Linnaeus' nomenclature of butterflies deduced from some mythological figures participating in the Trojan war

Some reflections upon how and why Linnaeus 1758 named swallowtails from the heroes in the Trojan war of Homer's Iliad and some notes about Queen Louisa Ulrika's type specimens, kept in the Museum of Evolution in Uppsala, which Linnaeus used for his descriptions in Systema Naturae.

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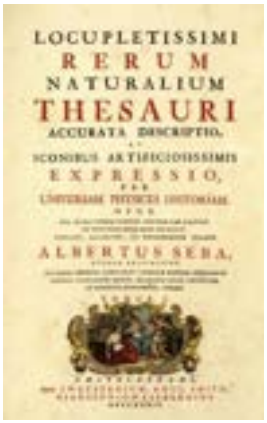
Most people, especially in Sweden, only know Carl von Linné as the "King of the flowers" but already as a young boy, and later as student in Lund and Uppsala, he also was much interested in insects, especially in beetles and butterflies. This interest we still can see when we today study his main zoological work, his 10th edition of Systema Naturae published in 1758. There he has used the names of kings, princes, heroes, doctors, warriors and other persons from the epos of Homer's Iliad, the Trojan war, to nearly all the big butterflies he at that time knew, when he gave them their names. Nearly all these butterflies, which mainly were swallowtails, were what we today call "tropical" and when I during the past 40 years have been studying the butterfly fauna of the world, four main questions arouse.

1. From where here did he get the butterflies he described?
2. How did he get the idea to use Homer's names?
3. After which principles did he arrange the species?
4. What reason was at hand when he named the particular species?

The butterflies we talk about here are the first 41 butterflies where he used his new binominal nomenclature. Many people think that it is because of his binominal names he is so famous all over the world and, at least here in Sweden, we often hear that he is the most well-known Swede of the world. In fact, he is most famous because of his unique and ingenious system of plants and animals published already in his first edition of *Systema Naturae* 1735. The binominal names were discussed among naturalists at the time when Linnaeus visited Albertus Seba in Amsterdam in June 1735. Then he probably encountered Seba's new and comprehensive book *Rerum Naturalium Thesauri*, published in 1734, where Seba used the binominal system for many flowers and animals. Five years earlier, 1730, the famous book *De Europische Insecten* by Maria Sibylla Merian was published. She too, was using binominal names as well, for most of her plants and it seems as Linnaeus 23 years later, almost copied many of her names in his *Species Plantarum* of 1753. Merian also spelled the name of genus with capital letter and Linnaeus later followed her in this way.

Albertus Seba and his book



Maria Sibylla Merian's book

Gaspard Bauhin

Maria Sibylla Merian, however, had already 51 years earlier, in 1679, published a fantastic book, *Der Raupen wunderbare Verwandlung und sonderbare Blumennahrung*, on the metamorphoses of many European insects, mainly butterfly and moths. She also for many plants used the binominal system and even with a capital for the genus we still use today and which Linnaeus stated more than 100 years later in his *Species Plantarum*!

However, the binominal nomenclature was not invented by this famous woman. Already in the year 1596 the Swiss botanist and professor Gaspard Bauhin (1560 – 1624) published *Pinax Theatre Botanice.* There he for the first time introduced the binominal nomenclature of taxonomy.

But I think we also have to estimate the value of Linnaeus as he so consequently applied the binominal names to all plants and animals found, **and finally in his opus *Systema Naturae* the binominal system became fully accepted by most scientists**.

In this article I like to start with the first question, which probably is the least hard to respond.

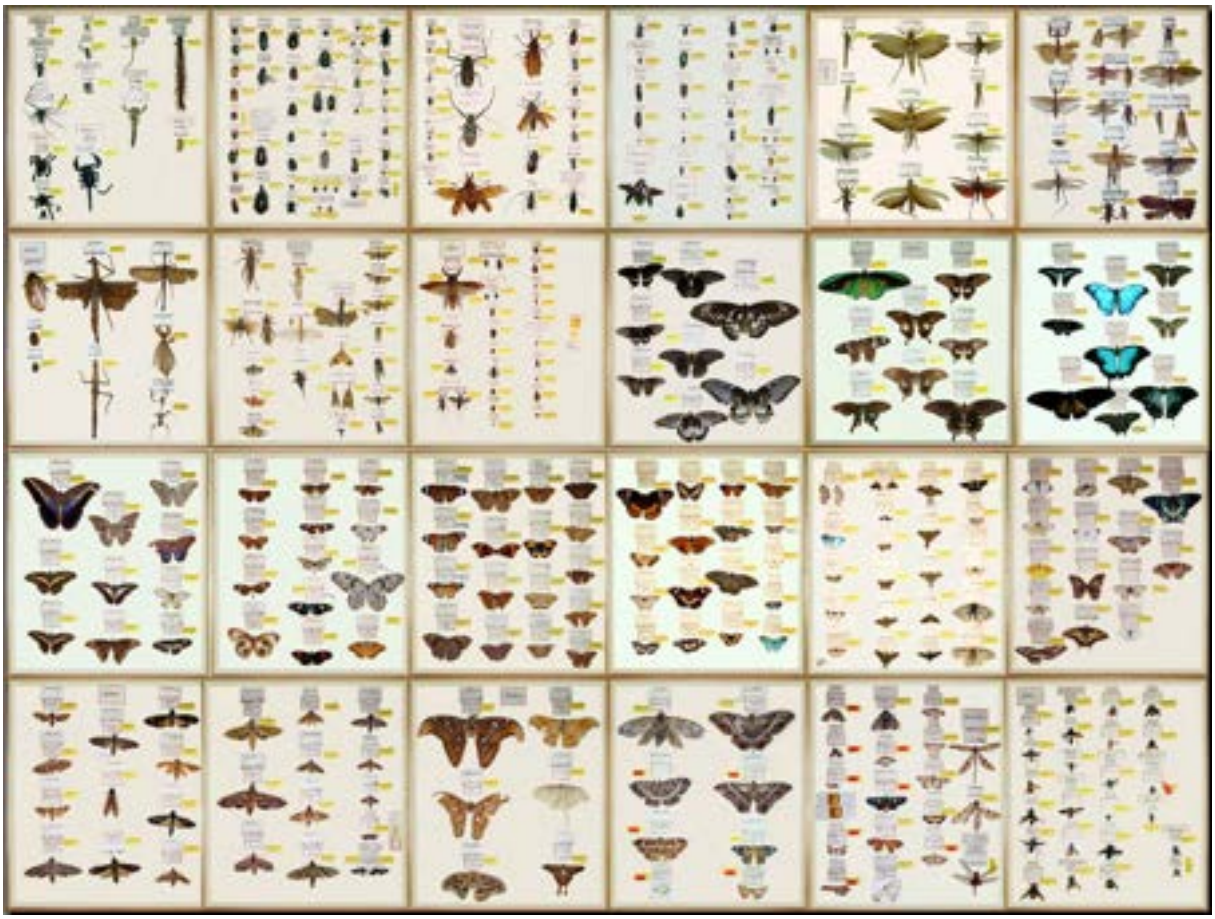
From where did he get the butterflies he described?

From the Uppsala point of view, to this question it is quite easy to find the answer. Linnaeus was living in Uppsala from 1728 to his death in 1778 and became a professor in 1741. Here in Uppsala and in the Museum of Evolution, we still keep almost nearly the whole collection of butterflies he used when he constructed his system. We are lucky that these specimens were not a part his own collection, but were belonging to the Swedish Royal family. Otherwise these specimens now had been stored at the Linnaean Society in London.

In fact, when Linnaeus described and named the butterflies, they all belonged to the Swedish Queen Louisa Ulrika, who started to establish and maintain an abundant collection of natural-history specimens in her cabinet in the castle of Drottningholm. One of her main interests consisted in collecting worldwide butterflies and shells. During many years, when Louisa Ulrika still was a princess, Linnaeus and his friends and students assisted her in building up a collection. Most of the tropical species she had bought from Holland, and we also know that both the Swedish King and the Queen bought specimens from Seba's house in Amsterdam when his remaining collections were sold on a big auction 1752. Unfortunately we hardly know anything about what they bought. Most of Seba's collections had been bought by the Russian Tsar Peter the Great already in 1717 for 15 000 Gulden. The Queen also bought collections from some of the disciples of Linnaeus. In 1751 she bought most of Pehr Kalm's collections of plants and butterflies from North America. Later also Speck's collections from China and Hasselquist's collections from Egypt and Palestine.

Unfortunately we do not have the collection set in the extremely beautiful chest of drawers where Queen Louisa Ulrika originally kept them, but luckily we today can see nearly all the "types" in cases where Linnaeus' perhaps most famous disciple Carl Petter Thunberg arranged them in 1804, when the collection was donated to the Academy of Science in Uppsala during the rule of King Gustaf IV Adolph, a grandchild of Louisa Ulrika.

The King Gustaf IV Adolph was later deposed from the throne in 1809 and then he had to leave Sweden, but as he still was the King when Thunberg arranged the collection as we see it today, we also understand why he call the collection "*Mus. Gust.Adolph*" instead of *"Museum of the Queen Louisa Ulrika"* which, at least for me, would be the most relevant name. I can, of course, understand the common Swedish name today "*the Linnéan collection*", as that name brings a great glory to the Museum of Evolution, in Uppsala, but at least for me, the collection will always be the M.L.U. collection, Museum Ludovica Ulricae. My opinion is based on Linnaeus' words "M.L.U." after most of the descriptions of species from that collection in his 10th edition of *Systema Naturae* of 1758.



Some of the drawers with the Queen Louisa Ulrika's collection, arranged by Thunberg 1805

In the museum we still have most of the specimens Linnaeus used when he first described them. A few specimens are lost but I think that we at least have some of them in Thunberg's own collection which we also are happy to store in the Museum of Evolution in Uppsala. We sadly regret we are not longer able to watch the collection in the magnificent chest of drawers where the Queen originally kept them. Finally we now have her chest here in Uppsala "emptied" but that is another long sad story.

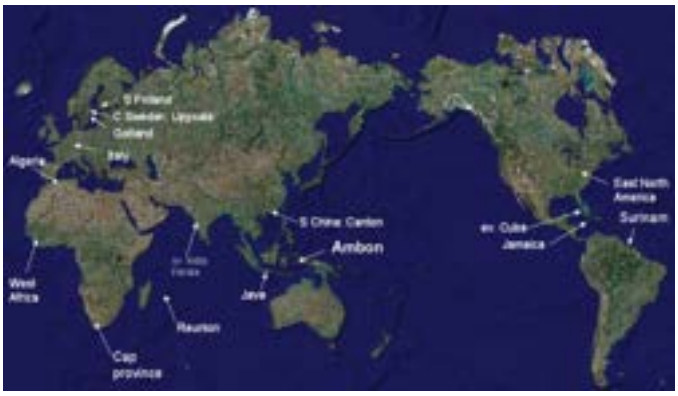
Martin R. Honey and Malcolm J. Scoble of the Department of Entomology, The Natural History Museum in London, have in their imposing article in the Zoological Journal of the Linnean Society penetrated all the 305 names Linnaeus placed under the name "*Papilio*". Of these they have designated 152 lectotypes. 99 of them were selected from the collection in the Linnaean Society but 52 of them we still have in the Uppsala collection.

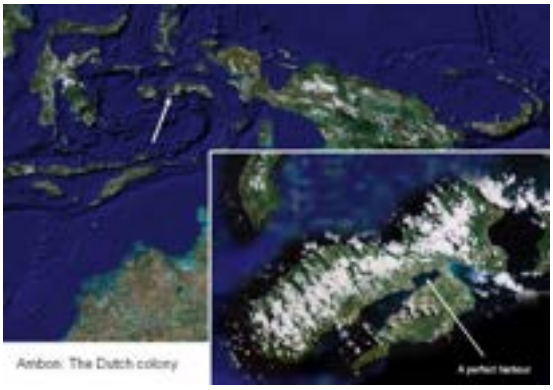
I quite agree with Honey and Scoble in their designation of nearly all these "types" even if I, concerning two or tree species, find that we perhaps can discuss whether the specimens of these species, in the Queen's collection in Uppsala, also should be designated as lectotypes.

Of the 41 "butterflies" in this article, the species which Linnaeus selected in the first phalange as Equites, Honey and Scoble has designated about 50 percent as lectotypes. Of the others we find a few lectotypes in the Linnean Society but most of the others come from "types" which Linnaeus had identified as good species despite they were specimens of the same species as he already had described. For most of the others the type has disappeared or Linnaeus has only described the species from a picture in a certain book.

An interesting question is also where the Queen's butterflies were collected?
On the word-map I have marked the locals for her butterflies. Many of the most spectacular species were probably collected on the small island of Ambon located west of New Guinea. On that island the Dutch East Indian Company trade centre was established. We know that Albertus Seba bought much of his material from ships which had visited that island so probably many of

these species come from the auction 1752 where we know that Louisa Ulrika, as well as her King, bought lots of specimens to their collections. It was also during this period the Queen was most interested in buying insects and shells to her cabinet. Many specimens were also collected in Surinam, where there were a Dutch trade station as well, and besides, it was in Surinam Maria Sibylla Merian painted her beautiful Morphos which Linnaeus admired so much and used for his descriptions. Linnaeus' disciple Pehr Kalm collected a considerable number of butterflies during his stay in North America 1747 – 1751. Queen Louisa Ulrika purchased most of his collection 1751.





These maps show the breeding areas for all the butterflies we find in the 10th edition of Linnaeus Systema Naturae

Now the second question:

How did he get the idea to use Homer's names in the epos of Iliad?

