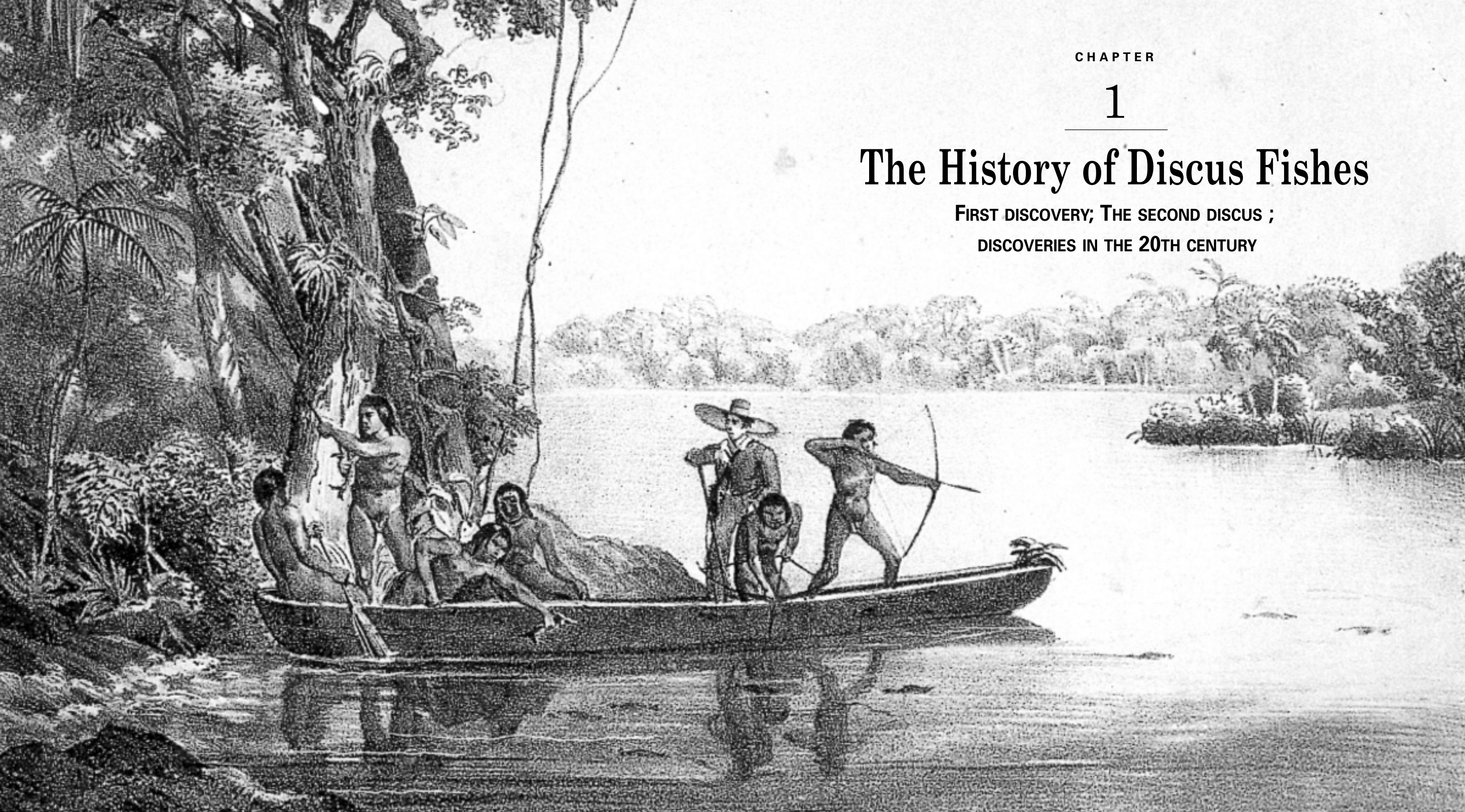


CHAPTER

1

# The History of Discus Fishes

FIRST DISCOVERY; THE SECOND DISCUS ;  
DISCOVERIES IN THE 20TH CENTURY





## FIRST DISCOVERY

It was an extraordinary day in the history of Austria – in two respects – when the State Chancellor and Foreign Minister, Prince Clemens Wenzel von Metternich, who in his day wielded considerable influence at the imperial court and on Kaiser Franz I (II), sampled the very first *Sacher-Torte* in Vienna. It was later to become the most famous cake in the world, and the handwritten recipe has remained a closely-guarded secret right up to the present day. Round about the same time (1832), the assistant supervisor of the imperial natural history collection, and leader of the Austrian expedition to Brazil that had started back in 1817, became the first white man ever to handle a discus: the Austrian Johann Baptist Natterer. His fish was later (1840) described as *Symphysodon discus* by Jakob Heckel, along with many other species of fish discovered by Natterer (see page 28). During his 18 year expedition to Brazil, this Austrian collected a total of 1671 fishes, 1678 reptiles and amphibians, 12293 birds, 1146 mammals, 32825 insects, 1729 vials of intestinal worms, 1024 mussels, 125 eggs of various species, 430 mineral samples, 192 skulls, 42 anatomical specimens, 242 seed samples, 216 coins, and 1492 ethnographic items. But just as neither von Metternich nor the 16-year-old baker's apprentice, Franz Sacher, who created the *Sacher-Torte*, could have foreseen the subsequent world-wide success of that confection, likewise Natterer had no idea that his discovery would one day become the most popular of all aquarium fishes, the “King of the Amazon”.

So what does this so influential State Chancellor von Metternich have to do with the very first discovery of the discus, and who was he anyway? Well, let me tell you.

