

## Introduction

To penetrate Linnæus' scientific and social thinking will always be a hard task. The core of his personality will in more than one respect always remain hidden, even unattainable to us, and his position within his particular sciences, botany and medicine, is very often difficult to decide because of their mutual dependence on contemporary thought. The scientifically fruitful years of Linnæus lasted for about three decades centering around the early summer's day in Holland in 1735 when as an unknown Swedish student he woke up and found himself a renowned savant. In the late 1740s his original vein in science began to peter out. As the prominent Swedish physician, Professor Robin Fåhræus remarks, the enormous intensity in his work caused him to be worn-out early.<sup>1</sup> When the Småland students harangued him in the end of 1749 their speaker, Samuel Krook, expressed grave concern for his weak health.<sup>2</sup> During the subsequent decades Linnæus nevertheless pursued his career in a rather miraculous way. From the viewpoint of Linnæus' early years, we must, however, look to the period of Enlightenment and backwards to the centuries of the Baroque and Renaissance.

The great Linnean bicentenary of 1907 heralded the edition of the then known sections of Linnæus' lecture notes on dietetics, written during the time of his professorship and entitled by him *Lachesis naturalis*. To Linnæus' own notes were added a number of class-notes made by his pupils. The editor, A. O. Lindfors, gave the collection the title *Linnés dietetik* ('Linnæus' Dietetic').<sup>3</sup> Some time afterwards another considerable portion of the *Lachesis* notes was found amongst Linnæus' posthumous notes preserved by the

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<sup>1</sup> Robin Fåhræus, *Till 250-års minnet av Linnés födelse, Nordisk Medicin* 1957: 57: 731, p. 24.

<sup>2</sup> Samuel Krook, *Urshults pastorats inbyggares seder, 1749*, ed. by N. Werner, Växjö 1922, p. 49.

<sup>3</sup> *Inbjudning till medicine doktors promotionen*. (Invitation to the conferring of the Degree of M.D.) Uppsala 1907.

Linnean Society in London. These have not been published although they possess an interest extending far beyond the history of medicine. From more than one point of view the Royal Swedish Academy of Sciences was certainly well-advised to bring about the publication of the earlier collection of notes, *Diæta naturalis*, in connection with the Linnean Jubilee of 1957. With unsparing pains and tireless energy the prominent Linnean scholar, Arvid Hj. Uggla, accomplished in 1958 the incredibly difficult task of sorting out and preparing for the press these notes, the contents of which had hitherto been almost unknown.<sup>1</sup> They were originally dated by Linnæus 1733, but they form a running series, and the actual time of their conclusion can only be determined by the date of the appearance of the *Lachesis* notes. In the latter the earlier notes have been revised and gradually enlarged. The relationship between the earlier and the later notes on dietetics is at present obscure, and it offers many intricate problems for future biographers. These problems depend, to a certain degree, upon the fact that the separate entries in the *Lachesis* folios have been made at different dates during the period between 1742 and 1772, when Linnæus, as professor, lectured no less than eight times on dietetics. Dr. Uggla makes the assumption that the manuscript written in Linnæus' youth was definitely laid aside in the first-mentioned year, but even this cannot be stated with full certainty.

Every scholar who is confronted with the many difficulties which arise when he uses these Linnean notes, is soon overwhelmed by a sense of uncertainty and uneasiness of mind when he tries to elucidate the problems of Linnæus' personality and learning, even when confined to the purposes mentioned here. Much must remain presumptions or guesses in accordance with some given *lignes de faits*. The very interpretation of the Linnean modes of expression, generally in a lapidary style and in a literary language, consisting of Swedish and Latin, presents great problems, even for a student who is relieved from the countless difficulties in the original manuscripts. Without the excellent, meticulously accomplished preliminary labour of

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<sup>1</sup> Caroli Linnæi *Diæta naturalis* 1733. På uppdrag av Kungliga Svenska Vetenskapsakademien, utgiven av Arvid Hjalmar Uggla, Uppsala 1958. (Commissioned by the Royal Swedish Academy of Sciences, edited by Arvid Hj. Uggla, June 5th 1957.) Cf. Arvid Hj. Uggla, *Linné och dietetiken. Levnadsteckningar över K. Svenska Vetenskapsakademiens ledamöter* 152. Sthlm 1958.

Dr. Uggla the latter difficulties would have been an insuperable task for the present author.