This question is not that easy to respond. Many people has for long wondered what books Linnaeus was familiar with, and for instance, John L. Heller has, in an article in 1945, *Classical Mythology in the Systema Naturae of Linnaeus*, been discussing about that Linnaeus probably had only two sources, namely the *Fabulae* of Hyginus and the *Syntagmata de Deios* of Giraldi. There he would have found the references to nearly all the names, not only for the swallowtails but also for many other butterflies of other families. I cannot understand why it would be so important to know what books he was reading when he was searching for the specific names. Knowledge of the Greek Mythology and its individuals was probably quite abundant at that time as learned people mostly had to study Latin and Greek. Most likely, all of them had read the epos of Homer's Iliad or at least they had heard of the famous kings and heroes in the war of Troy. Surprisingly Heller does not discuss the reason why and how Linnaeus got the idea to use the Greek names. Nor I have in any books or articles written by Linnaeus himself or other authorities found anything about how he got the idea to the names he so consequently used for all the swallowtails. We know of course that Linnaeus also in some other passages in *Systema Naturae* has used some names from the epos of Homer's Iliad, but nowhere in his works he used these names so consequently as for the swallowtails

Linnaeus made a smart move in using persons and other things from Greek Mythology and it must has been a real challenge – why not a temptation? - to him to do so, when he here encountered hundreds of names. Of course, many of the mammals, birds and reptiles already had old and very well-known names, which Linnaeus of course enrolled in his system, but when we are talking about the insects, most of the names were completely new. In his *Fauna Suecica* for example, he already in 1746, had used old common names as *"the princess"* or *"the little dog"* for some Swedish butterflies, but in the *Systema Naturae* 10th edition of 1758, he was giving all these butterflies completely new, "scientific", names!

I have a theory from where he got the idea, or frankly speaking, it was really not his own idea. Most likely his dear Queen inspired him. She arrived in Sweden as a princess in 1744 and already on her way to Drottningholm, a castle she had received from the old Swedish King

Frederick I, she visited Uppsala and there she met Linnaeus. After the first meeting they became acquainted with each other and they would see each other many more times. Thus, by the influences of Linnaeus, Queen Louisa Ulrika became more and more interested in butterflies. In 1751, Linnaeus was asked to visit her castle to arrange and describe her butterfly collection. As a Queen, Louisa Ulrika was well educated, and she spent long days with Linnaeus to discuss contemporary natural-history matters. My theory is that is was during these discussions Linnaeus got the idea to apply the old Greek names from the epos of Homer's Iliad to her most beautiful, precious and striking butterflies. We also know from a letter Linnaeus wrote in September 1751 that he worked with a manuscript to *Museum Reginae.*

During that time Linnaeus also assisted the new King Adolph Frederick, the husband of Louisa Ulrika, to arrange his natural history collection of snakes, monkeys, fishes etc. In the year 1754, Linnaeus published a very nice book describing the king's collection and now he also for the first time used the binominal nomenclature for all animals – four years before he used that system in *Systema Naturae*! In the book he also described six beetles, ten grasshoppers, one cicada, four scorpions and a spider. All these "insects" were in fact from the Queens collection in "*Mus Regin*", *Museum Ludovicae Ulricae*.

Museum Adolphi Friderici 1754 Museum Ludovicae Ulricae 1764

The grasshoppers and the beetles were not so beautiful, and probably therefore we believe they were in this mixture of insects. I think that Linnaeus, perhaps inspired by Louisa Ulrika's intentions, saved her beautiful butterflies for another book as he already at that time had planning to compose a book describing the Queen's butterfly collection. We have also a good reason to believe that he also already during this period, in the middle of the 18th century, had started to write the descriptions of the Queen's butterflies, especially the swallowtails.

It is almost impossible to understand sometimes what species Linnaeus described if you only read the text in *Systema Naturae* of 1758, but if you read what Linnaeus is writing in his big book, consisting of 720 pages, about the Queens collection, *Museum Ludovicae Ulricae Reginae* published in 1764, you can easily catch which species he describes. My friend Göran Waldeck, Virserum Sweden, who has translated all Linnaeus Latin texts describing the butterflies, has written to me that for many species it seems that Linnaeus had written the texts so a visitor would be able to read the book next to the drawer and compare the butterfly with the text. We find the book splendid today but we also know Linnaeus was very disappointed as the original plan consisted in editing a catalogue, foliated and equipped with hand-made paintings by Jean Eric Rehn, Niclas Larefsen and Herman Conrad von Kruse. Linnaeus intention was that this catalogue, with its coloured contents, would result in "magnificent fireworks, enlightening the whole world". He had worked with it during more than ten years.

My theory is that the Queen, who we know was very familiar with history of Antics, also was involved in Linnaeus descriptions of her lovely butterflies. We also know that she, probably one of our most splendid Queens, was a woman who had many ideas and a strong will, and for me it would have been quite unbelievable if she not had any ideas about what lovely names all her precious swallowtails would bear.

Then we only can speculate about how they worked together when her butterflies were divided into the different phalanges of the *Papiliones.* The first phalange he named *Equites,* the knights (equestrians) and that phalange he divided into two groups: *Trojani* and *Achivi,* the Trojans and the Greek where the *Trojani* had red tufts or stripes on each side of their breast. The apposition Equites is also interesting from another point of view. Linnaeus had, during his work with the Queen's insects, been ennobled to be among the Equites of the Royal Order of Stella Polaris. What would be better than using the name of Equites, knights, for her magnificent swallowtails! Later he was called Equites Aurato – the Golden Knight!

To divide animals in two or separate groups and then divide them into smaller groups was a way he often used in his system. Thus, the division into two fighting parts, the Greek and the Trojans, was consequent to him but it was also a genius move. From the war history we know that at least the leaders of the different fighting parts often used red or white plumes on their helmets. From old paintings we see the famous Greek, King Alexander the Great, with a white plume on his helmet. Because of that, we perhaps can find an explanation to why he saw the red tufts or stripes, like small plums on some of the swallowtails, as good models for the opposite part, the Trojans?

But here you might wonder why he at all made such a system. There is no significant or logic reason, at first sight, to divide the Papilios into these two groups at war, to become a part of his system. Some might think my intentions to find a solution will be too far-fetched, but Linnaeus found visible signs to separate the two groups. The swallowtails with blood-red tufts or stripes on their breasts he named the Trojans and those without red spots became the Greek. Here we easily can find that he had about fifteen species with red tufts. Generally we now put many of these rather homogeneous species to the Tribe of *Troidini*, but when we look at the Greek, those without red spots, we will find more heterogeneous butterflies. That was of course also an elegant conclusion as the Greek warriors, indeed, together made a heterogeneous army from all the small different so called town-states and were separated from the Trojans who were much more homogeneous. About a third of all the names Linnaeus used for those, were sons of the king of Troy!

Here an example will follow to show how Linnaeus made an exception from the rule to determine the Papilio genus based on the appearance of antennae.

When reading his description of the first phalange we find something peculiar. He writes in Latin: *Antennae filiformes*, which means *with tread-like antennae!* This is quite noticeable as his division in *Order Lepidoptera* into three groups, was depending just on the appearance of antennae. His butterfly "family" *Papilio*, butterflies, would thus be equipped with "*Antennae extrorsum crassiores*", signifying the extreme ends of antennae (are) thicker. But suddenly he is mistaken and ignored his own good system. Why he did, is really hard to grasp.

A fatal error: The queen had two very beautiful Uranides with thread-like antennae, which Linnaeus obviously considered should belong to the *Papilio* family! Probably because of the long forewing and the long tails on the hindwings ? Now he suddenly ignored the antennae. Why? Did the queen in some aspect confuse him? This matter is very interesting to discuss and I find it remarkable that Linnaeus did not discover his mistake for the rest of his life.

Here I find a good opportunity to explain how Linnaeus already in his first edition of *Systema Naturae* of 1735 arranged the insects we today treat as Lepidoptera. Together with other insects, we today list as Neuroptera, Odonata, Tricoptera, Diptera, Hymenoptera etc, he put them in a group of insects he called Angioptera, insects *with "free" wings, no shell*. In this group he placed all butterflies and moths under the name Papilio. The Papilio he divided into tree groups depending how they held their wings in resting position, erected for the butterflies (*alis erectis*), flat for the hawkmoths (*alis planis*) and compressed for the true moths (*alis compressis*). He named these groups Papilio, Psyche and Phalaena. Linnaeus showed to be genius by building an excellent system of all plants and animals of the world. Already as a young student aged 27, he

started his revolutionary taxonomy. This first *Systema Naturae* is his most important scientific work which he currently improved for the next coming 40 years.

23 years later, in his 10th edition of *Systema Naturae* of 1758, he still, like he had done in his first system, divided the Lepidoptera in tree groups, but now he used the appearance of the antennae instead of wing positions, to distinguish the old group "Papilio" which he now call Lepidoptera. His tree groups are now: *Papilio*, butterflies, with the antennae thicker at the tip (*extraorsum crassiores*), *Sphinx*, hawkmoths, antennae thicker in the middle (*medio crassiores*) and *Phalaena*, moths, thicker in the innermost part (*introrsum crassiores*).
This system is principally in use even today.

The third question:

After which principles did he arrange the species ?

That has troubled me a lot but with good assistance of my friend Göran Waldeck's eminent translations of Linnaeus' descriptions of the species in the book about her museum and my studies of Greek Mythology I think I have found a model for his arrangement of the Queen's collection, which is also valid for *Systema Naturae.* I write the "Queen's collection" as I am sure he made his system of her butterflies before he wrote the 10th edition of Systema Naturae even if the book of her Museum was printed 6 years later.

He did not arranged the butterflies in the way we do today after a natural morphology or "natural relationship" as he has done with most of all other animals including the insects. The Queen's beautiful swallowtails he arranged after the ranking or the hierarchy of persons in the war of Troy as a model for each species. He started with the King among the Trojans and then the princes in their rankings followed by a priest and an archer! But when he came to the Greek, he started with a Queen! The Queen of Sparta, the most beautiful woman in the world, Helen, he placed her higher than her husband and King Menelaus. Nota bene, the names were given for the Queen's collection! With this Queen Helen he also made a big mistake as he placed her among the Greek in spite his butterfly *Papilio helena* has red stripes on her breast.
First I thought he placed her among the Greek as she was the Queen of Sparta but the reason was another which also Linnaeus found out to his 12th edition of *Systema Naturae* 1767, where he correctly placed her among the Trojani. I shall com back to that later.

He continues his hierarchy by referring to important persons in community such as other Greek Kings, close friends of King Menelaus, important persons, physicians etc. Linnaeus himself was a professor of medicine! (= a high rank!) Lower ranked were the warriors. For instance, the most famous person in the epos of Iliad, Achilles, was placed as butterfly number 32 and as number 15 among the Greek. Even here his last warrior was an archer. Obviously the warriors achieved not so high position in his and/or Lovisa Ulrikas' ranking lists!

I find his hierarchy system very interesting as he at the bottom placed priests, servants and archers! You can easily believe that neither Louisa Ulrika nor Linnaeus had any high thoughts concerning priesthood – or what will we think? I have not found this matter being discussed in any books or articles. One thing is quite certain. The stairs of Greek hierarchy must have been an important topic of conversation between Linnaeus and Queen Louisa Ulrika during their meetings in the castle of Drottningholm, mainly during summer of 1751 and summers of 1754 and 1755, when Linnaeus was invited as a guest to arrange her collections.

From prefaces of several books etc., we know that Linnaeus greatly admired and highly honoured his Queen, but we do not know on the other hand much about what the Queen really thought about Linnaeus. Concerning this matter, we have just a few notes from their meetings as: She found him "*behave in some rural manner, but his straight forwarded and genuine witticism and brilliant power of description fascinated her tremendously*". From such words we might conclude that Linnaeus obviously made great impression on her.

Carolus Linnaeus 1753

Queen Louisa Ulrika

From my own collection I have tried to make an arrangement of all the butterflies Linnaeus described under the first phalange *Equites* so the reader of this article might be able to see each butterfly and get an idea of Linnaeus way to order them systematically, probably under considerable influence of his Queen, the real owner of the butterflies.

Equites Trojani Papilio 1 – 17

Equites Achivi Papilio 18 – 40 (41)

During the middle of the 18th century we can read the following about her collection:
"Her Royal Highness' natural history collection, which is stored at the pleasure-palace of Drottningholm is, indeed, beyond comparison to any collection in the whole world."

Let us face the forth question:

What reason was at hand when he named the particular species?

As already mentioned, I find this question most interesting. It would have been great to hear the discussions between Linnaeus and his dear Queen about the names her beautiful butterflies would bear. Unfortunately I have not found anything written about this subject, but if you read his descriptions of each species, in Linnaeus' opus *Museum Ludovicae Ulricae* of 1764, you easily note how carefully he examined each specimen of butterfly. In his descriptions there are always characteristic details, which made it possible for Linnaeus and Queen Louisa Ulrika to refer to a certain king, prince, priest, or warrior, when they had decided to use the name from the heroes in the epos of Homer's Iliad, for her swallowtails.

I will introduce to you **some** examples and begin with ***Equites Trojani***

Butterfly no 1***, Papilio priamus***

Probably it was easy for them, to name the most beautiful butterfly she possessed, the green birdwing, which Linnaeus in the book describes as: *among butterflies the most striking and truly quite rare among insects. To watch its silken appearance is sufficient to become goosy, the wings are firmly made, the colours are the most pure, there is no doubt that nature never produced anything more beautiful thing among insects to observe*.

That striking insect with red stripes on the breast became of course a perfect illustration for Priamus ΠΡΙΑΜΟΣ, the King of Troy! That butterfly also became the first of all butterflies described in *Systema Naturae* by the binominal nomenclature. In Latin "Papilio primus"!

Something we can speculate in is perhaps if Linnaeus saw any connections to the Latin name ***primus*** which means the foremost (for instance: primus inter pares = the foremost among equals) but we are not quite sure if Greek **Πρίαμος** , "**Priamos**" would possibly relate to Latin "**primus**". Perhaps Linnaeus found some connection between these two words as they are much similar. If he did, it would be another indication of Linnaeus' choice of Greek names of the Trojan war. How much did the Queen inspire him, we don't know for sure. Anyhow, the Greek **Πρίαμος** is Latinized to "Priamus".