The future Chancellor of the Austrian Empire was born in 1773, in the German village of Metternich, on the left bank of the Mosel, just a few kilometres from Koblenz, and was baptised Clemens Wenzeslas Lothar von Metternich-Winneburg. At that time Louis XV still ruled in France, Maria Theresa in Austria,

Katharina II in Russia, and Friedrich II in Prussia; Napoleon Bonaparte was only four years old, just like Arthur Wellesley, Duke of Wellington, his eventual conqueror.

When Metternich died 86 years later, the rulers who survived him were Victoria I, Franz-Josef I, Alexander II, and a boy had been born into the Prussian royal family whose destiny was to bring about the demise of the old, monarchistic Europe which the aged servant of the Austrian Empire had supported against all change.

Between these two epochs there was hardly an event of any importance in which Metternich was not involved, be it as witness or active participant; there was no notable personality during his time that he didn't know personally. Thus it was he that arranged the marriages of the Emperor's daughters Marie-Louise and Leopoldine. The latter is of the most interest to us, in connection with the first discus, although in my view it was Napoleon who was to “blame” (or, at least, chiefly to blame) for Natterer being sent on his travels. But judge for yourself.

Metternich was already well aware, when he began to draw the threads of the marriage of Princess Leopoldine's darling older sister Marie-Louise together, that marriage was a favourite instrument of Habsburg politics. “*Bella gerant alii, tu felix Austria nube!*” (Let others wage war; you, lucky man, marry Austria). And marriage between Marie-Louise and Napoleon would mean that the Austrian princess, once established in Paris, could moderate the demands of the conqueror, lay his suspicions to rest.

It is important to realise that in September 1808 Napoleon had held discussions in Erfurt with Tsar Alexander I. Pawlowitsch, his “dear brother and ally” as he called him, and Metternich had been present. And that following 1805, the Corsican tyrant had occupied Austria for a second time in 1809. That the existence of the Austrian Empire did not accord with Napoleon's concept of world domination; and that the Emperor's declarations of goodwill towards the French had met with other than belief...

Metternich was also aware that by 1808 Napoleon was already

contemplating securing his succession via a new marriage – preferably marriage into an imperial family – and that he had repeatedly flirted with the dynasty of the Russian Tsars. This view was reinforced by the meeting in Erfurt.

However, the Tsar was apparently of a different opinion. When, in 1808, he learned of Napoleon's intentions, he immediately married his elder sister Katherina to the Duke of Holstein-Oldenburg. But there was still his sister Anna. She was then only 13 years old, and there would have to be a delay, but Napoleon wasted no time. In 1809 he despatched his emissaries to St. Petersburg with an official proposal. Meanwhile (on 16th December 1809) the Senate had pronounced the divorce of Napoleon and Joséphine.

The wily Metternich was thus fully aware of the danger hanging over Austria in the event of a marital union between France and Russia, which would threaten not only her own destruction but also the carving up of Europe between these two great powers. The fraudulently obtained peace treaty (October 1809) between France and Austria had already divided the country, requiring large areas to be forfeited, and access to the sea to be relinquished. She had also been compelled to give up all trade with England. But at least this undesirable treaty had allowed the Austrian Emperor to return to Vienna on the 26th November, and Metternich to take office as Minister of State and do what he had been planning: “...from the day of the signing of the peace treaty our strategy must be solely to resist, connive, evade, and cajole. Only thus will we succeed in surviving until the day of the very probably universal liberation.”

On the 28th November – ie two days after his arrival at the Ballhausplatz – he summoned Count Alexandre de Laborde to his office. The latter was the son of a great financier, a member of the national government in Vienna, and acting as commissioner for the regulation of certain financial interests dependent on the recently implemented peace treaty. Metternich put forward the possibility of a marriage between the French

Emperor and an Archduchess: “The idea is my own, I have not yet sought the views of the Emperor on this matter, but I am almost certain that he will look favourably on the scheme”, he said. When Metternich then learnt from de Laborde that Napoleon would consent provided acceptance of his proposal was guaranteed (clearly the two Russian “flops” had not gone down well with the French ruler), and that the way was clear in Paris, he wrote to his master on the 7th February 1810, “The

marriage scheme will undoubtedly develop to our benefit.” Ultimately his “idea” not only had the desired effect, but also proved popular with the entire land-owning class when the news spread like wildfire. It even saw Austrian government securities rise by 30% on the stock exchange.

The 1st April 1810 was no matter for joking, but the day of the civil ceremony, with – who would have thought it – the religious service in the Louvre the next day. In the Louvre because the Pope had not given Napoleon his consent and for this reason he wished to avoid a wedding in Notre Dame. The elders of the Roman Catholic religion opposed a church wedding between the Archduchess and a divorced man.

Just as in the case of Marie-Louise (who was called Marie Ludovica before her marriage), the Emperor Franz I (II) did not dare oppose the all-powerful Chancellor when it came to Leopoldine. In 1816 Metternich suggested the marriage of his daughter to the heir to the throne of Portugal, Brazil, and Algarde – and, of course, as with Marie-Louise this was for political as well as personal considerations. The following is the background to the situation.

In 1807 the Portuguese court had decamped in its entirety to Brazil. Napoleon occupied Portugal, but himself abandoned it later. The neighbouring English took advantage of the situation, seducing the Portuguese people with their liberal policies. For this reason the Portuguese king, João VI, was interested in a closer liaison with the houses of Habsburg and Braganza, which promised greater security against Great Britain.



Following the agreement made at the Vienna Congress (1815), Portugal became part of Metternich's system of alliances, as he himself perceived that Austria would become stronger through her influence on Portugal and the New World. (Brazil was elevated to the status of kingdom because of the liaison with Portugal, and thus became the only monarchy in South America.) And Metternich knew that his Emperor, Franz I (II), desired the restoration of the monarchy in Portugal, which would effectively put an end to the liberalisation. And the instrument for that could only be Leopoldine.

