2007
The Linnean Tercentenary

Some Aspects of Linnaeus' Life

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2. Linnaeus' Medical Career*

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Linnaeus' interest in medicine seems to have started in 1722 when at the age of 15 and still attending the Lower School at Växjö he was introduced to Dr Johan Rothman, the state doctor of Småland who gave him permission to visit his garden. Rothman was also one of the senior masters at Växjö High School which Linneaus entered in 1724. It was Rothman who recognized and fostered the boy's aptitudes, and in 1726 finally convinced Linnaeus' father to allow his son to follow a career in medicine rather than enter the Church. More importantly for science, Rothman also arranged to take the youth into his own home for a year and there to give him private tuition in medicine and botany.

In the autumn of 1727 Linnaeus registered as a student of medicine at Lund University. Here he renewed his acquaintance with his former Lower School tutor, Gabriel Höök now a Master of Philosophy at Lund. Höök found him lodgings with a Professor at the University, Dr Kilian Stobaeus. This was to prove to be a propitious move for Linnaeus who was eventually allowed to use both Stobaeus' extensive library and museum and to go with him on visits to his patients. Then, like Rothman before him, Stobaeus came to treat Linnaeus as his son, giving him free board and lodging and allowing him to attend his lectures gratis.

Linnaeus was nevertheless disappointed with Lund University and in 1728, following the suggestion of his mentor Dr Rothman he transferred his studies to the University of Uppsala. The Medical Faculty at Uppsala had however fallen on bad times; no chemical laboratory existed, no anatomy was taught, and the University Hospital was in such terrible repair that Professor Lars Roberg was obliged to let out part of it as a public house to defray maintenance costs. On the credit side the University was endowed with several medical scholarships, one of which (Royal Medical Scholarship – lower class) was awarded to Linnaeus in December 1728. By the Spring of 1729 both the money his father had given him and his scholarship monies had gone – paid out in University fees, board and lodging, and on two journeys to Stockholm. Again, fate was on his side, for on the 8th April 1729 while working in the University Botanic Garden he chanced to meet the venerable Dr Olof Celsius, Professor of Theology and an eminent local naturalist. Impressed by Linnaeus' botanical knowledge and recognizing his poverty,

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Celsius at first invited Linnaeus to take meals with him and then later gave him a room in his house. Then in June 1729, probably on Celsius' recommendation, Linnaeus was awarded another Royal Medical Scholarship (initially second class, but in December raised to first class) and this, together with his lecturing fees, enabled him to pay off his debts.

By the Spring of 1730 Linnaeus' botanical abilities had so impressed Olof Rudbeck (one of the two Professors of Medicine at Uppsala) that he invited Linnaeus to hold demonstrations for him in the Botanical Gardens from Easter to Midsummer. He also invited him to tutor his three youngest boys (all told, he had 24 children by three marriages) and to reside in his house. In his spare time he was also to coach a fourth son in medicine! Rudbeck's patronage was such that Linnaeus was awarded a Royal Stipend and this meant he was now free to indulge his many interests. Thus he drew up a *Hortus Uplandicus* for his botanical garden demonstrations and began such works as his *Bibliotheca botanica*, *Classes plantarum* and *Genera plantarum.* He also started classifying and cataloguing insects and birds. Unfortunately, Nils Rosén (Assistant Professor elect) returned from his foreign travels in 1731 and decided to take over the botanical demonstrations which in the previous year had been given by Linnaeus. In December 1731, Rudbeck's patronage came to an abrupt end, probably at the instigation of his wife, and Linnaeus returned to his parents' home in Småland. Despite these setbacks Linnaeus managed to persuade the Royal Society of Science at Uppsala to give him a travel grant to visit Lapland in the Spring of 1732. On his return to Uppsala in 1733 Linnaeus continued as a medical student, financing himself as best he could by leading botanical excursions, giving a month's lectures on mineralogy, and teaching private pupils.