There was a letter to Clerck written by Linnaeus at springtime 1759. Linnaeus wrote that he wanted Clerck to paint a *Papilio priamus* on the initial page of the first edition of *Icones Insectorum Rariorum* in order to get the Queen more enthusiastic about the contents.

Linnaeus wrote: "Papilio priamus, a Princeps for all butterflies". The word "Princeps" means ranked first. The number one butterfly! Papilio priamus - the extremely magnificent green-shimmering butterfly, which fascinated so much both Linnaeus and Queen Louisa Ulrika - was associated to King Priamos of Troy. **Is Papilio priamus, in fact, the key and explanation to Linnaeus' whole system to deduct the names of the swallowtails from the Trojan war?**

By the way, Linnaeus own "fantastic Latin", many people depicted as "svartbäckslatin", which means in English "black creek Latin". The black creek was the name of a small stream outside Uppsala where he lived. About this first described butterfly we can also be sure that the specimen in the Museum of Evolution in Uppsala, really is that very specimen Linnaeus and Louisa Ulrika once held in their hands and admired so much! Carl Clerck made a very distinct painting in his *Icones Insectorum Rariorum* of that specimen with its prominent prepared proboscis. Clerck's illustration speaks for my conclusion as follows. Please also observe that the specimen lacks its antennae and therefore Clerk had only marked them with small dots. Observe also the big eyes and the golden-green spot on the thorax.

The proboscis of the lectotype and of the same specimen i Clerck's *Icones Insectorum Rariorum*

Concerning the Papilio no 2***, Papilio hector*** in the first phalange Trojani, after the crown prince Hector of Troy, ΕΚΤΩΡ, much can be written. He was the eldest and most famous among Priamus' all 50 sons. Homer writes much about Hector in his epos of Iliad and we all, who have read about the war of Troy or have seen a movie some years ago, know that Hector was killed by Achilles in a single combat. Achilles afterwards outrageously dragged Hector's dead, bloody body around Patroclus' tomb. On the day before, Hector had killed Patroclus who was Achilles' closest friend. Achilles had earlier also killed another of Hector's brothers, Troilus.

Achilles and Hector in a single combat where Hector, to the right, was killed

Two of the Queen's butterflies have lots of blood-red spots on their black hind wings. These two butterflies now bear the names of *hector* and *troilus*! Isn't that only an accidental occurrence? I cannot believe it is. I am rather convinced that Linnaeus and Louisa Ulrika, when they together admired these black butterflies with blood-red spots, inspired either Linnaeus himself or both, to the idea to apply classic mythological names to her precious butterflies.

Let us proceed to butterfly number 3, ***Papilio paris.*** ΠΑΡΙΣ

Here we face an extremely beautiful and handsome butterfly, just like a young lower ! It is equipped with green shimmering wings and big turquoise spots on hindwings, where you also can notice two conspicuous red eyespots. This species certainly made much impression to the Queen and to Linnaeus as well. All persons who are initiated into the war of Troy, know that it was Paris or Alexander, an alternative name, who eloped with king Menelaus' beautiful Helen and brought her to Troy. This act was one of the main reasons of the Trojan war as the brother of King Menelaus, King Agamemnon of Mycenae, set up an army attacking Troy to free her.


The Queens original insect cabinet with an original drawer showing the first 3 Trojani a bit restored from the original specimens and laced as we can imagine the were placed when Linnaeus arranged the specimens ***Papilio priamus, Papilio hector*** and ***Papilio paris***.

In the Uppsala collection we keep a specimen which we do not quite know if it once was owned by Louisa Ulrika. Nowadays the specimen is in a poor condition. We assume that it looked better when it was purchased by the Queen. But 250 years have passed and the ravages are obvious. The reason why I write we do not quite know and why this specimen is not designated as Lectotype is as follows:

This specimen differs a lot from Clerck's painting in his Icones. Because of this the specimen labelled "3 Paris" by Linnaeus in his own collection at the Linnean Society has been designated as Lectotype by Martin Honey and Malcolm Scoble as it matches better to the Clerck painting in *Icones*, than the specimen now kept in Uppsala. When Thunberg arranged the collection 1804 he obviously had the Queen's original specimen as he has made a label with the name "Paris" in the drawer. The question is if the ugly specimen we now have in the collection is the original as Corbet quoted Aurivillius words from 1941 that he "did not find any specimen in the Royal Museum".

My first thought was of course that my colleague Carl Clerck's painting on Plate 1. Fig 1. of the 1st edition of *Icones Insectorum Rariorum*, would be the Lectotype as a "M.L.U." specimen was mentioned first among the references to the 10th edition of Systema Naturae. In Thunberg's own collection in Uppsala, there are two specimens of *Papilio paris* and one of them is more like the specimen of Clerck's Icones than the specimen of the Linnean Society. But it is not similar enough to be among the Queen's butterflies.

But after watching an excellent facsimile of Björn Dal of Carl Clerck's *Icones Insectorum Rariorum* I am uncertain.

The artist Björn Dal has carefully investigated most circumstances concerning the book and he has also studied Clerck's own collection in the Swedish Museum of Natural History in Stockholm. Dal argues that Clerck used his own collection as a model for his painting of *Papilio paris*. In the end of 1758 Clerck had received some East Indian butterflies from Pehr Osbeck. Clerck had already in May 1758 begun to paint moths, mainly Geometridae, but after he had received the tropical swallowtails from East India he in January 1759 started to paint them. Probably he first painted the male of *Papilio memnon*. He sent his painting to Linnaeus and we can see that Linnaeus has written *Memnon* with his characteristic long hand writings. (See below under Papilio memnon !) During spring in1759 Clerck painted the plates 1. 2 and 3 which he later changed to 13, 14 and 15 when his *Icones Insectorum Rariorum* to be printed. In plate 13 he has painted *Papilio paris* and *Papilio helenus*. On plate 14 *Papilio polytes* and *Papilio pammon* and on plate 15 *Papilio agenor*.

Carl Clerck's own original insect cabinet, with the original drawers, is now stored in the Swedish Museum of Natural History in Stockholm. From there Dr Bert Gustafsson kindly has sent me a photo of Clreck's first drawer of his butterflies where he stored his tropical swallowtails. From this photo it is easy to see that Clerck's paintings of *Papilio helenus* and *Papilio memnon* are identical to the specimens painted in his *Icones Insectorum Rariorum.* As we can se on the photo, and as I also understand from Björn Dal's facsimile, Clerck's own *Papilio paris* has unfortunately disappeared. But here we obviously find an explanation to why the Queen's specimen in her Museum doesn't resemble Clerck's painting as he painted his own specimen and not the Queen's on plate 1 (13) in his first edition of *Icones Insectorum Rariorum.*

Papilio paris in the Museum of Evolution in Uppsala, Clerck's *Papilio paris* in his *Icones Insectorum Rariorum* and to the left Linnaeus own *Papilio paris* in the Linnean society with the label written by Linnaeus. "3 Paris"

Back to the question which specimen would be the Lectotype? If we had been sure the ugly specimen in the "Linnean collection" in the Museum of Evolution in Uppsala would be the original owned by the Queen, that specimen would be the Lectotype as Linnaeus mentions "M.L.U" first among the references in Systema Naturae of 1758. But now, according to Aurivillius' words from 1941 that he "did not find any specimen in the Royal Museum", we cannot be sure it really is the Queen's original specimen. Because of this I agree with Martin Honey and Malcolm Scoble when they designated the specimen labelled "3 Paris" by Linnaeus in his own collection at the Linnean Society as Lectotype.

Clerck's own drawer with his *Papilio helenus* and *Papilio memnon*. Please observe that there are no specimens at the drawer label of Paris. Compare also the identical white spots on the hindwings of his painting of the *Papilio helenus*. Compare also the male of the Papilio memnon with Clerck's painting of the same specimens below.

Let us now look at butterfly number 4, ***Papilio helenus.***

We have again a prince of Troy, Helenus - ΕΛΕΝΟΣ, another son of King Priamus and his Queen Hekabe. Helenus was a good warrior who together with his brother Deiphobus, led the third host of the Trojans against the camp of the Greeks. He was wounded by King Menelaus. Helenus was a seer and a dear son of Priamus. He was the cleverest man in the Trojan army but when Hector was killed by Achilles the King became vary sad and found no consolation in Helenus. He told Helenus and his brothers: *"Away with you, base children that are my shame; would that you all together in Hector's stead had been slain".*

Helenus became of course very disappointed and nearly at the end of the war, when their brother Paris had been killed by Philoctetes, Helenus and Deiphobus quarrelled for the hand of Paris' widow Helen. When she preferred Deiphobus, Helenus left Troy and established his residence on Mount Ida south of Troy. There he met Odysseus and in revenge he told the Greek, either voluntarily or by force, by how to conquer Troy. Helenus survived the war and married Hector's widow, his sister-in-law, Andromache, and became King of Epirus. This soot-black butterfly, *Papilio helenus,* makes a good illustration of the thoughts of Queen Louisa Ulrika, and probably she associated the insect with the bad behaviour and character of such a prince!

In this brief article it would be too extensive to report on all the 41 big butterflies which Linnaeus named under the first phalange, the *Equites,* the equestrians/knights. I therefore only want to write about some of the other species, but I am quite sure it will be possible to find some connections to most of the 41 "swallowtails" the Queen was storing in her collection. The forth prince in ranking was the brother of Helenus and the splendid *Papilio deiphobus* Linnaeus placed after *Papilio helenus*.

The Lectotypes of *Papilio helenus* and *Papilio memnon* in the Museum of Evolution in Uppsala. The right picture show Carl Clercks first painting of his own Papilio memnon which Linnaeus confirmed was *Memnon*

Another beautiful blue-black butterfly in her collection, on the upperside also with red towards the forewing base, was named ***Papilio memnon***. In the ranking list, this Memnon came directly upon Priamus' princes. That much dark specimen is a male you easily can compare with the dark Ethiopian King Memnon, who Priamus asked for assistance against the Greek.

Queen Lovisa Ulrica also had the female of this common butterfly. It was named ***Papilio agenor***. By the parents Agenor had a very high ranking in Troy as his father Antenor was one of the wisest men in Troy, and his mother Theano, who was a priestess of Pallas Athena. Agenor was one of the bravest among the Trojans and was also one of the leaders when they attacked the Greek fortifications. He was one of very few Trojans who managed to wound Achilles. I am rather surprised that Linnaeus obviously did not observe that he here gave a masculine name to a female butterfly. Did he really believe that male and female of a swallowtail species always looked the same? We are uncertain about that. One thing is for sure, he compared the swallowtails with our own swallowtail, *Papilio machaon*, now in English "Old world swallowtail". Concerning *Papilio machaon,* male and female look the same. Did Linnaeus make any conclusion of this observation?

Concerning another very interesting butterfly, Linnaeus made another noticeable mistake when he determined the species of ***Papilio glaucus***. There are at least two Greek Glaucus, ΓΛΑΥΚΟΣ. One is a son of king Priamus, the other is a son of the wise Antenor. Which of them is behind *glaucus* we cannot know for sure.

According my opinion, the species *Papilio glaucus* would be connected with Priamus' son. This North American swallowtail has a black female variation with blue spotted band on hind wings and is very beautiful. Linnaeus described this female carefully in the book of the queen's museum. The female was bought by Queen Louisa Ulrika 1751 from one of Linnaeus' most famous disciples, Pehr Kalm. Linnaeus obviously discovered some red spots on the breast of that butterfly, even if neither I, nor any other persons could see any, as there are no red spots on the breast of that butterfly!

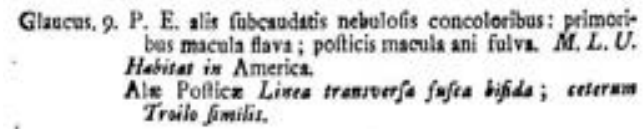
But that is not all. During the long time since the collection was transferred from Drottningholm to Uppsala more than 200 years ago this specimen has somehow disappeared. After my investigation of all old collections in the Museum of Evolution in Uppsala, where I have taken recent photographs of nearly all their specimens, I have been able take a closer look at these most interesting specimens. In a drawer, which once belonged to our famous Carl Petter Thunberg, I have discovered a certain black female of *Papilio glaucus.* If I study both the under- and overside of butterfly and compare it to Carl Clerck´s painting in his *Icones Insectorum Rariorum* of the same species, a most striking resemblance will appear. The specimen is absolutely identical with Clerck's painting of the species. This is really a sensational discovery as it was assumed that all the butterflies the Queen bought from Kalm were destroyed. The only difference between the butterfly and the photo is that the wings of the pinned specimen has lowered a bit. But the change has a natural explanation as it has been stored for 250 years, sometimes in humid rooms.

Pehr Kalm's *Papilio Glaucus* and the same specimen painted by Clerck in his *Icones Insectorum Rariorum*

Please, watch carefully the proboscis and the position of the head plus the light-coloured rings around the eyes!
I also find the fixed and frozen positions of the long tongues to be in conformity.

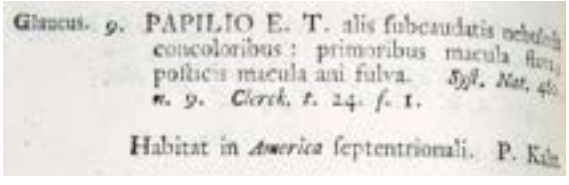
It is obvious that someone, during the investigation of the specimen, has pulled out the long spiral tongue and didn't put it back in its normal position. We are aware of that Linnaeus mostly checked the appearance of the tongue to place the specimen it in the appropriate group. The unusual position of tongue is showing that this is the specimen Clerck painted so carefully. When we check all the specimens of Clerck's *Icones Insectorum Rariorum*, he has painted only two specimens with their outdrawn long tongues, namely the *Papilio priamus* and the *Papilio glaucus*. I have observed that there are no more *Papilio glaucus* in any of the old collections in the Museum of Evolution in Uppsala.