A short quotation from an autobiography by Carl Linnæus may introduce our account of his Dietetic. He says that he conceives the discipline as "an experimental Dietetic founded on experiences and examples quite in accordance with the manner in which the newer physicians are treating their science and have made her experimental. Herewith all matters, occurring in *vita communi*, are alleged as proofs". Not without pride did Linnæus uphold his empirical methods. The manner of presenting his material is revealed by the headings *Theses* and *Scholia*. The health-maxims are contained under 136 headings with their accompanying comments (*scholia*).<sup>1</sup> The first fifty paragraphs were extended to seventyone, and complete the original version. Several insertions of a later date may nevertheless be observed. The latter parts of the manuscript are arranged by the editor in the same way. Much points to the assumption that these later notes were partly written after Linnæus' visit to Holland during the years 1735-38. Obviously this applies to those sections of the *Diæta* which will especially occupy us in the following. In the *Lachesis*-MSS these parts bear the heading *Animi pathemata*.

It is uncertain in what sequence and to what extent the *Lachesis* folios were used for the lectures, and also what Linnæus was actually saying on each separate occasion. Considering Linnæus' strange ways of working, similar doubts exist when it comes to the relative dating of the collection of notes or single notes.

*Diæta naturalis* and *Lachesis naturalis* show evidence of the author's intention to present them in a final literary form. Linnæus could, however, never mould these manuscripts into a form which satisfied his maxim: *ordo anima scientiarum*.<sup>2</sup> In the middle of the 1760s, however, Linnæus seems to have intended preparing the lecture-notes for publication. We presume that at this time he also composed the Prolegomena for the intended

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<sup>1</sup> In *Diæta* the principal parts here considered are numbered as sections 105-106, 111, 114-115, 123-125, 133, 135. In the *Lachesis* manuscript they are headed *Spectra*, *Manes*, *Sympathia*, *Magia* and *Superstitiones* (folios 16-21 according to Dr. Uggla's numbers on the photostatic copies in the Library of Upsala University). Notices about diseases, fate, idiosyncrasies, idolatry and similar things are entered in the preceding folios of the manuscript 7-11.

<sup>2</sup> *DN*, p. 179.

work. It is possible that the title-page of the *Lachesis* originated at the same time.

The title recommends itself.

CAROLI LINNÆI  
Med. & Botan. Profess. Upsal.  
LACHESIS NATURALIS  
quæ tradit  
DIÆTAM NATURALEM  
*innixam Observationibus, et Experimentis desumptis eo ex Historiis, casibus,  
observationibus, populis itineribus, physiologia, therapia, physica, zoologica,  
ubi omnes demonstrationes innituntur observationibus*  
*Philosophia Humana*  
*Nosce te ipsum*

The last lines are added by an elderly hand. As a motto on the title-page Linnæus placed the sub-heading *Philosophia humana* and the saying of the Delphic Oracle: know thyself. It brings to mind how this philosophy had emanated from an all-embracing conception of Man as the nuclear centre of the Universe. The psychological aspects of body and mind accordingly reflect almost indeterminable facets of medical thought. Post-Carthesian views can here be discerned against a rather vague background of an all-embracing dietetic.

The principal key to an understanding of Carl Linnæus' general ideas is his *Philosophia humana*. In his time medicine was still in many respects an old philosophy. Particularly was this the case with the teachings concerning a natural way of living, called *Dietetics*. This Philosophy of Medicine as a Philosophy of Man was deeply rooted in Old Greece and the centuries of the New Era before Linnæus had given it a stamp of ontological metaphysics.

It seems important that, in the last period of his life, Linnæus wished to formulate his views on medicine, in a tabulated style very characteristic of him, into a comprehensive survey of his systematic thinking in medical

matters. In this way *Clavis medicinæ duplex, exterior et interior* came about. It was printed in the year 1766, but it had been prepared a couple of years earlier. During the bicentenary in 1907 a copy of this very rare pamphlet was found in the collections of the Linnean Society of London. In this copy Linnæus had inserted explanatory notes and moreover added a list of medical aphorisms and sentences of his own. The new edition was issued in the same year by the distinguished Finnish physician Otto E. A. Hjelt, for the Royal Swedish Academy of Sciences.<sup>1</sup>

*Clavis* is not only an outcome of Linnæus' known tendencies to build systems, it is also a product of his speculative genius from the 1750s onwards. Although Linnæus never was a philosopher in any strict sense, he did not lack an inquisitive streak which united the youth in him with the aged man. Hence a good deal of attention should be paid to the structure of the general medical systems of this booklet.

In the following pages some of the most generally formulated sayings of Linnæus will be rendered from the Latin text of *Clavis*, published by Hjelt.

Apparently Linnæus commits the core of his reasoning in medical matters to these sentences, which were written by him in a lapidary and often difficult style. Although Linnæus' way of thinking sometimes seems to be beyond our reach, attempts should be made to understand it. These sentences, notwithstanding their peculiar style, can be regarded as elucidating Linnæus' views in general and especially on medical matters. Without grasping the framework, the fundamentals of his system would also be difficult to understand.