In June 1734 Linnaeus received a letter from the Governor of Dalarna, Baron Nils Reuterholm, suggesting he should travel through Dalarna (at the Governor's expense) reporting on it as he had done on Lapland. Linnaeus was delighted and the trip started from Falun on the 3rd July 1734 and ended 45 days later. On his return to Falun, Linnaeus remained a guest in the Governor's house while he completed his report. He remained with the Reuterholms until the middle of November, tutoring the sons in natural history, giving a course of lectures, in mineralogy at the Falun Assay Office and starting the practice of medicine. Then, probably on the insistence of the Reuterholms regular tutor, Johan Browallius, he decided that he must go abroad to obtain his doctor's degree. Linnaeus left Falun towards the end of the year for Uppsala in order to take his theological examination (one of his examiners being Olof Celsius) because at that time any student desirous of travelling out of Sweden had to pass such an examination before he could get a passport He returned to Falun on the 20th December. On February 20th 1735, aged 27, Linnaeus set out with his travelling companion, Claes Sohlberg (whose father paid him for escorting his son) for a short tour of Germany, Denmark, and Holland. When he arrived at Harderwijk on the 18th June he enrolled at the University for the degree of Doctor of Medicine and handed in a thesis written before he left Sweden on "Hypothesis nova de febrium intermittentium causa" (a new hypothesis as to the cause of intermittent fevers). He also wrote a short exposition of two of Hippocrates' Aphorisms (Fig. 1.) and diagnosed and prescribed for the treatment of a case of jaundice. Six days later he was duly awarded the degree of doctor of medicine by Professor Jan de Gorter.

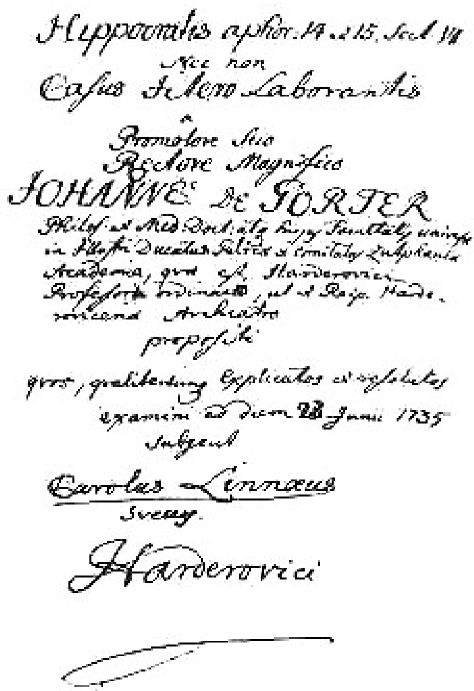

Figure 1. Title page of Linnaeus' short exposition of two of Hippocrates' aphorisms delivered to Professor Gorter in Harderwjik in order to become a cand. medicinae, 1735.

Linnaeus then accompanied Claes Sohlberg to Leiden where the latter intended to study medicine. While in Leiden, Linnaeus was befriended by Dr Johann Friedrich Gronovius who arranged for the publication of *Systema Naturae* later that year (1735); Linnaeus also made the acquaintance of the wealthy and eminent physician Dr Hermann Boerhaave. Running short of funds and returning to Sweden via Amsterdam, at Boerhaave's insistence he called on the Superintendent of the Amsterdam Botanic Garden, Professor Johannes Burman. Burman quickly offered him a fine room and board if he would help him work up the plants of Ceylon. Linnaeus accepted but only remained with Burman for six weeks, for within a week of his arrival in Amsterdam he chanced to meet (in the Botanic Garden) one of Beorhaave's wealthiest patients, Dutch East India Company director, George Clifford. Clifford had his own botanic garden at Hartecamp near Haarlem and he invited Linnaeus and Burman to visit him there. The visit was a success and following the advice of Beorhaave, Clifford suggested Linnaeus became his personal physician and also looked after his garden and private zoo at Hartecamp. The renumeration was to be 1000 florins a year plus free board and lodgings. Linnaeus could not refuse and on the 13 September 1735 moved to Hartecamp. For the next two years he worked for Clifford at the Hartecamp from where he made trips to gardens in Utrecht, Leiden and England, but by the autumn of 1737 he decided it was time to return to Sweden and his fiancée. However, he stopped off at Leiden and there he remained until the end of February 1738, receiving money from Professor van Roijen. He then briefly returned to Hartecamp and once again set out for Sweden, but this time via Delft and Paris. He arrived at Falun

in August 1738 where he was at last formally betrothed to his fiancée, Sara Lisa Moraea, who had waited for him for some four years!