It is interesting to compare Linnaeus' references to the species in the 10th edition of *Systema Naturae* to the description in the book of *Museum Ludovicae Ulricae* 1764, which was edited six years later. By Linnaeus' "M.L.U" commentaries we note that Pehr Kalm collected the specimen of *Papilio glaucus* in North America (showed on Clerck's plate no 24 fig 1).



Glaucus. 9. P. E. alis ſubcaudatis nebuloſis concoloribus: primoribus macula flava; poſticis macula ani fulva. *M. L. U.*
Habitat in America.
Alæ Poſticæ *Linea transverſa fuſca bifida; ceterum Troilo ſimilis.*

Systema Naturae 1758



Glaucus. 9. PAPILIO E. T. alis ſubcaudatis nebuloſis concoloribus: primoribus macula flava, poſticis macula ani fulva. *Syſt. Nat.* 46. n. 9. *Clerck.* t. 24. f. 1.

Habitat in *America* ſeptentrionali. P. Kalm.

Museum Ludovicae Ulricae 1764

The hindwings display a forked line across the wings; otherwise it is much similar to Troilus (*Papilio troilus*)

The bad condition of specimen is perhaps another circumstance which speaks for my theory. Pehr Kalm was primarily an excellent botanist, but he was not an expert in collecting swallowtails. Because of this it was difficult for him to get a perfect specimen with his poor equipment. He did not collect beautiful specimens just for money, in fact he was a scientist sponsored by a famous Royal Archiat and a Queen!

The interesting concerning this species is that Louisa Ulrika also had received a male of the actual species. This male is dominated by a yellow colour instead of black and for us it looks like a big *Papilio machaon*. Linnaeus could, of course, not believe that it was the same kind of species. One was black, the other yellow. Now, unexpectedly, Linnaeus placed the female among the *Trojani* and the male among the *Achivi*, the Greek! The Greek one, he named ***Papilio antilochus.*** The young, brave and very beautiful Antilochus, ΑΝΤΙΛΟΧΟΣ, was one of the most handsome heroes among the Greek. He was a son of Nestor and highly appreciated by the great Achilles. Antilochus was defeated by Memnon who later was defeated by Achilles. We are aware of that Linnaeus highly estimated the *machaon* butterfly, probably as he saw it on wing when he was a little boy in Stenbrohult, and therefore I think it is quite easy to understand that he named this beautiful butterfly after Antilochus.

Later Linnaeus received a butterfly which was rather similar to *antilochus* but with broader blue ribbons on hind wings. This butterfly he named ***Papilio turnus*** in his Mantissa Plantarum 1771 and referred Fabricius who had been a student under Linnaeus in Uppsala 1762 1764. Linnaeus placed this species correct under the Achivi, the Greek, as it does not had any red stripes on its beast. We today know that this butterfly is the normal yellow female of *Papilio glaucus.* Telling this I am trying to explain how difficult it might be to determine a species when a taxonomist receives a single butterfly, especially when the taxonomist is totally unaware of the life cycle of butterfly in its breeding areas. Linnaeus' mistake resulted in giving three different names to only one species. Here I cannot quite understand how Honey and Scoble could designated one of the normal males of *Papilio glaucus* in the Linnean Society as Lectotype of *Papilio turnus* as turnus is the female-name of the species. The label with the name "turnus" is written by Smith and not by Linnaeus.

Within the Trojani group I proceed to butterfly no 16**, *Papilio panthous***. This butterfly is one of the most interesting specimens in the queen's collection. The description of the insect in *Systema Naturae* is short and Linnaeus writes by few words, in English translation as follows:

"P. E. having toothed wings in uniform black colour throughout: the forewings have whitish stripes; the hind wings are black with an abundant number of whitish stripes. M.L.U. Lives in Oriental India".

(Abbreviations: P = Papilio, E = Equites, M.L.U. = Museo Lovisa Ulrica)

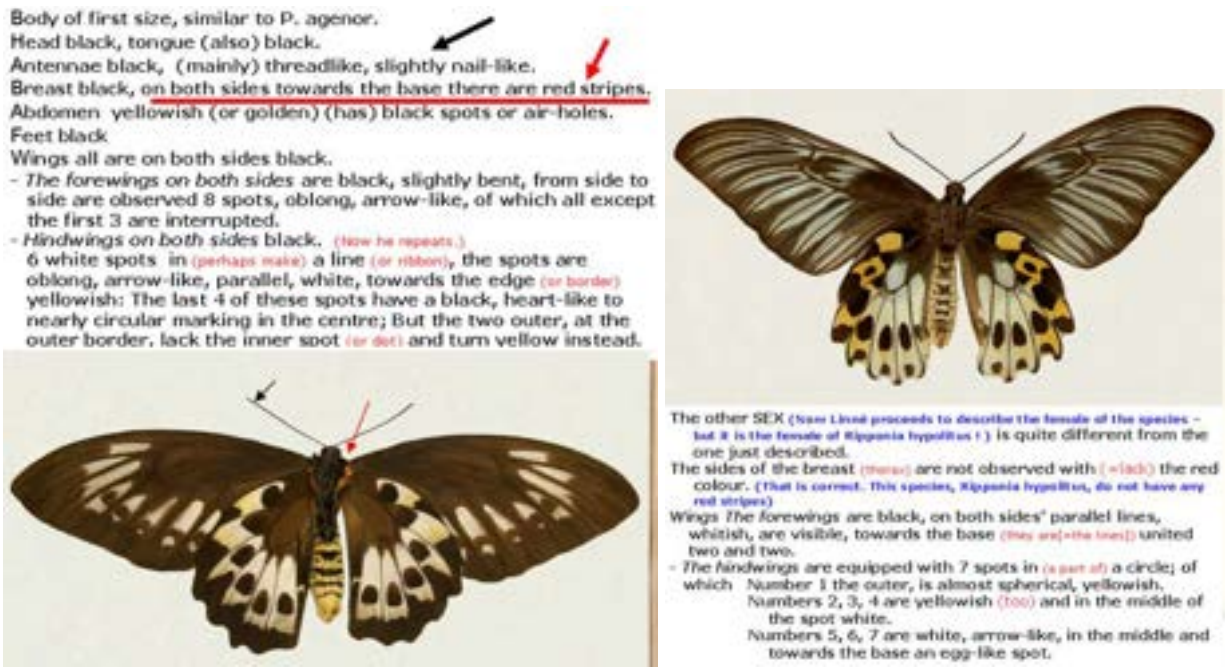
Reading the complete description in the great book *Museo Lovisa Ulrica*, page 195, we notice that he very carefully describes the red stripes on both sides of the black breast. As for almost all species, he is making references to Carl Clerck's paintings in *Icones Insectorum Rariorum.* Clerck was a close friend of Linnaeus and besides a public servant at the "Royal Swedish Tax department", an old colleague to me (!). Clerck was a much talented artist and made fantastic paintings of the Queen's most beautiful butterflies. He is also known as a splendid taxonomist, specialist on spiders. Already in the year 1757 he published his fantastic book about the Swedish Spiders with excellent hand-coloured plates and with the binominal nomenclature on all species – one year before Linnaeus' 10th edition of Systema Naturae!

The name Panthous, ΠΑΝΘΟΟΣ, alludes to a priest in Troy. It is therefore of much interest to see that he had placed a priest last but one among the 17 butterflies of Troy! We know that neither Linnaeus nor Lovisa Ulrica had higher thoughts concerning priests. It will follow logically in a position of low ranked butterflies in the Linnaeus' hierarchy earlier explained! The brown and black colours certainly reminded of a clergyman's gown. But Linnaeus could not imagine that this butterfly in reality was the female to butterfly number one, the *priamus*. Today, of course, both sexes bear the name of *Ornithoptera priamus*. Both were, like many of the other

species at that time, collected on the island of Ambon among the Moluccas. In the 18th century Ambon was an important Dutch trade centre.

In the Book of the Museum he also makes a very interesting addition. He describes also the other sex (*SEXUS alter*). Here he makes another big mistake in his conclusion and choice of name for a new species. Queen Louisa Ulrika had received a butterfly rather likely the big butterfly he described above but today we know that the species he described was a female of the species *Ripponia (Troides) hypolitus.* One thing which I cannot understand is how he could find this "*the other sexus*", as both these specimens were females! For me it is surprising that he did not see that there were two females. When handling so big butterflies it is very easy to determine the sex. How could he make that fatal error as the solution is obvious? Linnaeus was certainly equipped with a good magnifier making it even harder to understand.

This *"SEXUS alter"* in the Book of Museum and in the Queen's collection has caused much trouble among entomologists and other persons interested in butterflies. The last Trojan butterfly in *Systema Naturae* is *pandarus* and the last butterfly among the Trojans in Thunberg's arrangement of the queen's collection, when he put them in new cases, is the female of *Ripponia hypolitus*, which Linnaeus thought was the other sex, the female of *Papilio panthous!*



Part of the descriptions of the *Papilio panthous,* butterfly nr 17. in Systema Naturae 1758
Papilio panthous (female of *Ornithoptera priamus* with the red stripes and the other sex, female of *Ripponia* (*Troides hypolitus*). Please note that Linnaeus saw that the other sex did not had any red stripes and that the antennae were threadlike. You see here the Queens own specimens "restored" as we can imagine they were when the Queen and Linnaeus saw them during their meetings in the castle of Drottningholm

It was not until I could read my friend Göran Waldeck's translation of Linnaeus' description of *pandarus* I understood that Linnaeus, with his very informative and illustrative way to describe the wings of *Papilio pandarus* with twin-spots etc had described the male of the butterfly we today name *Hypolimnas pandarus*! But where is the male Linnaeus had described? We do not know. In *Systema Naturae* he had not written "M.L.U." but I just think he simply had forgotten that. In the Book of the Museum he had, as I wrote, made very carefully descriptions of it so the queen must have had it in her collection. In *Systema Naturae* he also for example had "forgotten" to write M.L.U. after butterfly no 1, the *priamus*. As we do not have any indications that he there had described any other specimen but the Queen's precious green *priamus*, a specimen Clerck, as I have shown above, also had painted with its special loop bended proboscis. I am quite sure the description in *Systema Naturae* is derived from the same specimen. Hooney and Scoble has also, quite right as I see it, selected that specimen as a lectotype for *priamus*.

After having carefully investigated in the Museum of Evolution in Uppsala, all specimens in all actual collections, I found in Thunberg's "own" collection, a single male of *Hypolimnas* ***pandarus*** in bad condition, but set on the same kind of pin as was used for Queen Louisa Ulrika's butterflies! I am convinced that this is the very specimen Linnaeus described but I do not have any good idea why we cannot find that M.L.U. specimen in the collection which Thunberg arranged in 1805.

Male of *Papilio pandarus* male with the Queen's pin and an other of the Queen's pins on her coleoptera in her museum which Linnaeus notes as a M.L.U. specimen: *Buprestis fasicularis*.

We can also note that neither Carl Clerck in his *Icones Insectorum Rariorum* from 1759 has painted that *Papilio pandarus,* nor Linnaeus has noted that his descriptions in *Systema Naturae* 1758 is based on any specimen in M.L.U. Therefore we speculate if Louisa Ulrika did not possess that butterfly in her collection before Clerck made his last paintings? Another possibility is that she found that specimen in such a bad condition that she did not like to have it in her beautiful drawers among the other attractive butterflies? Perhaps Thunberg for that reason did not place that butterfly in the Queen's collection, in spite of the fact that Linnaeus had written his very informative descriptions of the Queen's *pandarus* in the book of her Museum. Another, and most probable explanation is that Thunberg never realised that this was the *Papilio pandarus* Linnaeus had described. On Thunberg's own drawer-label over this specimen he has written "*Callisto*".

Pandarus, ΠΑΝΔΑΡΟΣ, from Lycia south of Troy, was a good archer, bow-hunter, and besides a warrior. Obviously Linnaeus and/or Louisa Ulrika consequently gave Pandarus the lowest ranking among the Greek. We here find another big mistake by Linnaeus. The female of this *Nymphalidae,* which Louisa Ulrika also had in her collection, and which Clerck has painted, he named *Pipleis* and placed it correctly among his *Nymphalidae* next to *Iris, Populi* and *Antiopa.* Probably Linnaeus, when he saw that black male, with its sensational wings, found that it corresponded to an Equites. Perhaps the condition already at that time was so bad that he thought it had lost the red stripes and therefore placed the butterfly among the *Trojani* in *Systema Naturae?* There are no red spots on its breast! I would like to show Linnaeus' own very short description of that butterfly, without any references in the 10th edition of *Systema Naturae* 1758.

Pandarus. 17. P. E. alis ſubdentatis nigricantibus albo-maculatis coloribus; poſticis flavis: ocellis ſeptem nigris.
Habitat in India.

Pandarus. 17. P. E. (PAPILIO Equites) A knight (An equestrian)) with slightly toothed white-spotted wings in a blackish ground colour:, hind wings yellowish (golden):seven black eyespots.
Lives in India.

compared with his description of same butterfly in the book
***"Museum Ludovicae Ulricae Reginae"* 1764** on page 178:

Pandarus. 17. PAPILIO E. T. alis ſubdentatis nigricantibus albo-maculatis concoloribus; poſticis flavis: ocellis ſeptem nigris. *Syſt. Nat.* 461. *n.* 17.

Habitat in *Indiis*.

Corpus ſecundæ magnitudinis, una cum artubus nigrum.

Palpi nigri linea alba.

Alæ *Primores ſupra* nigræ:
Intra marginem poſticum Maculæ 5, albæ, didymæ, parvæ.
Ante has Maculæ 8, albo-cæruleſcentes.
Ante has Maculæ 5, majores, ovatæ.

- *Subtus* ſimiles, at extrorſum pallidiores.
Maculæ didymæ, 8, marginales.