As well as representing the political and economic interests of Austria, the State Chancellor had, of course, not forgotten to think a little further ahead. If only because his Emperor was a dedicated gardener – for which reason he became known to posterity as the *Blumenkaiser* (Emperor of flowers). Franz I (II) had greenhouses erected and parks created. His children were also enchanted with nature, and he commissioned the creation of a garden for them in Schönbrunn, a garden which they had to look after themselves as part of their education, and which served to instruct them in botany. Leopoldine herself loved country life and nature. She maintained her own orchard in Laxenburg – the summer residence of the imperial household – where she herself cultivated various berry fruits, as well as keeping white foxes, a parrot, and bantams from Angola, and breeding hares.

So what could be more appropriate than for her Highness and Austria to also derive some scientific benefit? He therefore suggested that a mission for the benefit of science and culture should take place in conjunction with the marriage of her Highness the Austrian princess. Of course permission was given, and the planning for this expedition was already under way in 1816. Metternich was in overall charge, and von Schreibers, the director of the *Naturalien-Cabinet* in Vienna, supervised the scientific side.

On the 29th November 1816 the betrothal of Archduchess Leopoldine and the son of King João VI, Dom Pedro, was sealed. Emperor Franz I (II) had not given his consent until the return of the Portuguese royal house to Lisbon was imminent. He did not find it an easy decision, but it would be the first time

in the history of the world that an emperor's daughter had crossed an ocean to a virtually unexplored land.

Leopoldine began to study all the contemporary books on Brazil, as well as maps pertaining to South America. She learnt the Portuguese language.

The wedding took place on the 13th May 1817 in the church of St Augustine in Vienna, albeit in the absence of the bridegroom, who was represented *per procurationem* by the Archduke Karl. The 13th May because this was the birthday of Dom João. Leopoldine had sought in vain to make it a different date. She

was superstitious, and moreover, her mother had died on a 13th, her darling sister Marie Louise had taken her leave of the imperial family on a 13th, it was on a 13th that Austria had lost a battle against France, and many other instances. The Portuguese ambassador from Paris, the Marquês de Marialva, who (armed with a healthy bank balance, diamonds and other precious stones, and jewelry) had previously officially asked for the hand of the Archduchess in the name of the son of Dom João and thereby promulgated the fiction of Brazil as a land of unsurpassed wealth, was originally supposed to represent the son at the wedding, but assigned his authority to the Archduke Karl. Nevertheless he arranged, from France, for festivities to take place over several days, an event that long remained in the memories of the Viennese.

Because Metternich also wanted international recognition for the expedition, rather than it being merely a collecting trip for the imperial natural history collection, he approached various scientists from overseas, including Alexander von Humboldt, a visitor to his salon. The latter presented him with a long “wish list”...

Eventually Metternich had assembled a team totalling 14 academics, researchers, doctors, and painters. At the request of the Bavarian king, Max Joseph I, the expedition was to be accompanied for a while by the botanist Philipp Friedrich von Martius (1794-1868) and the zoologist Johann B. von Spix (1781-1826), a member of the Academy and Conservator of the zoological collection in Munich. The Grand Duke Ferdinand von Toscana even delegated the naturalist Joseph Raddi (1770-1829), at that

time working at the Natural History Museum in Florence, to go on the trip.

Together with von Schreibers, Metternich suggested Johann Natterer as the scientific leader in the field.

Since 1806 Natterer had been working in the *Naturalien-Cabinet*, initially as a visiting researcher (until 1808), and thereafter as an unpaid member of staff. From the end of 1809 he received 300 florins per year. He had already won recognition from Director von Schreibers for his work capturing marsh and aquatic birds from the Neusiedlersee and the Plattensee for the imperial collection. He had collected in Croatia, Hungary, and Styria, and along the Adriatic coast. In 1808 he was commissioned to take charge of a consignment of natural and archaeological items that had arrived in Trieste from Egypt, and accompany it to Vienna. On his own initiative – and mainly in his spare time – he collected fishes and intestinal worms, the latter for his director, who was a learned doctor who had very early in his career established a collection relating to the worm diseases common in those days. Moreover the Emperor himself had personally awarded Natterer a certificate of commendation for this work, and granted him permission to work in the *Naturalien-Cabinet* without remuneration (this was, of course, a signal honour...).

As well as making several trips to Italy – to Calabria – for the Emperor, usually to bring back creatures arrived from overseas or to make collections himself, he gave private tuition in English, Italian, and French. He was also involved in the original repatriation of valuable items belonging to the *Naturalien-Cabinet* from Ofen (Budapest) in 1806. When Napoleon marched in during 1805 everything had been evacuated as it was well known that the French plundered collections. Napoleon always ensured that scientists accompanied the rearguard of his army, and during the Egyptian campaign this led to important discoveries such as the famous Rosetta Stone. There were two evacuations and repatriations, in 1809 and 1813, in which Natterer played a significant part. In 1815, on the order of his Emperor, he travelled with von Schreibers to Paris in order to organise the return to the Vienna *Münz- und Antikencabinet* of the art treasures, libraries, and oth-

er items that had been spirited away from Austria by Napoleon in 1809.

Natterer's involvement with the collections during the “French years” and repatriations was one reason why in 1816 he was promoted to “supervisory assistant” in the *Naturalien-Cabinet*, and ultimately was appointed scientific leader of the Brazil expedition in the field. Even so, shortly before the departure of the expedition there was a dispute, as there were moves to replace him with a certain naturalist from Prague, Doctor Johann Christian Mikan k.k. (of the Cabinet of Natural Objects), a professor

of botany, a suggestion he opposed vigorously. In the end the expedition party was split into two groups, with each of them leading one part. Both groups had to follow the direct instructions of their respective leader, and in every case consult him with regard to suggestions for excursions and collections to be made.