In September, on the advice of his future father-in-law, Johan Moraeus a physician in Falun, he set up in practice as a physician in Stockholm. However, few patients would trust themselves to him and he was ridiculed because of his botanical interests. By winter 1738 he was forced to go in search of patients and was reduced to scouring the more seedy parts of Stockholm especially around the docks. His luck changed when he seemingly cured a young rake of gonorrhoea (more probably a non-specific urethritis) and from then on he was inundated with clients.

Realizing that there was a great deal of money to be earned in the treatment of venereal diseases he wrote for advice to the eminent physician and naturalist François Boissier de Sauvages de la Croix at Montpelier who very kindly supplied him with the recognized remedy (mercury ointment). The 'successful' treatment of venereal diseases, coupled with his seemingly infallible diagnoses of such complaints as smallpox and malaria, rapidly earned Linnaeus a considerable reputation. Then through the influence of Count Carl Tessin (who took a special interest in science) he was appointed, in 1739, Admiralty-Physician to the Stockholm Hospital.

In October 1741 after much intrigue Linnaeus was finally freed from the drudgery of his medical practice in Stockholm by his appointment to the Professorship of Medicine and Botany at the University of Uppsala, following the death of his former patron, Rudbeck and the resignation of Roberg. It was soon mutually agreed that Linnaeus should teach pharmacology (materia medica), pathology and dietetics while his colleague, Professor Nils Rosén was to be responsible for practical medicine, anatomy and physiology. Linnaeus also taught botany and mineralogy. From the time of the appointment of Linnaeus, Uppsala became the central point for the study of natural history and botany for more than a third of a century and students came from many parts of Europe.

Linnaeus taught in Uppsala for the rest of his working life, although he asked to be released from lecturing in 1775 because of his old age and toothless condition. As late as 1776 he was still acting as Dean and examiner in the Medical Faculty. During his years at Uppsala Linnaeus' medical contributions included three books, three papers, 61 dissertations (or academic theses) and five contributions on medicine to Swedish Almanacks, including epilepsy in Skåne, intermittent fever, the causes of leprosy and a treatise on coffee.

Pathology

From the very outset of his medical career Linnaeus was meticulously compiling information. He kept the most elaborate case notes on the development and courses of diseases as well as their treatment, and was constantly bringing them up to date. The case notes enabled him to accurately discriminate between various diseases and was undoubtedly the reason for his rapid rise to fame in the medical profession. His greatest interest judging from his notes (housed in the Linnean Society strongroom) lay in fevers, the pox and the great pox, while he was least interested in skin diseases.

One of his first duties as Professor of Medicine at Uppsala was to teach the Diagnosis Morborum. This he enjoyed, and he quickly adapted Sauvages' 1731 classification of

diseases *(Nouvelles classes des maladies . . . .)* and drew up his own nosology based on symptoms alone. This symptomatic plan of arranging diseases was eventually published as a dissertation by one of his pupils in 1759 and later (1763) in an expanded form as his *Genera Morborum.*

The syllabus of his remaining medical lectures, together with his theory of medicine, (which distinguished between the vascular and nervous systems of the body) was published in 1766 as *Clavis Medicinae duplex, exterior et interior.*

Pharmacology

One of Linnaeus' lasting interests was pharmacology and throughout his teaching career he was forever adding to his lecture notes, thereby keeping his students abreast of the times. His ability to amass and synthesize information enabled him to present his students with the names and synonyms of all the plants of medicinal value; to list their countries of origin and catalogue their pharmaceutical effects and the illnesses they may be used to treat.