- *Poſticæ* margine repando, nigro variegato.

Supra diſco flavæ, baſi nigricantes.
Ocelli 7, nigri pupilla cærulea, ſerie transverſa digeſti, quorum ultimus verſus angulum ani pupilla gaudet duplici.

Subtus ſimiles paginæ ſuperiori, ſed pallidiores.

Pandarus.
17. PAPILIO E. T. (Equites Trojani)
A Trojan knight (should be equestrian) equipped with slightly toothed, white spotted wings in black ground colour; hind wings yellowish (golden) with seven black eyespots.

Lives in India.

Body of second size, altogether with legs in black.
Palps black, white lined.
Forewings recto in black.
Within the back edge five twin spots, white, small sized.
In front of these eight spots, white-bluish.
Forewings verso (are) similar, but towards the border (or edge) paler.
Eight twin spots (are) placed at the edges (or at the borders).

Hindwings with bulging edge, in varying black colours.
Hindwings recto have a yellowish (golden) disc, towards the base blackish.
Seven eyespots, (each one) with a blue pupil, are arranged in transverse order.
Of these eyespots is the one placed last at the back, formed (more or less) as a twin spot (or as doubled).
Hindwings verso(are) similar to recto, but (some) paler.

Now to the next group: ***Equites Achivi*, the Greek Knights**

Linnaeus starts with a very interesting innovation. He describes an extremely beautiful butterfly, ***Papilio helena***, from a painting made by the famous German painter and author Maria Sibylla Merian, who in her *Metamorphosis Insectorum Surinamensium* of 1705, had made a very nice plate with a beautiful flying "golden wing butterfly".

In the 10th edition of Systema Naturae Linnaeus only writes:

***Helena* 18. P. E.** (Papilio)(Equites = A knight - An equestrian) **with toothed wings in a black ground colour; the centre of hind wings mostly golden.**

Next lines will be comments to Merian's magnificent painting of the butterfly:
Mer. Surin. In tabula titulo praefixa, figura maxima.


METAMORPHOSIS
INSECTORUM SURINAMENSIUM
OFTE
VERANDERING
DER
SURINAAMSCHE
INSECTEN.
DOOR
MARIA SIBYLLA MERIAN.
Tot AMSTERDAM,

Linnaeus was searching for a very beautiful butterfly corresponding to beautiful Helen, ΕΛΕΝΗ, who likewise Louisa Ulrika also was a Queen. Maybe they searched in Louisa Ulrika's collection to find such a butterfly, but probably they did not find any.

About the same time as the *Systema Naturae* was printed - the manuscript was in fact signed by Linnaeus May 24, 1757 on his 50th birthday! - Queen Louisa Ulrika received a butterfly which both she and Linnaeus obviously thought was the same species as Merian had painted in her book. But the butterfly we today see in the collection in Uppsala is a *Troides oblongomaculatus* from Ambon. You can check the photo of all the butterflies I have arranged after Linnaeus system and the actual butterfly do not bear the name "*Helena*", as he originally named it after Merian's painting. In my arrangement I have a real *Troides helena helena* from Java to the left and a *Troides oblongomaculatus oblongomaculatus* from the island Ambon to the right.

The Merian butterfly paintings were often showing Surinam species. But here an exception occurred as the "golden wing butterfly" was collected on the island of Java. But consequently Linnaeus was mistaken as he assumed the butterfly was breeding in Surinam as many or most of Merian's butterflies. Because of this Linnaeus writes that the butterfly flies among "*floribus* Arecae *Americes*". What a guess! And a lapsus too...

Greek butterfly no 2 ***Papilio menelaus*.**

Menelaus ΜΕΝΕΛΑΟΣ, was a King of Sparta and the husband of beautiful Helen. Obviously both Linnaeus and Lovisa Ulrica had chosen one of the most beautiful butterflies in her collection for such a King. This blue Morpho breeds in Surinam and with his blue shining wings it must have made them both enthusiastic. A perfect butterfly for a King!

Maria Sibylla Merian had also painted this butterfly and Linnaeus referred in his Systema Naturae to that plate. In spite of this notice, I am quite sure, at a very high percentage of probability, that it was the Queen's butterfly he used for the choice of name. It is not logic that Linnaeus first describes all these "Greek" and Lovisa Ulrica then managed to buy just that particular species after the year of 1758. At that time her interest for the butterflies unfortunately had been somewhat reduced depending on many circumstances.

The 3rd *Achive* butterfly, ***Papilio ulysses***.
Odysseus ΟΔΥΣΣΕΥΣ, the Greek name, was a King of Ithaca and one of the main leaders of the Greek army fighting against Troy. He had also once been one of the suitors who had tried to win Helen as wife. Obvious Odysseus must be honoured with one of the most beautiful and powerful swallowtails in the Queen's collection.

Here I would like to add that concerning Lectotypes I do not agree with the Honey and Scoble suggestions. They have designed a specimen in the Linnean Society labelled "Ulysses" 748, rariss:" (by Smith) as Lectotype. I find it more accurate to choose the male specimen of Papilio Ulysses kept in the Queen's collection as Lectotype. I have many reasons for such a suggestion, which I would like to explain here. In spite of the fact that Linnaeus did not write M.L.U. concerning this species we can be quite sure that he described the Queen's specimen as he did not write any other reference to the butterfly. According to my opinion it is also obvious that it is the very specimen we keep in the collection in Uppsala. Clerck painted it and as he only painted the Queen's specimens, this one has to be the specimen owned by the Queen.
By the way, Linnaeus did not possess any specimen of this rare and expensive butterfly at the time when he described the butterflies. If I compare the two photos showed below, I find them identical in many ways. Look at the settings of wings! Please, also notice the place of the small dot at the end of the cell of forewings. Compare also the veins of wings and the clear grey field on the sub marginal area of forewings. The fact that the Queen's specimen has lost its abdomen and the tail on right hindwing we of course regret, but there is no reason to disqualify Louisa Ulrika's specimen because of that. Thus, I find it consequent to select this specimen as the Lectotype when the specimen of Linnaeus' *Papilio diomedes* is selected as a Lectotype. In the book of *Museum Ludovicae Ulricae* Linnaeus also has presented very detailed descriptions of this specimen.

Papilio ulysses in the Queen's collection in the Museum of Evolution in Uppsala and Carl Clerck's panting of the Queen's *Papilio ulysses* in his *Icones Insectorum Rariorum.* The same specimen? Lectotype?

The 4th *Achive* butterfly is ***Papilio agamemnon.***

Agamemnon, ΑΓΑΜΕΜΝΩΝ, was Menelaus' brother and one of the most important of the Greek Kings. Already the first time when I saw that butterfly, which Linnaeus probably with assistance of Louisa Ulrika had chosen for this great King of Mycenae the commander in chief of the Greek army and fleet, my first thoughts were focused on the black wings with lots of light yellow-green spots which made the wings looking like a crown of a King, especially if you focus on the forewings. I believe that Linnaeus or/and Lovisa Ulrika noticed that too. We must here remember that Lovisa Ulrica was very interested in the Greek Antiquity and as sister of Frederick the great Fredrik the Great of Preussia she knew well the signs of a great leader.

I myself have thought a lot about how it came about that Linnaeus chose to use the names in Homer's Iliad for all of Lovisa Ulrika's stately Papilionids. I actually think that the idea for this choice originates from Lovisa Ulrika herself, i.e. that we have our brilliant queen Lovisa Ulrika to thank for naming so many of our most stately butterflies precisely Knight butterflies with names based on Homer's Iliad. The interesting thing is who came up with the actual idea for this! I think it was her idea!

It is otherwise hard to understand why Linnaeus or Linnaeus & Lovisa Ulrika together had selected this very small butterfly for such an important King as Agamemnon but we also know that King Agamemnon was disliked by many Greek, especially Achilles. Because of this we perhaps also can imagine that neither Linnaeus nor Louisa Ulrika was impressed by Homer's commander Agamemnon even if they were forced to place this important and famous Greek among the Achivi.

The 5th butterflies among the Greek, ***Papilio diomedes.***

Diomedes, ΔΙΟΜΗΔΗΣ, was Odysseus' closest friend and the second best warrior of all men in the Greek army. Here we find a good example of Queen Louisa Ulrika's or Linnaeus' knowledge in Greek mythology. They must have known that Odysseus was close to young Diomedes, nearly as a father. Because of this we easily can understand why he chose a butterfly so close by appearance to the butterfly he had chosen for Odysseus, the *ulysses*. Already a few years after Linnaeus' death it became obvious for the scientists that Linnaeus´ two *Equites Achivi* nr 20 *Papilio ulysses* and nr 22 *Papilio diomedes* in fact were male and female of the same species!

The Lectotypes of Papilio ulysses + Papilio diomedes and Papilio leilus + Papilio patroclus restored as we imagine they looked when they were stored in the Queen's original cases.

Next thing to deal with is the most strange "butterfly" among all Linnaeus "swallowtails" :

Papilio Equites nr 23, *Achive* nr 6. ***Papilio patroclus***

We here have a good example to show how Linnaeus left and ignored his own excellent system to arrange the Lepidoptera. As I already have written he in his key had made a very strange exception to the rule how he divided lepidoptera in three groups depending of the antennae. If he

had acted after his own rules he never would place this moth, an *Uranid,* among the genus *Papilio.*

I have been thinking a lot about how Linnaeus acted and I have been trying to understand why he made such mistake and I believe I have found an explanation. At first I thought that the fragile antennae had been broken so he could not investigate the antennae at all but then we read Systema Naturae and his notes "*Antennae filiformes*", we realise the antennae are still there.

What made him make his mistake? There are some alternatives.
Both *patroclus* and *leilus* had their wingscape in a form which he had chosen as a model to select the *Equites* from the other *Papilio*. In his key to the division of the six phalanges of the true butterflies, the *Papilio,* he wrote: *Alis primoribus ab angulo postico ad apicem longioribus, quam ad basin;* which means that "The forewings are from the back corner to the tip longer than the base (line)" or as we say today: the outer margin of the forewing is longer than the inner margin.

Forewing of Linnaeus' Equites

Clerck's painting of *Papilio patroclus* in *Icones Insectorum Rariorum*

Linnaeus had also noted that the big butterfly *priamus* obviously had lost its antennae, but the big *panthous*, the female of *priamus*, had very long and thin antenna without any real club at the tip. That he did not write in *Systema Naturae* but in the book on the Queen's Museum we can read, as I have quoted above: *Antennae nigrae, filiformes, vix manifeste clavatae,* Antennae black, threadlike, slightly nail-like/club-like. Probably he therefore accepted this beautiful long-winged moth "*Papilio patroclus*" as an Equites?

A very interesting thing is to notice when Linnaeus wrote, in the text to introduce the butterfly in the Book of the Queen's Museum, that the butterfly obviously still had its antenna left, but when Carl Clerk painted that butterfly, before his book was published, from June 1759 to 1764, he only marked the antennae with small dots in a row. We can make a conclusion that he, already a long time before the 10th edition of *Systema Naturae* in 1757/1758 was edited, had written the text to Queen Louisa Ulrika's book about her butterflies in her museum. Then it lasted another six years after *Systema Naturae* until her Book of Museum was published in 1764. During these years the Queen had lost much of her interest in her collection and therefore she was not, at that time, willing to spend more of money by printing the book. We assume that when Linnaeus started the work with this book about in 1754, ten years before it was published - according to his preface words - his ambitions were to compose a new book as beautiful as his book of the King's collections, printed in 1754 or with his own words: "that this catalogue with its coloured contents, would result in "magnificent fireworks, enlightening the whole world".

Patroclos ΠΑΤΡΟΚΛΟΣ was a young famous warrior and Achilles best friend. He was killed by Hecor in a single combat. If you look at the wing you might perhaps imagine that Linnaeus saw a white line over the wings as military marking or stripe. We note similar stripes on the wings of *Papilio achilles* but the stripes are here blue on a black bottom. When we talk about Achilles we can, as I have written before, also be surprised that Linnaeus had ranked this, the most famous of all Greek or "Antic /historical" warriors ever, that low. It is rather strange that Achilles, who later was so admired by famous kings and emperors as Alexander the Great, Caesar and Napoleon, not achieved a better ranking than no 15 of total 23 *Achives*! According to my opinion it was quite consequent and corresponded well to the thoughts and feelings, which were present at both Linnaeus and queen Lovisa Ulrika concerning the dirty business of warriors and soldiers.

The 8th Achivi, Equites 25, ***Papilio leilus***

When Linnaeus would determine the "Papilio" he named leilus he once again did not follow his own system. Was it depending of queen Louisa Ulrika? She had received an extremely beautiful green-shimmering "swallowtail", which of course must find a place among her most beautiful butterflies. It had no red stripes beneath the abdomen, and even the shape of wings made it look as it would be placed among the Equites, thus, it was supposed to be among the true Achivi. The problem that this species, like that of specimen of *Papilio patrocles*, had tread-like antennae, Linnaeus already before had mentioned as an alternative in the precautions for this phalange, that sometimes exceptionally a species would be equipped with tread-like antennae!

For us who study both Greek Mythology and Linnaeus' butterflies we here encounter another problem. In Greek Mythology we do not find any "leilus". The most similar name is Leitus, ΛΗΙΤΟΣ, who were a famous Greek warrior, son of Lacritus and Cleobule from Boeotia. This Letius sailed with King Agamemnon's fleet with twelve own ships according to Hyginus´ Fabulae. We accordingly suppose that this Letius must be the Greek hero Linnaeus or Louisa Ulrika had in their view when this butterfly would be named. By its sword-like hind wings and black stripes spread over the green-shimmering wings, this day flying moth Urania leilus, of the Uranidae family, must have been a perfect representative for a Greek hero.