A set of “Instructions for service for the naturalists Doctor Johann Christian Mikan k.k., Professor of botany from Prague, and Mr. Johann Natterer k.k., *Naturalien-Cabinet* assistant from Vienna, appointed to the expedition to Brazil” was given to them, and was binding on all the participants. *Inter alia*, Rio de Janeiro was to be the starting point for all excursions. Travel plans must be made in advance, and, indeed, include details of accommodation, routes, hazards, duration, details of the return journey, etc. It would appear that no-one at the court of Vienna had very much knowledge about Brazil and the jungle! Let alone the conditions in that vast country. Only consider, Natterer needed more than

a year just to get from the coast to the Mato Grosso. (Something my mother, along with four children, managed in a month 125 years later, and which today takes only two hours by plane.)

I find the section of these instructions, “Notes and comments for the expedition to Brazil”, particularly interesting: for example, they were particularly to “search for half savage aborigines, long-bearded apes, gold-panning opportunities, etc.” in Cantagalo, rather nearer the coast. Cantagalo is in the state of Rio de Janeiro and was already than a well known *Município*...

When the frigates of the Austrian navy, *Austria* and *Augusta*, left Trieste on the 9th of April 1817, it was the first time in the



Leopoldina Archduchessa d'Austria 1797-1826



Johann Baptist Natterer, 1787-1843



history of Austria that ships had ventured overseas. And there were still serious problems, such as a lack of navigational equipment. The only chronometer in the entire k.k. marine arsenal of Venice was defective, and not until Gibraltar did they obtain a functional one. There was likewise no sextant until the marine commandant fetched one of his own.

Aboard the *Austria* were Mikan and his wife, Spix, Martius (both pictured right), and others, while Natterer and his assistant hunter/conservator Sochor shipped on the *Augusta*. Both frigates were wrecked off the Adriatic coast in a storm only three days later. The *Augusta* lost all her masts and had to lay up in Pola (today's Croatia) for a long time; the *Austria*, on the other hand, was soon under way again and first reached Rio de Janeiro on the 14th June 1817. After her repairs the *Augusta* joined the Portuguese fleet of two ships in Gibraltar and all three ships put into Guanabara Bay off Rio on the 4th November 1817, where they were welcomed with cannon, bells, and fireworks.

Metternich, who had accompanied the Archduchess Leopoldine to Livorno, where she embarked, wrote letters to his family describing interesting events and detours during his journey across Italy. And I cannot resist including a few extracts here, in part because I myself have now lived in this beautiful country for several years. He enthuses about Padua, Ferrara, and Bologna, and then writes:

*Florence, 14th June 1817:*

“We have been here since 11 o'clock yesterday morning... Everything I have seen so far exceeds my expectations. Good God! What fellows those men of the past were!... The country is glorious... the climate is heavenly.”

And because the arrival of the “cursed squadron” – as he termed the Portuguese fleet – continued to be delayed:

*26th July 1817:*

“The squadron is, happily, now at anchor in Livorno... I am off on my travels again, to the Baths of Lucca. I plan to begin my treatment tomorrow...” (He had eye problems and even had an eye specialist with him.)

*Baths of Lucca, 28th July 1817:*

“I am staying in the house that Elisa (Napoleon's eldest sister) had built for herself, or rather, had converted for herself (today's Vila Reale outside of Lucca). That should tell you that it is com-

fortable and well located... News from Livorno... that the squadron will weigh anchor before 15th August.”

*Livorno, 10th August 1817:*

“I arrived here at eight in the evening. I found the entire court here, along with 4,000 foreigners, I saw my princess and went to an evening entertainment.”

*11th August 1817:*

“This morning I was aboard the Portuguese warships... You cannot imagine how many people there are on such a warship...

As well as the Austrian ladies the entire Portuguese court is there... The number of officers of all ranks has been tripled. In addition there are a considerable number of cows, calves, pigs, lambs, 4,000 chickens, several hundred ducks, and 4,500 canaries, as well as large and small birds from Brazil; so you can imagine that Noah's Ark was just a child's toy compared with the *Johann VI*.” (He was referring to the *Dom João VI*, one of the two warships transporting the bride. There were a total of 1,300 men on the *São Sebastião* and the *Dom João VI*. The numerous ornamental birds were for the entertainment of her Highness.)

*13th August 1817:*

“Today around four I escorted her Ladyship the Archduchess on board her ship... her apartment pleased her very well... it would have been difficult to have decked it out more elegantly.”

