings, bones are regarded from their hardness and are considered to have but little life. On the other hand, in at least one place we read that they are the ultimate in which interior (and therefore living) things terminate [AC 8005].

Let us see how bones have but little life and yet have interior things terminating in them. In the adult the hard parts of the bones actually are dead. In the early stages of growth (i.e. in the child and especially in the embryo) the bone-forming cells are abundantly supplied with blood. They are soft and very much alive, but the process of maturation and hardening involves their death. Yet, in places, some of them remain alive. Moreover in adult life, when the bones are thoroughly hardened, the centers of some contain the marrow which is alive and is continually engaged in the essential process of making red blood and other cells. This appears to be the interior which terminates in the hard outer shell. On the other hand the remainder of the bone-forming cells that are still alive form another interior which perhaps more realistically terminates in the bone itself.

In view of these details of anatomy it is not surprising that the signification of *bones* is complex. However we also learn from the Writings that in the Word *bones* often mean a proprium of the understanding and therefore also truth (or, in the opposite sense, falsity) [AC 147-149, 3812, 5560-5564]. More specifically bones signify the scientific² and "Scientifics are circumstanced as the bones" [AC 8005].

So now we have, in the growth of bones and their development from relatively soft tissues into hard structures, a picture of the way scientifics develop in the mind. We can see how the tender love of the developing mind collects knowledge, which is at first soft and living, from the love which corresponds to the arteries and blood from the heart that nourishes the growing bones. In some way (application to life? effect of the proprium?) the soft living form of knowledge grows firmer, and eventually quite hard. At the same

² The term *scientifics* has been retained because of its special meaning (see for example the index to *Arcana Coelestia*). Scientifics are things in the exterior memory (AC 5212). The Latin is sometimes translated as *external-knowledges*.

time it is organized in such a manner that it closes the love in a definite form, but not as a mere shell, for the love itself partly becomes this form, so that it is love no longer, but still some love remains within. We have then a love, which might be called a subservient love, being given a useful degree of firmness by means of scientifics. It has now a form which is not easily changed, though it can be changed gradually in certain ways, corresponding to the fact that the form of bones changes slowly by accretion or diminution in response to mechanical stresses resulting from weight and the pull of muscles.³

We can see the bone-like development of scientifics in the commandments as they exist in our minds. Having learnt, "Thou shalt not steal," we retain the commandment in a firm and definite form, and we spend scarcely any time and emotion on it. Even the internal sense is but little different from the external, and in its own simple external form it is in continual use, though hidden deeply within it is living active affection, however unyielding the external may be.

When we picture scientifics as bones, we can readily appreciate how useless they are on their own and yet how essential they are for the active life of the man. However, such a life can only follow when they are clothed with flesh. The flesh means the proprium of the will, or good from the Lord (when not the opposite). In application to the chest, however, the flesh is mostly muscle. At least one passage of the Writings mentions muscle in detail [AC 9394: 5]. After a description of muscle the passage continues:

The scientifics of the memory are similarly circumstanced; they also are excited in like manner by the delight of the man's love, which belongs to his will, yet through the medium of his intellectual part.

This indicates that muscles as well as bones correspond to scientifics but that these particular scientifics are more living than the others. They have more love in them and are not so distant from the will. We see this also in the more voluminous blood supply to the muscles. This in turn points to a closer dependence on the heart, which fact leads again to the teaching that the understanding is dependent on conjunction with the will or love and that the conjunction and reciprocation are initiated by the will [DLW 412].

It is clear that if the will or love is to achieve its ends, it must make use of knowledges, and while it is in this life in the world it must also

³ *Gray's Anatomy*, 35th Ed. 1973 (Longman, Edinburgh), p. 201 and 230.

make use of the muscles it controls through the brain. It is also clear that the muscles would be ineffective without the bones (and the correspondence of that is obvious!). So bones and muscles work together in most parts of the body. How are they different in the chest? In several ways! Here are the knowledges (ribs) which enclose and protect the living core of the personality, i.e. the will and understanding (heart and lungs), which will in due course be receptacles of love and wisdom from the Lord. Here also are those nerve connections with the respiratory centre in the brain (the brain is heaven) [AC 4049], from which we learn that the scientifics that begin to be arranged for regeneration (become organized into a "chest") have their own connection with heaven.

It is interesting to notice that the bony chest also protects the heart and lungs, for this suggests that the personality, i.e. will-and-understanding, must have knowledge to protect it and emphasizes the dangers of ignorance. Oddly enough even the learned can be ignorant of those knowledges that would protect their minds. They are like animals with strong bones in some places but no rib cage (like frogs for example, which breathe by forcing air into the lungs with the mouth). These ideas lead us to think more precisely of what has perhaps been implied from the start, namely that the scientifics to which the bones and muscles of the chest correspond are not merely knowledges the man happens to imbibe but true doctrines of the church; for it is only these, together with charity, that can protect the mind from dangers of eternal consequence. This view of the correspondence of the ribs is confirmed where we read that to the Most Ancient Church the chest signified charity [AC 148] and, "also by ribs...are signified truths sustaining good" [AC 10189].