Here I also like to celebrate Maria Sibylla Merian for her beautiful painting of day-flying moth. She correctly painted the species with the thickest part of the antenna in the middle like an antennae of the *Sphingidae*. As a colleague of occupation to Carl Clerck, I unfortunately have to blame him a bit for painting *Papilio leilus* with club-like antennae instead of the thread-like ones which were obviously were at hand!

Urania leilus in Maria Sibylla and the same species painted by Clerck in his *Icones Insectorum Rariorum*

Next Papilio will be the Equites 27, ***Papilio machaon*.** Achivi number 10

This Papilio was the only species which Linnaeus had seen alive and which butterfly he in his *Fauna Svecica* of 1746, already had described. He gave this magnificent butterfly the name of a Greek physician. We suppose that he, by this butterfly, which he so many times as a young boy had observed in the woodlands of Småland, found something most convenient for a Greek hero and besides corresponded to himself – a physician! In fact, Linnaeus started his career as a physician. He became more and more popular as he seemed be able to cure even "dirty" diseases, as for example syphilis. Later he was appointed a professor of medicine at the University of Uppsala.

Homer mentions two Greek medical doctors in his epos of Iliad, namely the brethren Machaon ΜΑΧΑΩΝ, and Podalerius, ΠΟΔΑΛΕΙΡΙΟΣ. They were both sons of the God of healing art, Asclepius. It is hard to believe that he did not make any connection to himself, and the only European *Equites* he describes are just these two, *Papilio machaon* and *Papilio (Iphiclides) podalirius*. Is there ever a better way to name them after physicians. We also note that he placed them both in ranking before the great hero Achilles!

Talking about the butterfly *Papilio machaon*, I am still very sad we did not, during the 9th Swedish Entomological meeting in Gävle in the summer 1998, could choose the *Papilio machaon* to our Swedish national insect. Maybe we were not brave enough, or not sufficient proud of the butterfly, to bring this matter in public. However, I am sure Linnaeus would have supported such a suggestion!

The 11th Achivi, Equites 28, ***Papilio antilochus***

Antilochus ΑΝΤΙΟΧΟΣ, a prince of Pylos was one of the youngest and bravest of the Greek warriors. He was also known for his beauty. At least for me it is quite easy to understand that this extremely beautiful yellow North American swallowtail, which the Queen probably had received from Linnaeus' disciple Pehr Kalm, was depending on their taste of beauty. (synonyms: *Papilio glaucus, Papilio turnus*)

Equites 29 ***Papilio protesilaus***

The young warrior, Protesilaus ΠΡΩΤΕΣΙΛΑΟΣ, among the Greek troops was the first Greek who leaped from the ships upon the Trojan coast and he also was the first Greek to be killed in the war against Troy. I often wonder if we can see a connection to this young man and the only white butterfly among all the "swallowtails" the Queen had in her collection? This delightful butterfly also has thin black and blood-red stripes across the underside of the hindwings. One of the Queen's two specimens is namely also set in verso position in the drawer to show the stripes. Is that a good hypothesis? We, who study Greek Mythology, also reflect about how Protesilaus' wife Laodameia after his death, by help of the infernal gods, during three hours met him. This great story and what happened afterwards, is really something which perhaps made impression, not at least to the Queen.

Papilio podalirius (Equites 29b)

Concerning *Protesilaus* we can note a small curiosity. As a foot-note after rather long descriptions on Protesilaus, Linnaeus wrote: "*Simillimus* Podalirio *Europae australis & Africa*; *an sastis diversus*"

This beautiful butterfly *Papilio podalirius* we in Europe know very well as it, as Linnaeus wrote, is breeding in south Europe and Africa. The Greek Podalerius, ΠΟΔΑΛΕΙΡΙΟΣ, was, as his brother Machaon, son of the God of healing art, Asclepius. This rather common butterfly of south Europe, fly in Spain and North Africa as the subspecies *feisthemelii*. When we look in the collection of Uppsala and in the Linnean Society there are only two females of this butterfly and both are of the Spanish/African ssp *feisthamelii*. But if we look at the original description in the book about *Museum Loudovicae Uricae* he first mention: Raj. Ins. III. N. 3. The international Commission on Zoological Nomenclature has designated the illustration in Ray 1710 to represent the lectotype of *podalirius* (ICZN, 1954:331, Opinion 263). Because of this we today name the forma of southcentral Europe, *Papilio podalirius podalirius*. This nice butterfly we also have seen a few times in south Sweden.

Equites Achivi 30 and 31 ***Papilio nestor*** and ***Papilio telemachus***

After the foot-note of the *Papilio podalirius* Linnaeus described two famous and beautiful butterflies which we today find under the genus *Morpho*. Here he used two of the very beautiful paintings of the illustrations in Maria Sibylla Merian´s book *Metamorphosis Insectorum Surinamensium* as ”types” for the species of *Papilio nestor* and *Papilio telemachus*. At the time of printing of *Systema Naturae* in 1758, the Queen probably did not possess any of these species, but in Thunberg's collection in the Museum of Evolution in Uppsala, we encounter specimens of the actual species.

Maria Sibylla Merian's plates 9 and 68 where she has painted 2 different beautiful butterflies which Linnaeus used for his descriptions Achivi 30 and 31, Nestor and Telemachos. Today we know them as female of Morpho menelaus and Morpho telemachus.

As I already have mentioned Merian's great book *Metamorphosis Insectorum Surinamensium* must have been available to Linnaeus and the Queen. We therefore have good reason to believe that at least Linnaeus liked to add these two extremely beautiful illustrations to his list of Papilio as they both, by shape of their wings, quite fulfilled his norms for an Equites.
Both these butterflies were of course good species to represent the famous Greek Nestor ΝΕΣΤΩΡ and Telemachos ΤΗΛΕΜΑΧΟΣ. The old and wise Nestor was the Leader of the Pylians against Troy. The young Telemachos was son of Odysseus. Maria Sibylla Merian's paintings of *Papilio nestor* is superb, even if the blue colour is too dark now. But the painting of the butterfly on plate 68, which Linnaeus named *Papilio telemachos*, is not so good, probably most depending on the colours. Probably we shall not blame Merian for that as old blue colours unfortunately tend to become slowly darker. We can notice this on Carl Clerck's plates in his *Icones Insectorum Rariorum,* especially concerning the blue *Morphos* and *Papilio ulysses*. In Thunberg's own collection we today can see a specimen of *telemachos* but I think we can be sure that this butterfly never belonged to the Queen.

Equites Achivi number 32, ***Papilio achilles.***

Here Linnaeus first notes that the specimen belonged to the M.L.U. (Museo Louisa Ulrika) and thereupon, on next line, he referred to Maria Sibylla Merian's painting showing the species. Thus, the Queen's specimen will become a "type" of that species. In the drawer, this specimen is placed in upside down so you might be able to admire the characteristic spots Linnaeus duly describes. He is also describing the recto position with the light-blue ribbon across the dark-blue wings. Perhaps these beautiful stripes were associated with a special military uniform. In Sweden we had in the beginning of the 18th Century typical blue uniforms, which were worn by the soldiers, "the Carolines" - of the famous King Charles XII.

I know that our Swedish King as other prominent leaders like Tsar Peter the Great, Napoleon, Caesar and the greatest of them all, the Greek King Alexander the Great, all were very impressed by Achilles, ΑΧΙΛΛΕΥΣ, and had considered him being the best commander in chief ever. During the Trojan war he killed more than 50 Trojans, among them their leader Hector, but there was also a conflict with the Greek commander in chief King Agamemnon concerning a beautiful girl named Briseis. Finally he was killed by a Paris by assistance of Apollo, the god.

The Lectotype of *Papilio achilles* (a bit restored as it would have been in 1751 - 1754)
Stored in the collection of Louisa Ulrika in the Museum of Evolution in Uppsala.

The 35th Achivi, ***Papilio demoleus*** and demodocus

We now have to deal with a butterfly complex, which caused at least for me a lot of trouble as we here have two species closely related to each other, both in appearance and names, but one of them is breeding mainly in Africa and the other have its main extension in the South East Asian area. The actual Papilios are the Asian *demoleus* described by Linnaeus in 1758 and the *demodocus,* described by Esper in 1798. This species together with *Papilio panthous*, *Papilio pandarus* and Linnaeus' 26th Achivi *Papilio ajax*, which I leave over to a planned book about Linnaeus' butterflies, are the species which have caused most problems for us who try to state which specimen he originally used as model when he introduced the new species in the 10th edition of *Systema Naturae* of 1758.

I have been wondering some about the names, as the Greek Demoleos, Δημολέος, is not mentioned by Homer in the epos of the *Iliad*. However we know that Demoleos as a Greek, who had been defeated by the well-known Trojan warrior Aeneas, a son of Anchises and Aphrodite. Aeneas was one of the few Trojans who survived the battle of Troy. The only thing we know about Demoleos is that his coat of mail was offered by Anaeas as a prize of the games which he celebrated the victory in Sicily during his long wanderings to Italy after the battle of Troy.

It is hard to believe that Linnaeus thought of that person when he was searching for a name to the yellow and black Papilio without tails but with two red "blind" eyes on the hindwings.

We find Demodocos, Δημοδόκος, in the epos of Homer's *Odyssey* as the famous bard who according to the fashion of the heroic ages delighted the King Alcinous' guests during their repast by singing about the defeats of the Greek and Trojans, but he is also known as the blind singer, who composed a poem about the destruction of Troy. I have often wondered if Linnaeus observed the "blind" eyespots of the hindwings of the butterfly we today recognize as *Papilio demoleus*, a circumstance which could refer to the blind singer Demodocus ?

Fig. 69
The Queen's two P. demoleus

Fig. 70
The Queen's P demoleus no. 1902

Fig. 71
The Queen's P demoleus no. 1903

"*Papilio demoleus"* in the Queen's collection in the Museum of Evolution, Uppsala University.
Both these specimens, number 1902 and 1903, are good examples of the African *Papilio demodocus* !

A noticeable thing is that Linnaeus in his *Systema Naturae*, under *Papilio demoleus* had written that it is a M.L.U. specimen. And, besides, he adds that the species is breeding in Asia, *"Habitat in Asia"*. If we check the specimens in the M.L.U. collection which Thunberg arranged in 1805 there is no Asian *Papilio demoleus*, but instead there are two specimens of the African *Papilio demodocus* !

If we look what Linnaeus has written in his description of Papilio demoleus in *Museum Ludovicae Ulricae* of 1764, it is at least for me obvious that he is describing the particular African species we find in the collection in the Museum of Evolution in Uppsala.

He starts his descriptions with "Habitat ad Cap. B. Spei. Tulbagh". which means that the specimen was breeding at Cape of Good Hope in South Africa. Then he describes the antennae, the thorax and the abdomen. During the investigation of the wings, he writes as follows:

"*A yellow ribbon leads from the back angle towards the tip of the forewing, but it is in the front greatly interrupted by scattered spots. The back angle of the hindwing has a black eyespot, the lower part of it is scarlet coloured, and the upper part is violet*".

As far as I can see it this is an excellent description by Linnaeus where he with only few words describes the overside of the wing of the African *Papilio demodocus* and if we look at the *Papilio demoleus* which Carl Clerck has painted in his *Icons Insectorum Rariorum* it is without no doubt that it cannot be that specimen he describes! That butterfly has absolutely no yellow ribbon on its underwing and if you look at the eyespot at the angle of the hindwing it is mainly red with only a thin black-blue line on the upper part.

Fig. 72

Left side of Clerck's own demoleus demoleus

Fig. 73

Clerck's painting of Papilio

The left side of Clerck's own best *Papilio demoleus* compared his Tab.6. fig 1 in *Icones Insectorum Rariorum* approved by Linnaeus as Demoleus.

Now to next question. Where is the specimen Clerck painted? As far as we know Linnaeus did not possess any own *Papilio demoleus* at that time when he wrote the description in *Systema Naturae* in 1758. During many years I thought that Clerck perhaps had painted a specimen from the Thunberg collection. This specimen is much similar to Clerck's painting but continued investigations have convinced me that Clerck this time painted his own specimen of the Asian *Papilio demoleus*. We know today that he had received some tropical butterflies from Pehr Osbeck in 1758, and he started to paint these in 1759. Today we are lucky to discover at least some parts of Clerck's Asian butterflies in his cabinet at the Museum of Natural History in Stockholm.

In his drawer, he has placed several *Papilio demoleus*, and we can notice a specimen exactly corresponding to his picture if we study the left forewing and the hindwings. The wings on the right side are damaged. When we look at this painting we must remember that when an artist at that time painted a butterfly, he normally started by a drawing on a paper of one side of the butterfly. Next moment was to turn the drawing and attach it to another paper. Now he rubbed the paper and obtained a mirror-like drawing on the paper attached. Thus, after putting the papers together, both sides of the butterfly became identical and the artist was able to continue his work.

Fig. 74
Fig. 75
Clerck's own demoleus cabinet-drawer

Clerck's own best Papilio demoleus

Carl Clerck's own cabinet-drawer with his *Papilio demoleus*. Right his best *Papilio demoleus* which probably is the model for his painting in *Icones insectorum Rariorum*

To Science this picture is much interesting, but not as a type specimen for the species, as Clerck made this painting, Plate 6 Fig 1, during spring of 1759, one year after Linnaeus had published his *Systema Naturae*. This painting was named "Demoleus 35" (Equites number 35 in the 10th edition of *Systema Naturae* 1758) and was approved by Linnaeus. As I already mentioned Clerck made the first edition in order to attract Queen Louisa Ulrika's attention to a special book representing all her beautiful, tropical butterflies.

There are some conclusions to make. The first thing which makes me rather surprised is that Linnaeus did not observe that we here have to deal with two different species, especially when he so carefully had described the yellow ribbon and the red, black and violet eyespot on the hindwing. A consequent question is, of course, if the Queen had any Asian *Papilio demoleus* in her collection, when Linnaeus or they together made a system for her swallowtails ? This is possible, but it presupposes that it has disappeared and that Linnaeus, when he wrote the descriptions in the book of her museum, he did not discover that there were actually two different species.