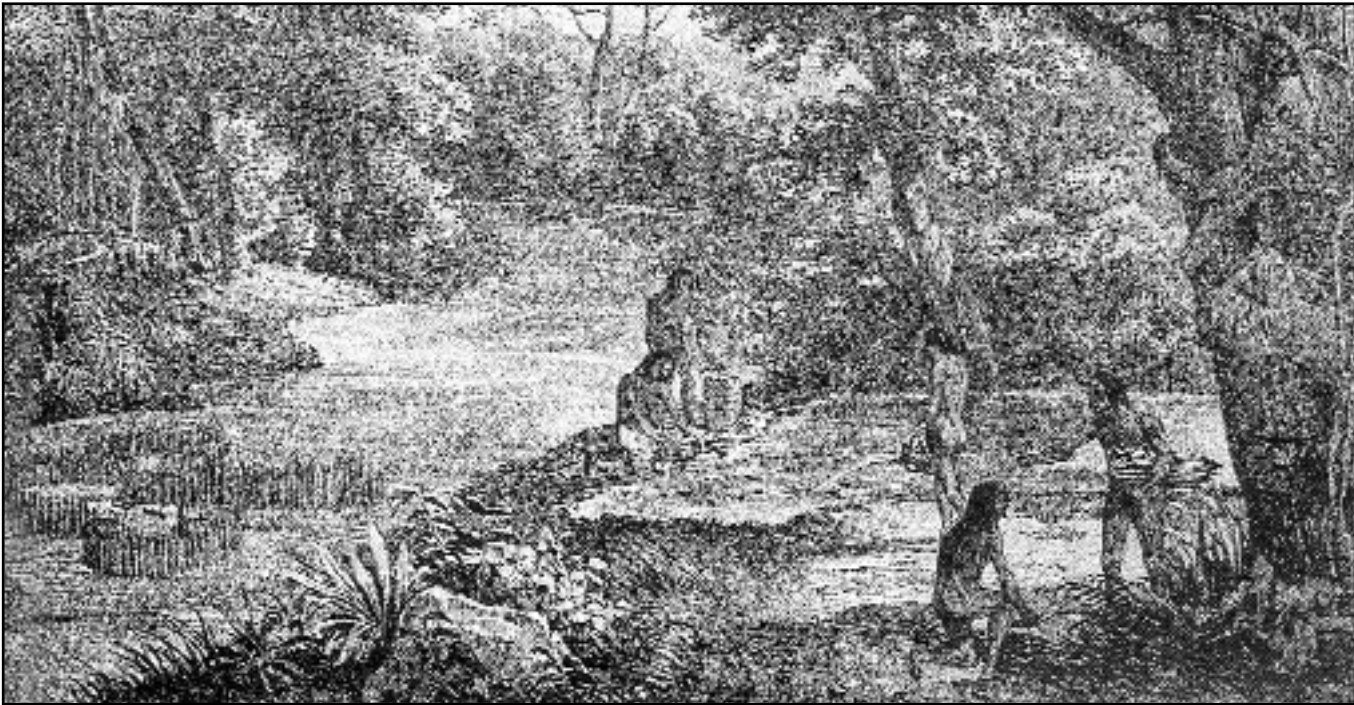
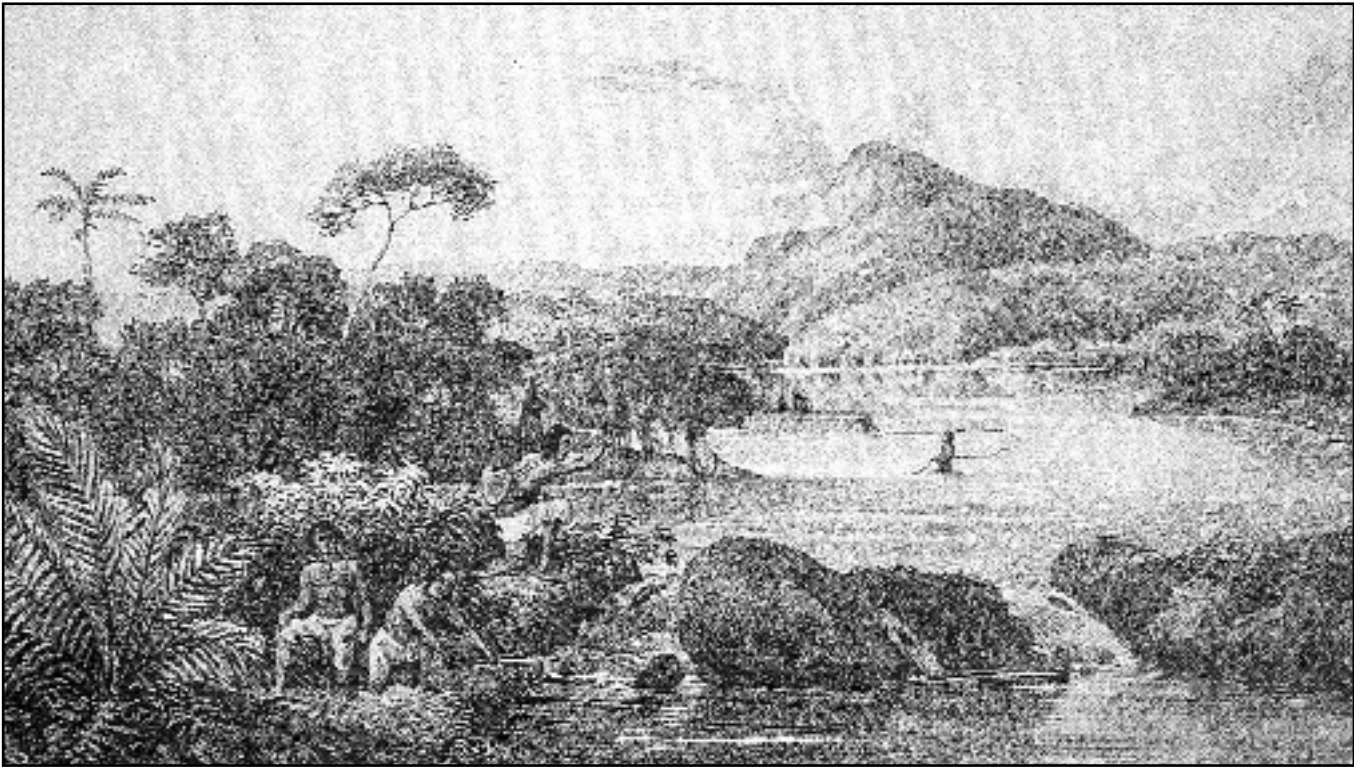
And then from the Baths of Lucca on the

*16th August 1817:*

“I have bade farewell to my Archduchess. The squadron set sail yesterday morning around half past six.”