The sentences are collected from Linnæus' own notes in the interfoliated copy of *Clavis*. In several instances the editor also seems to have picked them out of Linnæus' other writings. A sequence of them is here reproduced in English translation. The sequence is made by the present author. Some slight corrections are made. Several other sentences from the manuscript are inserted in the text. In the footnotes Linnæus' original text is reproduced

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<sup>1</sup> *Caroli a Linné Clavis medicinæ duplex*, Holmiæ 1766, later editions Langensalza 1768, Naples 1793. Printed as Appendix (pp. 159-242) to Otto E. A. Hjelt, *Carl von Linnés betydelse som naturforskare och läkare*, Upsala 1907. A Swedish translation by Albert Boerman and Telemak Fredbärj, *Valda avhandlingar av Carl von Linné*, ed. by Svenska Linnésällskapet 52. Ekenäs 1967.

only when it deviates from the readings of Hjelt. Some parallel passages are observed and the abbreviations have been expanded.

1. The Soul (*anima*) is not life. It is the God within us.
2. The Virgin-like fire of Creation continues through the transmitter (*per Traducem*), and consequently does not proceed outside of the species.
3. The World is from God, the body is from the soul.<sup>1</sup>
4. Motion comes from Nature. No body can move on its own. The daughter of God, the soul, is the prime mover through the transmitter, as is the flame to the candle, (and) the prime motion in the Universe is by God's hand; everything is conserved through motion.<sup>2</sup>
5. Everything is conserved through motion, everything is destroyed through quiescence.
6. Life is conserved and persists through motion.
7. Life is an electric fire. The fire lives and moves. The Vestal flame is kindled by the transmitter.<sup>3</sup>
8. Nature and mind are never at rest. This is also the case with light.<sup>4</sup>
9. The mind is often forced by Nature. The struggle between body and soul.<sup>5</sup>
10. The will comes from the mind, ideas from Nature.<sup>6</sup>
11. The cerebrum concerns the mind, the cerebellum the motion, the medulla cerebrum the vital motions.<sup>7</sup>
12. The brain has a double function: to reason and to move.
13. Reason (comes) from the multitudinous memory of the senses.
14. Memory is contained in the back of the head, (it is) shown by examples: Reason consists of memory and sense-perceptions.

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<sup>1</sup> 1-3: *Anima vita non, est Deus in nobis. Ignis vestalis creationis continuus per traducem, ergo non extra genus. Nullum corpus movetur a se ipso, universum a Deo, corpus ab anima. residet inter oblongatam et cerebellum ut inter radicem et caulem contrarieque. sedet ut Aranea in rete, manibus cerebellum, pedibus oblongatam ludit. (Natura et Mens).*

<sup>2</sup> 4: *Motus a natura. Nullum corpus movetur a se ipso, Dei filia Anima movens per traducem ut lux a candela a primo motu universum manus Dei, omne conservatur motu. (Introductio, p. 5 interlinear note). Cf. Anima primum movens motor absque natura movet Naturam et Mentem. (Theoria, p. opposite 11).*

<sup>3</sup> 7: *Vita ignis electricus, ignis vivet et movetur. Vestalis flamma per traducem accensa. (Theoria, p. opposite 11).*

<sup>4</sup> 8: *Natura et Mens neutra nequitur quieta [sc. esse] ut lux. (Natura et Mens).*

<sup>5</sup> 9: *Cogitur Mens sæpe a Natura. Lucta corporis et animæ. (Natura et Mens).*

<sup>6</sup> 10: *Idææ a Natura, sic idea excitat penem, non voluntas. (Natura et Mens).*

<sup>7</sup> 11: *Cerebrum mentis, cerebellum motus, cerebellum medullare motus vitæ cerebrum corticalis somni, oblongata circulationis, spinalis vigoris, caudelis veneris. (Natura et Mens).*

15. The body consists of a double principle as in the warp and weft of material.<sup>1</sup>
16. The central parts of the nervous system (*encephalum*) come from the mother, the body from the father. The inner and the outer man.
17. The inner man originates from the mother, not the father.
18. The foundations of life, the heart and lungs, diastole and systole, persist as long as life exists.
19. The lungs inhale the air, but the air does not enter into the blood.
20. The inhaled air is electric, but not so the exhaled air. In consequence it is collected in the lungs and is deprived of its electricity. It dies in a moment without leaving any symptoms.
21. There are no channels for the electricity, it follows the whole (body).
22. The flame of the candle cannot glow without air, neither can the flame of life.
23. The concord of the world originates in discord.<sup>2</sup>
24. Medicine is the opposite of disease.
25. The species are divided into opposites. The most wholesome bread, when taken in excess becomes harmful.
26. The principle of contrast is split up into five.
27. (Medicine) was formerly called an art of guessing, and (still) is.
28. (Medicine) should be of mathematical certainty.
29. The Schools of Galen, Astrology, Signatures, Hermetism, Stahl are today faded doctrines.<sup>3</sup>
30. The principles of the mechanical school, founded upon the functions of the heart, and in ignorance of the brain, are false.
31. Whoever should deliver the key ought to be familiar with the qualities of Nature, physiology, pathology, natural dietetics and matter.
32. The complete theory concerning the working forces has been left for me to solve. I shall provide the key.