I cannot find a good answer to this question, especially as we know he worked with the book of her museum already when he was dealing with the book about the King's collection, published in 1754, four years before he published the 10th edition of *Systema Naturae*, in which he only shortly describes the *Papilio demoleus* as follows:

Fig. 76
Linnaeus Latin descriptions of Demoleus

When we read his brief description, we perhaps have the solution of the problem.
We know that the Queen had two African *Papilio demoleus* in her collection, but probably neither she nor Linnaeus knew exactly where they came from. He had seen the picture by Ehret which he is referring to and he knew that his picture was a butterfly collected in Asia. The text descriptions is so undefined, that it could be either a *Papilio demoleus* or a *Papilio demodocus.*

Demoleus 35. A knight butterfly with toothed wings: with yellow spots and a ribbon consisting of yellow spots; the hindwings have two eyespots. M.L.U.
Ehret's painting picture 5
Lives in Asia.
A blue eyespot at the front border, a red one at the back angle.

The second conclusion is that it is most likely that one of the African specimens in the Queen's collection really is the Lectotype for the *Papilio demoleus*. Martin Honey and Malcolm Scoble write in their article, that they "have maintained stability by selecting the MLU syntype labelled "Demoleus" as Lectotype" for *Papilio demoleus*. I cannot agree to their opinion as both of the specimens are the typical representatives of the African *Papilio demodocus*. Aurivillius, who really was an expert on African butterflies, correctly stated in 1882 that the *demoleus* was the African species and *erithonius* consequently represented the Asian species. But already three years later, in 1885, Rothschild "considered it to be "unsatisfying" by using" the name *demoleus* for the African species.

Syntypus means that a specimen has the same appearance as the *typus forma*, in this case *Syntypus* would signify to be equal by appearance to the actual and chosen *Lectotypus*.

If the Queen's African specimen would be designated as the Lectotype of Papilio demoleus, a statement which Linnaeus obviously would approve, and the Asian species would bear Cramer's old name for this species *Papilio erithonius*, as we notice it in Thunberg's collection! Today it is almost impossible to change these well-established names.

Fig. 77
Thunberg's Erithonius Cramer

Papilio demoleus (*Erithonius* Cramer) in Thunberg's collection.

By my notes I would like to tell how troublesome it sometimes might be to interpret many descriptions by the old authorities. Next question is: Which specimen would become designated as a Lectotype for the *Papilio demoleus*? According to my opinion, Carl Clerck's model for his painting was approved and determined by Linnaeus as a *Papilio demoleus*

The 38th Achivi: ***Papilio nireus***

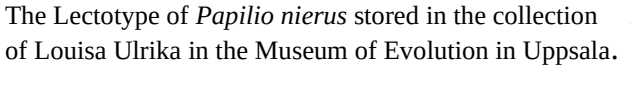
Nireus, Νιρεύς, son of Charopus and Aglaia was in addition to Achilles and Antilochus, among the handsomest of the Greek warriors. Their beauty became in time proverbial. Was is the Queen or Linnaeus himself who wanted to name the Queen's nice butterflies after this beautiful young man? I cannot believe that the Queen, with her special interest in Antic arts and literature did not hand over to Linnaeus any suggestion of suitable names to her butterflies. This true swallowtail, *Papilio nireus*, is a very beautiful African butterfly. Its upperside has a velvet black ground colour with blue-green shimmering stripes across the wings.

Papilio demophon, the Achivi 39

Again Queen Louisa Ulrika had two specimens which Linnaeus obviously thought was representing the same species. Carl Clerck has made an excellent painting of one of them on Tab. 29 fig. 2. Mas 36. We can see that he has painted both the upperside and the underside of the butterfly. If we, in the book of *Museum Ludovicae Ulricae*, read the detailed description of the butterfly which Linnaeus named *demophon* we can see that he has described both the male and the female. The specimen which Clerck has painted is definitively a male. This male we unfortunately cannot find in the M.L.U. collection today and when Thunberg made his list over the butterflies in the Queen's collection in 1804 he only mentioned one single specimen. The butterfly which we still today have in the collection in Uppsala is possibly the specimen which Linnaeus thought was the female of demophon. Today we know, which already Aurivillius found out, that this female is of an other species which Hübner 1811 described as *laertes*.

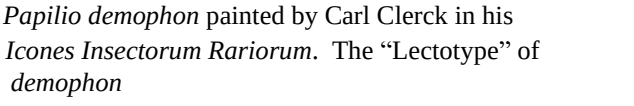
In the Linnaean Society there are, as far as I can understand, at least one specimen, labelled by Smith as a "*Demophon*" but that specimen is not identical to that which Clerck had painted in his *Icones Insectorum Rariorum.* Therefore I quite agree with M.R.Honey and M.J.Scoble when they write that "the identity of demophon is based, therefore, on the Clerck figure of the male"

Fig. 78
Papilio nireus, Lectotype



The Lectotype of *Papilio nierus* stored in the collection of Louisa Ulrika in the Museum of Evolution in Uppsala.

Fig. 79
Clerck's painting of Papilio demophon



Papilio demophon painted by Carl Clerck in his *Icones Insectorum Rariorum*. The "Lectotype" of *demophon*

About Demophon, Δημοφῶν, we know that he, a son of Theseus and Phaedra, accompanied the Greek against Troy even if Homer in his epos does not mention him at all. In Troy he effected the liberation of his grandmother Aethra, who was with Helena as a slave. Could that story be the source when Linnaeus or Louisa Ulrika chose the name for the butterfly or was this very powerful black butterfly with turquoise-blue stripes across the wings just a good model for a good warrior ? Demophon and Demophoon are identical names in Greek Mythology. But Hübner chose the second name for a species similar to Linnaeus' *demophon*, *Archaeoprepona demophoon.*

Achivi 40 ***Papilio philoctetes***

Linnaeus finished his descriptions of the Achivi with *Papilio philoctetes*. Philoctetes, Φιλοκτήτης, was the most skilful archer in the Trojan War. In Greek Mythology we read a lot about him, for example that he was one of the suitors of Helen and that he sailed to Troy with seven ships. Perhaps he is most famous because of he managed to kill Paris/Alexander at the end of the war. We can of course also wonder why Linnaeus, or he and Louisa Ulrika, placed the famous archers Pandarus and Philoctetes on the last place among both the Trojani and the Achivi? Didn't they like archers, or was it just because they were simple warriors?

The butterfly *Papilio philoctetes* is one of the most beautiful and also the rarest butterfly which the Queen kept in her collection. I think that the violet-blue shimmering hindwings, with its blue twin eyes, associated well to the famous archer. Linnaeus also, in the book about the Queen's collection, just after, before the references to *Systema Naturae* and to Clerck's painting, wrote that the hindwings had two blue eyes with black pupils. After the references he made very detailed descriptions of that interesting butterfly which we today know as one of the about 20 species of the much interesting genus *Antirrhaea* breeding in south Central America and in the Amazon Basin of South America. This genus is closely related to the genus of *Morpho*.

If we take a closer look at this buterfly we find another example of Linnaeus leaving his basic system of dividing his first phalange, the Equites. The characteristic feature for the first phalange consisted in "the forewing from back corner to the tip would be longer than the base" but if we investigate this *Papilio philoctetes* we notice that the base line, the inner margin, is the longest! Therefore, if he had followed his own system rules, the butterfly would have been placed among the *Nymphales*, in phalange D, in the subgroup of *Gemmati*: "with eyespots only on the hindwings". There Linnaeus for example had placed *P. cardui, P pipleis* (female of *Papilio pandarus*) and the beautiful *P. iris*. We might wonder why he could make such a mistake! Was it because the Queen wanted to keep this beautiful butterfly among her Equites, or was it because they needed an archer on the last place among the Achivi, like the *Papilio pandarus* among the Trojani whose base line also was the longest, as a true species among the Nymphalis ? I can only admire his system, but if he consequently had followed his own system he should have placed the

quite different appearance of sexes of *Papilio pandarus* in the same group, even if he did not discover that they were the representatives of the same species !

Fig. 80
Clerck's painting of P. philoctetes

Fig. 81
Queen's Papilio philoctetes

Carl Clerck's painting of the Queen's *Papilio philoctetes* and the Lectotype in the Museum of Evolution in Uppsala. If we look at the painting we observe that the specimen lacks the antennae as Clerck only painted them with small dots. We also notice that the Lectotype unfortunately, like many of the other specimens in the Queen's collection, has been badly eaten by vermins during the past 250 years which have passed since Clerck made his paintings. Probably damage of specimens occurred already in Drottningholm Palace, not at least after Louisa Ulrika had passed away, and before the collection was transferred to Uppsala.

Papilio hecuba

When we look at all the butterflies Linnaeus and the Queen had chosen in the 10th edition of his *Systema Naturae* for the famous persons in the Trojan War, we might wonder why they did not name a butterfly after the glorious Queen Hekabe of Troy, Ἑκάβη, mother of the most famous princes of Troy. We can speculate about why, or if, they did not find any butterfly beautiful enough and sufficient "feminine" for the Queen Hekabe. It was not until thirteen years later, when Louisa Ulrika probably had lost much of her interest in the butterflies as Linnaeus, who obviously must have been thinking about that gap, finally found a butterfly worthy the Queen of Troy.

As far as we know today Linnaeus at first did not find any specimen for the Queen of Troy. In his last description of new butterflies, *Mantissa Plantarum, Altera, Animalia Insecta page 534 – 535, published in 1771*, he describes under PAPILIO. E. T. (Ecuites Trojani) a big red butterfly with black margins. This huge butterfly we today know as *Morpho hecuba*. His descriptions most probably are taken from a painting by Daubenton. This big and extremely beautiful butterfly, with its wings like a red cloak swept around the body is, according to my opinion, a perfect choice for a famous Queen! The glorious underside, which is clearly shown in detail on Daubenton's painting, will also associate to an important person. But here we find another example that Linnaeus did not always follow his own system.

This *Papilio hecuba* does not show any red stripes on the abdomen so it would consequently be placed among the Achivi if he had followed his original system. But as Hekabe was the Queen of Troy, Linnaeus of course had to place the species among the Trojani.

Fig. 82
Daubenton's Papilio hecuba

Fig. 83
The Wooden Horse

Daubenton's painting of the butterfly Linnaeus named *Papilio hecuba* in his *Mantissa Plantarum* 1771

The oldest picture of the Wooden Horse with the Greek warriors hide inside the horse.

The Wooden Horse

About The Wooden Horse and how Linnaeus chose his names.

After my first studies of Linnaeus' names on his Equites, I have wondered a lot about what principles he followed, or if he had any rules at all, when he selected the names he used for the Queen's "swallowtails". Accidentally I found an interesting coincidence, which does not necessarily mean anything special, but it is so remarkable that I would like to mention it here as I do not think anyone during the past 250 years, which have passed since he made this list, has thought much about this matter.

I consider the Greek names were used as a model of the Achivi. This is valid especially concerning the Greek, with a few exceptions, who were hidden in The Wooden Horse when the Greek fleet left Troy. In the epos of Homer's *Iliad*, the Trojan War, a large number of Greek warriors are mentioned. When the Greek left Troy, after constructing the big Wooden Horse as a gift to Troy, about 40 Greek warriors were hidden inside the horse. Of these Linnaeus, or he and Louisa Ulrika together, chose Greek names for the 23 "swallowtails" without any red stripes on the breast. Twelve of these were hidden in the horse!

Of the remaining eleven Achivi, seven had already been killed by the Trojans during the war before the Wooden Horse was constructed. One of the other four was Helen and the other three was Agamemnon, Nestor, Telemachus and Leilus. Among these, king Agamemnon was not able to enter the horse as he, the commander in chief of fleet, brought all the Greek ships to the island of Tenedos just southwest of Troy, so that the Trojans would believe the Greek had left Troy for good. Nestor was too wise and too old to enter the horse. The very young Telemachus was probably not allowed by his father Odysseus, to accompany the other Greek heroes on this dangerous expedition. Odysseus originally got the idea to construct the horse. Leilus or Letius also sailed with his ships together with Agamemnon to Tenedos.

In 1771 Linnaeus also added another hero Thoas, Θώας, to the others. The butterfly *Papilio thoas*, Linnaeus described in his *Mantissa Plantarum* of 1771, is his last description of butterflies. Summary: Perhaps my hypotheses are just fantasy and unrealistic, but I find such distinct patterns in Linnaeus choices of Greek names, that these have to be more than coincidental

A foot-note.

As a foot-note to this article, I also would like to add a recent discovery among the butterflies in this famous collection in the Museum of Evolution in Uppsala. Louisa Ulrika kept a small Lycaenid, which Linnaeus quite surprisingly thought was identical with the common

Swedish and European *Quercusia quercus* and obviously did not give any other name. In reality it would later be shown as a different species. At first we easily state, this is not a Quercusia quercus. Already Aurivillius observed the mistake but instead he referred the butterfly to *Thecla cyllarus* named by Cramer in 1775. Aurivillius saw it was not like the European *Plebejus quercus*, which Linnaeus had described in 1758, but connected it instead with *cyllarissus* named by Herbst. *Cylarissus* is a later synonym name of *cyllarus*.

I received the kind permission from the director of the Museum of Evolution in Uppsala, Mats Eriksson, to investigate these old and fragile specimens, in order to take some photos and I was also able for me carefully examine the back side of this 250 years old specimen. By my photographs and Bernard D'Abrera's book, *Butterflies of the Neotropical Region Part VII, Lycaenidae*, showing nearly all known butterflies of the family Lycaenidae of South and Central America, I found that the butterfly queen Louisa Ulrika succeeded to obtain from South America in the middle of the 18th century, was not a representative of the species Thecla cyllarus which Cramer described in 1775.