Leopoldine had also said farewell to her much-loved sister Marie-Louise, by now elevated to Duchess of Parma, Piacenza, and Guastalla as a result of the Vienna Congress. At that time neither of them as yet had any idea that this was the last time they would see each other.

Metternich had completed his work, although he repeatedly had to intervene when there was trouble in Brazil – if disputes or financial problems arose. In fact this was the case only with Mikan, and after barely a year the latter returned prematurely to Europe, along with other members of the expedition, some of whom were seriously ill. In 1820 he also published a splendid volume, *Delectus faunae et florum brasiliensis* (The enjoyment of the flora and fauna of Brazil), notable not only for the high quality of its illustrations but also for a whole series of new descrip-





tions – including a *Metternichia*, a tree-like shrub (family Solanaceae).

Leopoldine, who was deeply impressed with the rich nature of Brazil, wrote to her father on the 26th January 1818 that every day she made new discoveries in the plant, animal, and mineral kingdoms. And that every morning at eight she rode out hunting with Dom Pedro. She sent back live plants and animals, hides, stuffed birds, minerals, and butterflies – mainly to Marie-Louise and her father. But the scientists didn't do badly, either.

Donna Leopoldina, as the Portuguese called her, was very active. She had a Viennese *Naturalien-Cabinet* established at the fortress of São Cristovão – this later developed into the Museo Nacional (the Brazilian National Museum). She was involved in the

founding of the splendid Jardim Botânico in Rio, as well as the animal park at Santa Cruz. But Leopoldine was not only a blessing to science and nature – plant genera and species were named in her honour – but also an energetic woman who knew how to get her way, something that had already caused Metternich some concern. She took a lively part in politics and Dom Pedro listened to and asked for her opinion on difficult questions, as his role as

Emperor had not yet gone to his head. She played an important role in the elevation of his rank, the liberation of Brazil from the Portuguese motherland, and the coronation of her husband as Emperor in 1822.

The design of the Brazilian flag was her concept (with the southern cross in it, only the text: *Ordem e Progresso* – Order and Progress – was added later). She also earned long-term credit for her sorties into art and culture. Her charitable acts, her social work, her trips to the quarter of the poor (where she endeavoured to help in person) are still remembered today.

Many Brazilian *ruas* (streets), *praças* (squares), *bairros* (parts of cities), *idades* (entire cities), and *provincias* (provinces) bear her name. Sadly she didn't even attain her 30th year. On the 11th

December 1826 the talented Empress of Brazil died – apparently of a broken heart. Dom Pedro had forced her to acknowledge his mistress, Donna Domintila, whom he had ennobled, as the first lady of the court and allow her to sit on the throne next to him.

Meanwhile Natterer had many expeditions behind him and had despatched large collections from the region around Rio, São Paulo, Goiás, Minas Gerais, and Rio Grande do Sul back to Austria.

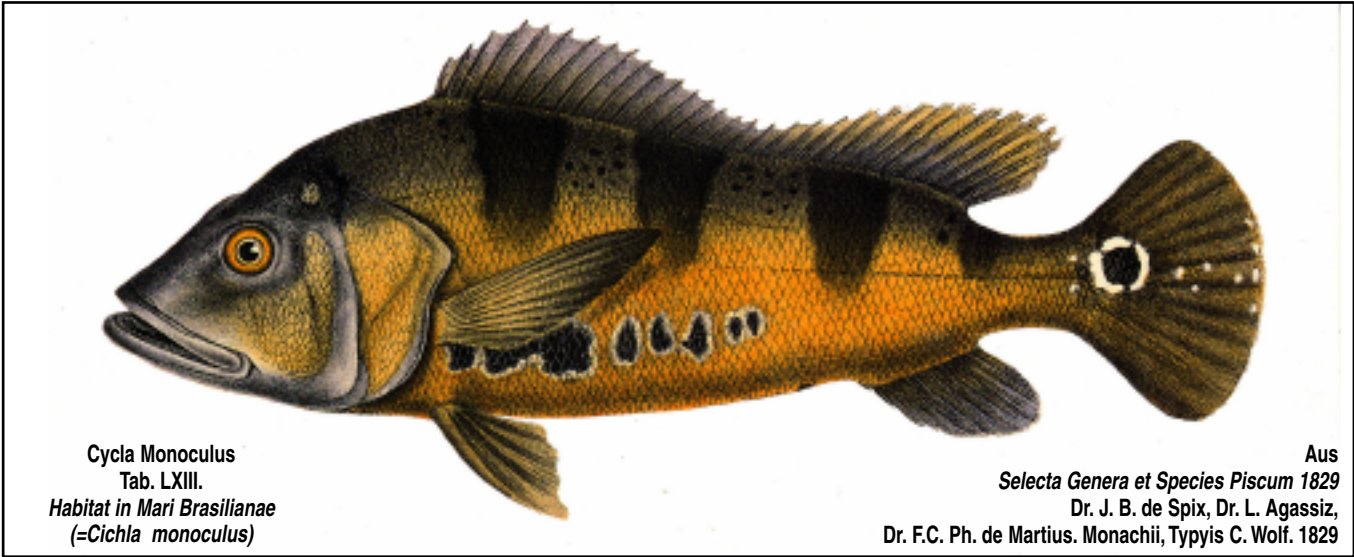
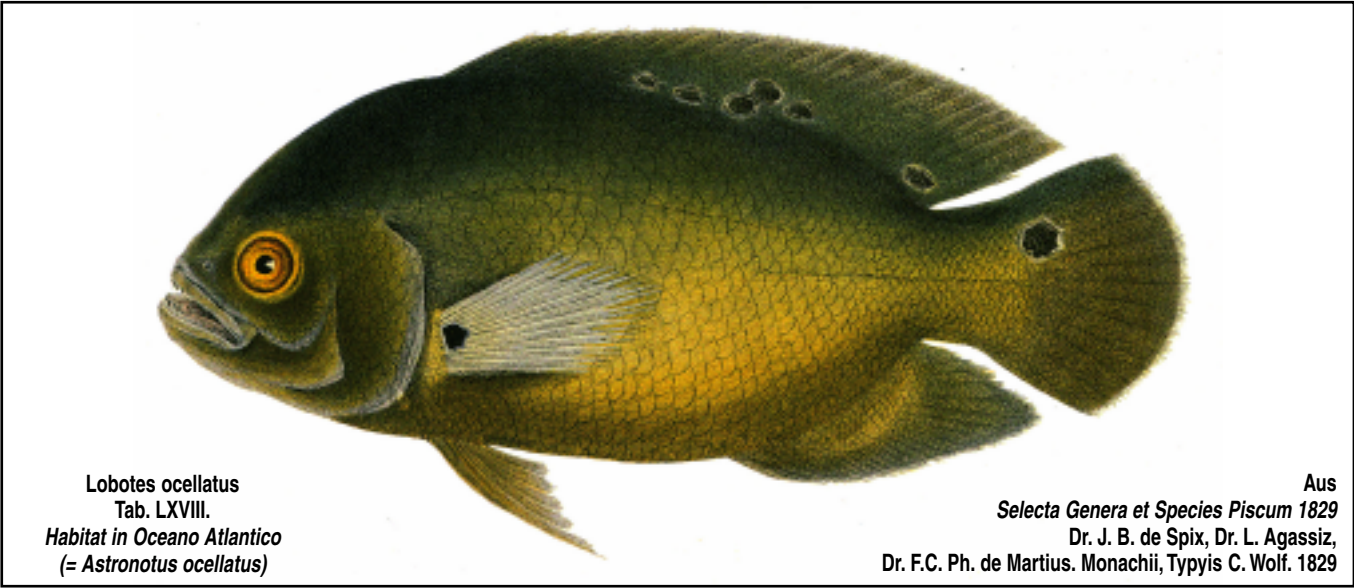
Originally he wanted to be in Mato Grosso by this time, but the Brazilian government refused him access, so Martius and Spix travelled before him into the paradise of birds, as they termed it. In 1829, along with Dr Jean Louis Rodolphe Agassiz, discoverer