Since the respiration of the lungs corresponds to the understanding [AC 3888], the bronchia to perceptions [DLW 405], and the air saccules to thoughts [DLW 413], and since respiration cannot normally take place without the activity of the muscles and bones of the chest, we see that perceptions and thoughts cannot produce understanding unless there is also some activity of the scientifics, which activity draws in the influx from heaven as the chest draws air into the lungs. Lest the activity of scientifics should be thought of as a low and base activity compared with perception, let us remember that as the chest cannot actively draw air into the lungs unless it receives blood from the heart and nerve impulses from the brain so neither can the scientifics be active unless impelled by love nor beneficially active unless directed from heaven.

Now, although we are told that the bronchia correspond to

perceptions, we may perhaps distinguish between perceptions which are, as it were, permanent structures of the mind, as the bronchia are permanent organs of the body, and perception itself or the act of perceiving. The receiving of those perceptions which are dictated flowing from the Lord is thus the act of perceiving — a thing going on continually like the active understanding and like respiration. For this active, continuing perception, scientifics are necessary, as the chest is necessary for breathing. Thus we read “perceptions, but such as are human from scientifics” [AC 2144]. This suggests that the kind of mystical meditation that consists in concentrating on a simple thought (thus shutting out most knowledge) is like a swoon which would occur if one could hold his breath for long enough.

The chest with heart and lungs, then, provides a delightful and useful picture of how the organized knowledges of the Lord, heaven, and the church, provide a means of expansion to receive life from the Lord through heaven. The picture is rich and multidimensional. It needs and rewards much thought, for life from the Lord, i.e. the Lord Himself, flows in in several ways — ways that correspond to the beating of the heart, to the drawing of air into the lungs, to the activating messages from the brain controlling both the pulse rate and the depth and rate of breathing, and probably to other bodily functions also. However the Lord is even closer than this would indicate, for the will and understanding are His receptacles and dwellings [DLW 360].

Although such a brief description of the correspondences of bone and muscle as existing in the chest provides only a minimum of information for an outline of the subject, it is perhaps enough to give us a glimpse of the complex interplay between the love, (heart), the affections (arteries), the understanding (lungs), and scientifics (bone and muscle). We see how essential both kinds of scientifics are in order to form the chest so that the lungs may breathe. Clearly the heart could not beat if the lungs were unable to breathe and provide the oxygen. We know also that the chest could not expand the lungs if its muscles did not receive oxygenated blood from the heart. So the circle is complete. Yet, as mentioned above, there is another essential — the life-impulses from the brain, without which there would be no movement. That “the brain is heaven” [AC 4049] is a provocative statement, possibly not intended literally, but with literal implications since, as I have discussed elsewhere, ‘heavenly things such as love exist in the brain under

correspondences which are closer to the actual thing than are the correspondences in the rest of the body and in nature.

The kind of synthesis we have just adumbrated shows how futile it is to try to decide which of love, wisdom, or knowledge is the most important. In different states of regeneration one or another tends to predominate. As the body cannot live without all, so neither can the soul be regenerated until all the correspondent heavenly things are united as in the image or likeness of the Divine Human. Nevertheless it is abundantly clear that love is the centre and origin from which life flows but that it does nothing without making use of wisdom which also makes use of knowledge [DLW 409]. ■

* *New-Church Magazine*, July-Sept. 1979, p. 61.

PHILOSOPHICAL NOTES

349 *Introduction to Examples of Connected Wholeness in the Philosophical Works and the Writings.* In the two previous sets of notes, connected wholeness was illustrated in current theories in physics concerning the whole universe. Not only is this illustrated by continued radiation evidence of the "big bang" as a theory of creation, but also by Bell's theorem that there is a connectedness of all things in the universe. There are no local causes. The notes that follow discuss selected examples of systems of connected wholeness from several works by Swedenborg, in the order of their writing.

350 *Connected Whole of the Universe According to The Principia.*

[Everyone may] perceive, that all things in the world originate from what is uncompounded; consequently from one single fountain-head and one primitive cause; that this primitive cause is derived into the various things which are causes;...also that no other cause could possibly have had existence than the one which proceeded by geneological descent, as it were, from its first parent or simple. [Swedenborg's "Preface", Clissold transl., p. xciii]

Thus according to *The Principia* the whole of the universe is connected by originating from a single cause.