The Linnæan aphorisms belong to the history of medicine, and it is the task of the historians of medicine to decide what Linnæus owes to his fore-runners and what may be original. How much he actually owed to the Old Medicine becomes apparent from his statement that medical science

<sup>1</sup> 15: *Corpus consistit duplici principio renning et inslag.* (*Pathologia*, opposite p. 7).

<sup>2</sup> *Mundi concordia ex discordibus, constat Seneca.* A paraphrase of *Universum lucta discordium aequilibratur*, added on the title page.

<sup>3</sup> According to Hjelt p. 160: *Dogmatica Galenica, Astrologica, Signata, Hermetica, Mechanica, Stahlianica, Dogmatica hodierna palliativa.* The reading of the last word may be uncertain. I propose relating it to Latin *palleo* (*pallidus*).

was only an "art of guessing, totally lacking the exactness of mathematics".<sup>1</sup> What a striking contrast to the bold language in the Preface of *Diæta 1733*! It would, however, be a delicate task to extract a completely explicit meaning out of these Linnæan sayings, because they lack running context and are partly scattered in various places in his writings. Much is only aphoristically and fragmentarily expressed. Sometimes the sentences are ample in content and comment; with luck they are also products of thinking and brilliant wit.

Linnæus became acquainted with the great literary tradition of the Hippocratic medicine during his last year at school. Already as a student he was very widely read in medical and kindred matters, all the more so as he had access to the foremost private libraries in Lund and Upsala. A principal characteristic in the dietetics of olden times was that between the health-factors *κατὰ* and *παρὰ φύσιν* there was a basic concept created by Galen at the end of the second century, which made a distinction between the necessities and non-necessities in hygienics. Its six conditions of health were the surrounding air, moving and resting, sleeping and waking, retention and evacuation and mental excitements (*animi pathemata*). In the Middle Ages these facts were restated in the terms *res naturales* and *non naturales*.<sup>2</sup> Linnæus still makes use of these old distinctions, although he uses a considerably wider scale.

Linnæus' main interest was the study of the generation forms of living nature. The knowledge of these organic processes was, during Linnæan times, still obscured by the bewildering views of earlier centuries. From pre-Hippocratic ages the analogies between animal and plant and between egg and germ had been primary findings of biology. But in principle biophysiology had never reached very much further than the saying of Empedocles that "the great olive trees laid eggs".<sup>3</sup> The famous dictum of Harvey *omne animal ex ovo*, forecast by Fabricius of Aquapendente in the sixteenth

<sup>1</sup> Aphorisms 27 and 28 above, compared with DN p. 18: *Mathematica evidentia, systema totum involvit, quid jam in medicina quod non principiiis mechanicis demonstratur, adeo clara sunt ut nil evidentius*. Probably this part of the preface is to be dated to the years in Holland or somewhat later. See the author's note in *SLSÅ* 1967 pp. 93 sq.

<sup>2</sup> Fredrik Berg, *Hygienens omfattning i äldre tider*, *Lychmos* 1962, see especially pages 94 sq. and 104 sq.

<sup>3</sup> Joseph Schumacher, *Antike Medizin*, Berlin 1963, pp. 186 sqq.



century and by Malpighi at the beginning of the seventeenth century not only became a doctrine but a symbol for Linnæus. The mediatory position of Harvey concerning the generative functions was apparently that of Linnæus. The theory of reproduction advanced in 1759 by Caspar Friedrich Wolf evidently passed him by. We find the Harveyan egg alluded to already in the preface of *Diæta*, and also depicted on the seal of Linnæus. Finally, after he had been knighted, he reproduced the egg in his coat of arms. This may be mentioned here only to illustrate Linnæus' fondness for symbols.

Linnæus' systematization was founded on identities and analogies in the "three realms of Nature". The *a priori* of the system lies in the type-concept, which was worked out to include *species* and *genera*. The constancy of the organic types was the constancy of Nature herself, and reproduction through generation was the primordial fact of the systematization. When towards the end of his life, Linnæus built up medicine into the grandiose system of *Clavis*, the core of it was no other than his early conception of the Sexual system, enlarged into a rather visionary cataclysm.

It cannot be the purpose of these chapters to give a full-length portrait of Carl Linnæus. But as a prominent historian of medicine, Walter Pagel, has recently pointed out, it is necessary to make a portrait of a man of science not only with a view of understanding those of his theories which are still current, but in order to grasp the whole of his personality within the framework of his own epoch.