He published all of this information in 1749 in *Materia Medica* which soon became an invaluable medical reference book. It is a great pity that he never republished this classic work with the addition of the copious notes which he added to his own interleaved, copy. (See copy in Linnean strongroom).

Dietetics

Dietetics was an early interest of Linnaeus', but one in which he did not always practise what he preached. Thus in his *Diata Naturalis* (Fig. 2) started in 1733, and which he later (1741) used as his lecture notes on dietetics, he lists some 70 aphorisms including the one that tobacco should be considered a medicine rather than a regular diet and smoking is poisonous. Nevertheless he himself was a heavy smoker for most of his life.


Caroli Linnæi

Diata Naturalis

Figure 2. Title page of Linnaeus' unpublished 'first edition' of *Diata Naturalis.*

From this 1733 edition Linnaeus eventually produced another set of lecture notes, part of which was published by Lindfors in 1907 under the title *Linne's Diaetetik* while a more complete set was published in 1958 by Uggla as *Diaeta Naturalis.*

Amoenitates academicae

During the period in which Linnaeus was Professor of Medicine and Botany at Uppsala, 186 dissertations on natural history and medicine were issued. Each dissertation formed an independent pamphlet and bore the name of a different pupil as the respondent, but all with the "viro cèleberrimo et experientissimo Dn. Doct. Carolo Linnaeuo" as *praeses.* These dissertations were collected together and reprinted, sometimes unchanged and sometimes considerably altered to form Linnaeus' *Amoenitates academicae* 1749-1790 (10 vols).

All of these theses were selected by Linnaeus who was also responsible for their contents, while the student's responsibility was to have the thesis printed and to defend it in Latin in public debate. This custom, common in many universities at that time, enabled the professor to publish quickly and free of charge any work of special interest to him.

Of the 186 dissertations, 26 referred to pharmacology (materia medica) and 35 to more general medicine. The titles include: Suitable specifics to the venom of the rattle-snake, Diseases of the Swedish winter season, Advantages of breast feeding, Diseases of the Navy, Origin of contagious diseases, The influence of climate on health, The importance of proper exercise, The medicinal leech, Leprosy, Raphania, The abuse of fermented liquors and their influence on society, and Tapeworms. The last medical thesis defended under Linnaeus' presidency was *Canones Medici* in 1775.

Figure 3. Ilustration from Linnaeuss article on coffee in Hjorter's Almanack for 1747.

Almanacks

Linnaeus contributed lively, popular articles in Swedish to Hjorter's Almanack (Fig. 3), on domestic medicines for the Ague (1742), on tea (1746), on coffee (1747), and on brandy (1748). These were eventually put into a scientific format and used as the basis for student dissertations and then reprinted in *Amoenitates academicae* (see above). Thus in his 1747 article on coffee, Linnaeus gave a poetic account telling us it induces insomnia, gives us tremulous hands and that those of us who drink strong coffee are more subject to strokes. He also maintained that coffee is good for hangovers, migraine and for those tormented by worms. However, the *Amoenitates academicae* dissertation on *Potus Coffeae* of 1761, which gives us a botanical and medical history of the coffee-tree and its fruits, concludes that coffee destroys the appetite, promotes flatulence and indigestion and is noxious to melancholic, hypochondriacal and hysterical people.

Postscript

In the above article mention is made of how Linnaeus corresponded with Sauvage on the treatment of venereal diseases and the recommended cure which was the use of mercury. This illicited the following remark from William Stearn: "One night with Venus and a lifetime with Mercury." Much later, in 1725 Linnaeus became aware of the efficacy of lignum vitae (*Guaiacum officinale* L.) for the treatment of syphilis and accordingly incorporated this information into both his medical notes, used for teaching, and into his *Materia Medica* of 1749. The *Materia Medica* was a classic work on pharmacology which at the time was regarded as an invaluable reference work by all medical practitioners. It contained the names and synonyms of the known medicinal plants with information on their countries of origin. It also listed the doses to administer, their pharmaceutical effect and the illnesses for which they could be used. His much shorter *Clavis Medicinae Duplex*, described by himself as "the fairest jewel of medicine" followed some 27 years later in 1766.