Fig. 86
Thecla occidentalis overside

Fig. 87
Thecla occidentalis underside

Recto and verso of *Thecla occidentalis* Lathy 1926, described as *Quercusia quercus* by Linnaeus in *Museum Ludovicae Ulricae* 1764 The butterfly is probably from the Amazon basin.

In fact, the specimen now showed to be a close relative to *cyllarus/cylarissus*, namely *Thecla occidentalis*, described from Amazonas by Lathy as late as in 1926! Louisa Ulrika's male of that "Thecla occidentalis" has its upper side quite blue instead of turquoise to nearly green as on cyllarus, and in verso the inner white ribbon is much broader and more clear, especially on the forewings, and also more straight compared to the *cyllarus.* The red spots in verso of the hindwings are also some different. Thus, we notify that Linnaeus failed in the determination of a species, a beautiful tropical butterfly, owned by the Queen. The simple reason was that the species was not yet described. It would last another 168 years before the Queen's specimen would be correctly specified. *Occidentalis* is only one of many other different species which Linnaeus had wrongly specified. He obviously thought they would belong to species he already stated in his procedure of determination and naming process of species.

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I would like to express my deepest gratitude Curators Mats Eriksson, Hans Mejlon, Lars Hedström and to Mr. Sten Jonsson for their kind assistance in making it possible to study all old specimens and all old books about Linnaeus in the Museum of Evolution in Uppsala. A lot of thanks also to Martin R. Honey and Malcolm J. Scoble for their kindness to bring me their great article about Linnaeus Butterflies in the Zoological Journal of the Linnean Society. Without that article it had been nearly impossible to write this article. . Sincere thanks also to Björn Dal, who made en excellent contribution to all people interested in Natural History and butterflies, by publishing a facsimile copy of Clerck's *Icones Insectorum Rariorum*. I also would like to thank Dr Kauri Mikkola for making me more observant concerning the special kind of the pins which were used for the Queen's butterflies and to Bert Gustafsson at the Swedish Museum of Natural History in Stockholm for all his help during more than 40 years. I extend my thanks also to my old friend Chris Samson. He worked at the Saruman Museum with Paul Smart 40 years ago and he has since that time really increased my interest for the worldwide butterfly fauna. I am also thankful to Bernard D´Abrera for his great books of the Butterflies of the World, and to my mother Brita who already, when I still was a young boy, opened my eyes and my mind for the fantastic Greek Mythology and the fantastic Nature with orchids and butterflies already in the summer 1952 on the island Öland .

My deepest thanks finally must go to my dear friend Göran Waldeck in Virserum, Sweden, who during several years has helped me by translating all Latin texts on butterflies and moths we have found concerning my subject of investigation. Thanks also Göran, for our nearly daily contacts we have had during the last years and our conversations about different ideas in what way Linnaeus might have been thinking, when he dealt with the butterflies. I hope we will later be able to compose and edit a book on "The Butterflies of Linnaeus" to show what Linnaeus really wrote about the actual insects. It is our intention to accompany the texts with photographs of as many as possible of the species described and also actual knowledge of these species today. After profoundly have been studying Linnaeus' life, his literary opuses, family circle and friends, his relations to people and all thinkable circumstances during his lifetime in the !8th century, I am convinced that Linnaeus really used all these elements in his brain to bring the beautiful and sensational animals at that time discovered and known, their well-deserved names.

A last foot-note.

Last year, 2007 we celebrated the Anniversary of birth of Linnaeus 300 years ago. This year 2008 I find it relevant to celebrate the QUARTER MILLENNIUM Anniversary of our "Zoological Bible" the 10th edition of SYSTEMA NATURAE in 1758! I would like to dedicate Linnaeus this article but at the same time I hope this article will throw a beam of light upon the fantastic Queen Lovisa Ulrika, whose considerable contribution to Natural Science in Sweden in the middle of the 18th century is almost forgotten. There is no doubt she was an important source of inspiration to Linnaeus and he would probably not been able to construct his everlasting nomenclature of the prominent swallowtails without his dear Queen!

Göran Sjöberg, Gävle, 8 December 2008

Fig. 84
C. P. Thunberg and Göran Sjöberg

Fig. 85
In the collection valve Museum of Evolution in Uppsala

Carl Petter Thunberg & Göran Sjöberg in the Museum of Evolution in Uppsala to the left. In the middle Sten Jonsson, Hans Mejlon and portrait of Göran Waldeck. To the right Mats Eriksson, Martin Holmer, Göran Sjöberg and Sten Jonsson looking at old butterflies. Photos in the middle and to the right from the valve where the Museum among others stores the collections of Louisa Ulrika's "Linnean collection" and Thunberg's own collection.

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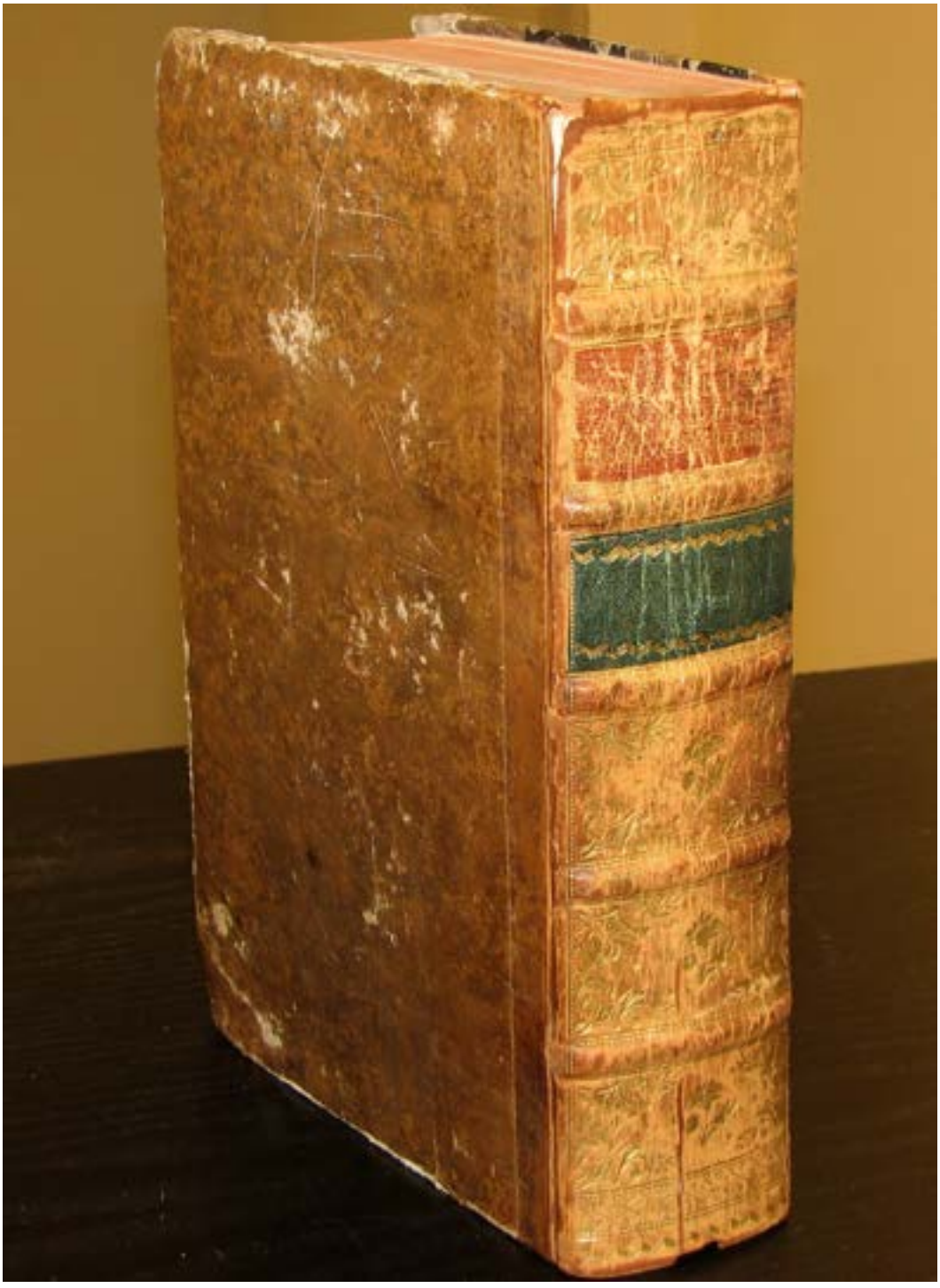
Fotnot skriven 2023 som en uppföljning av mina tidigare tankar om hur Linaeus fick idén att utnyttja namnen i Homeos Iliaden för drottning Lovisa Ulrikas exotiska dagfjärilar

Det är hos flera Linnékännare en vedertagen sanning utifrån vad bl. a John L. Heller i sin 24 sidiga artikel **Classical Mythology in the Systema Naturae of Linnaeus**, Vol 76 (1945) *Trasactions and Proceedings of the American Philological Association,* att Linnaeus hämtat namnen på flertalet beskrivna fjärilar i sin 10:e upplaga av Systema Naturae från framför allt Hyginus *Fabulae* men också ***Giraldis*** *Syntagmata de Deis* och hans *Syntagmata.*
Jag ifrågasätter alls inte detta då det säkerligen är helt riktigt att Linnaeus utynyttjat dessa sammanställningar av antika namn för sitt stora arbete med att namnge bl.a. alla då kända dagfjärilar, mer än 200 st. Man kan ju notera att när det gäller fjärilarna så saknade de allra flesta av Linnaeus namngivna fjärilar helt egna namn. De av honom tidigare kända fjärilarna hade av honom i exempelvis Fauna Svecica bara med en mängd ord huvudsakligen beskrivit utifrån deras utseende. Det kan ju här gärna påpekas att för just fjärilarna så står Linnaeus själv för dessa helt nya namn till skillnad från en stor del av de då kända växterna, fåglarna och däggdjuren som redan tidigare hade de namn Linnaeus sedan ofta anammade i sina berömda verk Species Plantarum och Systema Naturae där han ordnar upp alla de då av honom kända växterna och djuren.

Men som jag ser det är ju det intressanta – hur fick han idén till detta? Denna för mig så stora fråga har såvitt jag kunnat finna inte alls berörts i Hellers långa artikel där Heller inte ett med ett ord ens omnämner den bok Linnaeus påbörjade tillsammans med Sveriges då nya drottning Lovisa Ulrika redan år 1754 då hon från Holland inköpte en mängd då extremt sällsynta och dyra exotiska fjärilar från Albert Sebas dödsbo, nämligen ”MUSEUM LUDOVICAE ULRICA REGINAE ANIMALIA RARIORA EXOTICA INSECTA & CONCHILLA”. På grund av ekonomiska svårigheter blev denna förnämliga bok om drottningens Fjärils- och snäcksamling tryckt först 1764. Manuskriptet med alla namnen enligt det binära namnsystemet han införde i sin 10:e upplaga av SYSTEMA NATURAE 1758 finns dock med för dessa hennes exotiska fjärilar redan 1754. I sin Systema Naturae 1758 hänvisar Linnaeus till ”M. L. U.” d.v.s MUSEUM LUDOVICAE ULRICA.



Frågan är ju om Heller borta i University of Minnesota ens känt till denna bok och allt samarbete Linnaeus hade haft med den då nya drottningen Lovisa Ulrika på Drottningholms slott och att det var hon som ville ha hjälp med att ordna sin mycket dyrbara dagfjärilsamling. Med hänsyn till

hennes stora kunskaper i den Grekiska antikens historia och mytologi och hennes uppenbarlige stora engagemang när det gällde att ge adekvata namn utifrån speciella kännetecken på många av dessa hennes fjärilar finner jag det högst osannolikt att hon vid deras möten över hennes fjärilar på slottet passivt låtit Linnaeus själv namnge dessa utan att hon som den ytterst vetgiriga och mycket bildade kvinna hon var, haft synpunkter på deras namn och att hon då mycket väl kunnat framlägga förslaget att namnge dessa vackra fjärilar efter hjältarna i Homeros Iliaden. Detta är naturligtvis en ren spekulation från min sida men jag kan inte släppa tanken på att hon haft med denna sak att göra.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Markus

Jag skickar dig denna artikel som jag skrev för att den skulle publiceras i jubileumsnumret 2008 i Entomologisk Tidskrift i samband med Linne-jubileet 2007.

Mats Jonsell som då var redaktör ansåg dock att artikeln inte kunde tas med då jag saknade löpande referenser till vad jag skrivit i den löpande texten. Detta är tydligen kutym i s.k. vetenskapliga artiklar som dock gör att de är rätt trista att läsa. Jag hade ju jobbat rätt mycket för att få till denna artikel och hade varken tid eller motivation att försöka villfara hans önskemål. Det blev som jag ser det ett ganska tråkigt nummer av ET i detta på förhand så märkvärdiga jubileumsnummer om vår störste vetenskapsman. Men skit samma.

Jag sade till Mats att jag tar tillbaka min artikel och förbjöd honom att publicera något. Meningen var väl att jag skulle ge ut den som en artikel i vår egen tidskrift Insectifera. Detta har dock inte blivit gjort – åren har gått – nu 15 år. Vår tidskrift är nedlagd så för närvarande är någon publicering av artikeln inte aktuell – kanske senare på hemsidan i ”MUSEO AVELLONIA”?

Jag ska försöka hitta de bilder i slutet av denna artikel som fattas. Förhoppningsvis finns de kvar på något gammalt USB-minne.

Jag bifogar också mitt bildprogram till det föredrag jag höll på Evolutionsmuseet i samband med Linnejubileet 2007. Jag har tyvärr inget skrivet manus till detta föredrag.

Jag känner mig dock så pass dålig så för att undvika att denna artikel går obemärkt i soporna vid min bortgång så skickar jag den nu till dig. Om vi inte hinner publicera densamma innan min bortgång hoppas jag att du om du finner den läsvärd kan publicera densamma någonstans efter min bortgång.

Mina varma hälsningar till dig Markus!
Göran