of the 2<sup>nd</sup> Discus much later (page XXX), a Swiss ichthyologist who subsequently emigrated to America, they published in Munich the book *Selecta Genera et Species Piscium quos in Itinere per Brasiliam Annis MDCCCXVII – MDC-CCXX Jussu et Auspiciis Maximiliani Joseph I. Bavaria Regis Augustissimi* (Selected genera and species of fishes) with numerous drawings, two of which (of cichlids) are presented here (right-hand page). But they didn't find any discus.

It is also worth mentioning that this work, which appeared in Latin, listed Spix as the author and describer of new genera and species (eg the characiform genus *Leporinus* and the cichlid species *Cichla monoculus*), although he had already been dead for three years.

As luck would have it, Natterer also made collections in the Rio Tieté in São Paulo, in which all life forms except bacteria have now been extinguished by catastrophic environmental pollution – São Paulo is today in all probability the most heavily populated city on Earth, with probably more than 30 million inhabitants.

His son-in-law Julius von Schröckinger-Neudenburg later divided Natterer's travels into 10 sections (see map, page 37). By the time of the third (to the Tieté and Curitiba) orders had



arrived from Vienna for him to return to Europe (this subsequently happened twice more). He wrote to his brother that he must get to the Mato Grosso (like my mother later) and that he would from then on continue at his own expense. He took out a loan and thereafter sent his collections to England for sale. Whereupon he received permission to continue, along with adequate financing, from Vienna. Metternich had without doubt realised the possible consequences otherwise.

Natterer planned to make his way from Curitiba to the Mato

Grosso with 23 mules, five horses, and four dogs. He had purchased two slaves and rented another two. Special ox-hide sacks were made which the mules could carry on one side, with a cask of brandy on the other, for preserving the animals, amphibians, and fishes that were collected. He set off in October 1822 and, travelling via Goiás, reached Cuiabá, today's capital of Mato Grosso state, in December 1823. The trek was very arduous and lasted more than a year (it took my mother over four weeks by car through the "green hell").



The hardships were so great that he fell sick with an acute infection of the liver and had to remain there until 1825. During this journey he encountered indians for the first time and acquired large quantities of artefacts (like us). The Mundurukú indians made their dance head-dresses, arm-bands, aprons, and many other items from the feathers of parrots and bare-faced curassaw (*Crax fasciolata*, family Cracidae, locally known as *mutum* – see also page 280). The indians generally kept these birds specially for the purpose, repeatedly plucking out their feathers.

Natterer's sixth journey (from January 1825 to July 1829) likewise took place under an ill star. In Arraial de São Vicente his faithful companion Sochor fell ill with a very bad fever (undoubtedly malaria) and died. In this village of 600 souls there was no doctor, let alone medications. Then Natterer himself suffered attacks of fever – the malaria had him in its grasp as well. He survived only thanks to the intervention of a miller's wife named Gertrud, who took him to Vila Bela de Santíssima de Trindade, on the Rio Guaporé, where he was cured.

Natterer stayed in the Mato Grosso region and by the fabulous Guaporé until July 1829, collecting and making the bulk of his fish drawings (two of which can be seen below), including that of the piranha species later named after him (*Serrasalmus nattereri*). Although it is repeatedly stated that there are discus in the Guaporé, this is not the case. Natterer found no *Symphysodon* there, nor have my mother or I during our numerous collecting trips years later. Discus are nowhere in their range found in the vicinity of rapids or waterfalls, let alone upstream of these obstacles. And the Guaporé-Marmoré (the lower Guaporé is some-

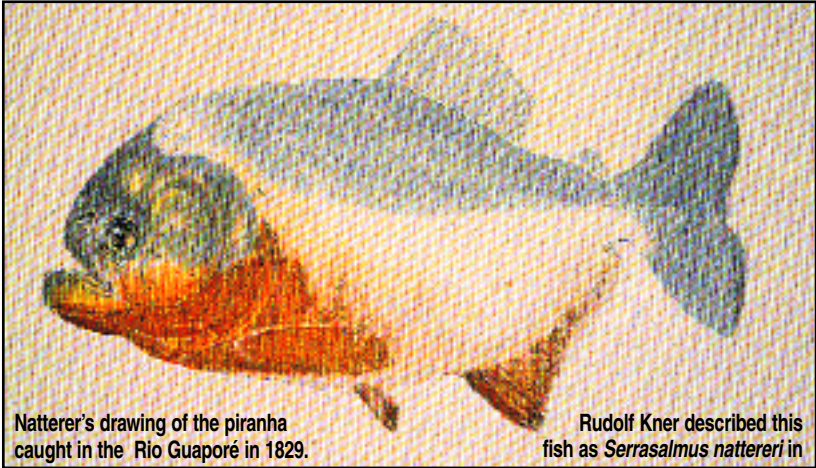
times called the Marmoré after it is joined by the left-bank affluent of that name) has more than 20 north of Guajará-Mirim, before, together with the Rio Beni and Rio Abuná, it becomes the Rio Madeira.

Natterer followed the course of the Rio Guaporé, the centre of which forms the border between Brazil and Bolivia for more than a thousand kilometres in this region, where it is known as the Iténez. He successfully negotiated the rapids and the perilous cataracts at Teotonio on the Rio Madeira, and reached the village of Borba November 1829.

On his eighth journey (June 1830 to the beginning of 1831) he followed down the Rio Madeira passing to the south of the Island Tupinambarana, up the Amazon and the Rio Negro upstream to São José de Marabitanas near to the border with Venezuela. He surmounted the waterfalls at Uaupés (nowadays São Gabriel da Cachoeira) and on his journey upriver went some distance up three Rio Negro affluents, the Rio Içana, the Rio Xié, and the Rio Uaupés. (Only the Englishman Richard Spruce (1817-1893) managed to travel further up the Uaupés, 20 years later – see also *aqua geographia* Vol. 11.)

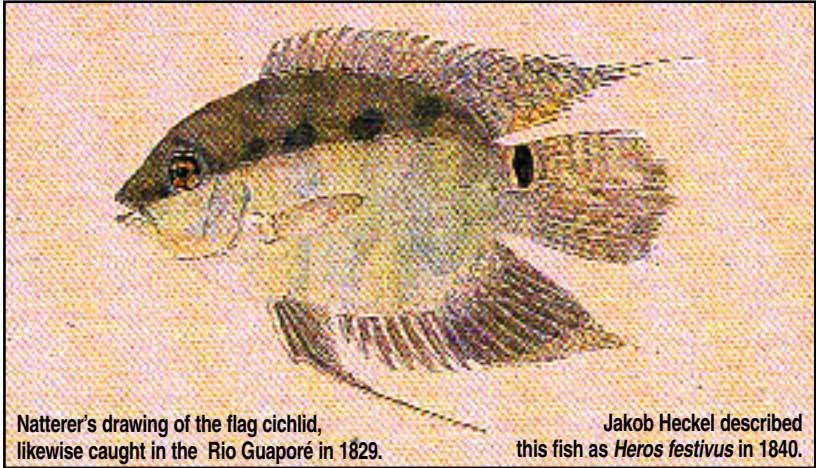
On the way back Natterer stopped at Barcelos, and from this base made the collections of the 9th "section" between 1831 and 1834, in the Rio Negro basin and in the Rio Branco upstream as far as Forte São Joaquim. It was during this period that the discus "found its way into his net" – in actual fact an indian caught it for him near the mission Moreré (later called Moreira), but not, I think, with bow and arrow as they usually do (see photos and drawing on this page and page 39).

We cannot imagine what Natterer must have thought when he



Natterer's drawing of the piranha caught in the Rio Guaporé in 1829.

Rudolf Kner described this fish as *Serrasalmus nattereri* in



Natterer's drawing of the flag cichlid, likewise caught in the Rio Guaporé in 1829.

Jakob Heckel described this fish as *Heros festivus* in 1840.



Natterer's route - in red. The maps were prepared at the time and also show the route taken by the botanist Pohl (in black). It is also possible to see (on closer examination) Natterer's 10 bases (I, II, III, IV, V, VI, VII, VIII, IX & X). The red circle is where Natterer collected the first discus (*Symphysodon discus*). The black dotted line shows the border of Brazil at that time. Pará at the mouth of the Amazon = Belém.

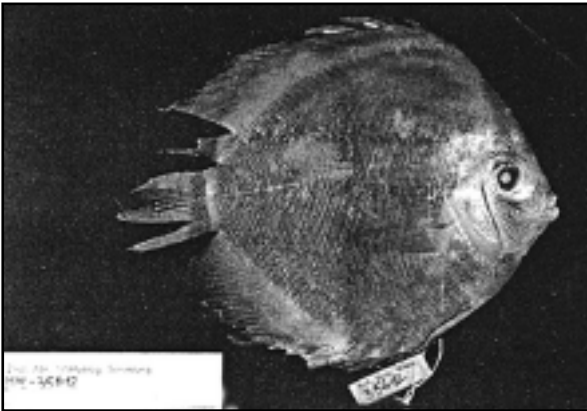
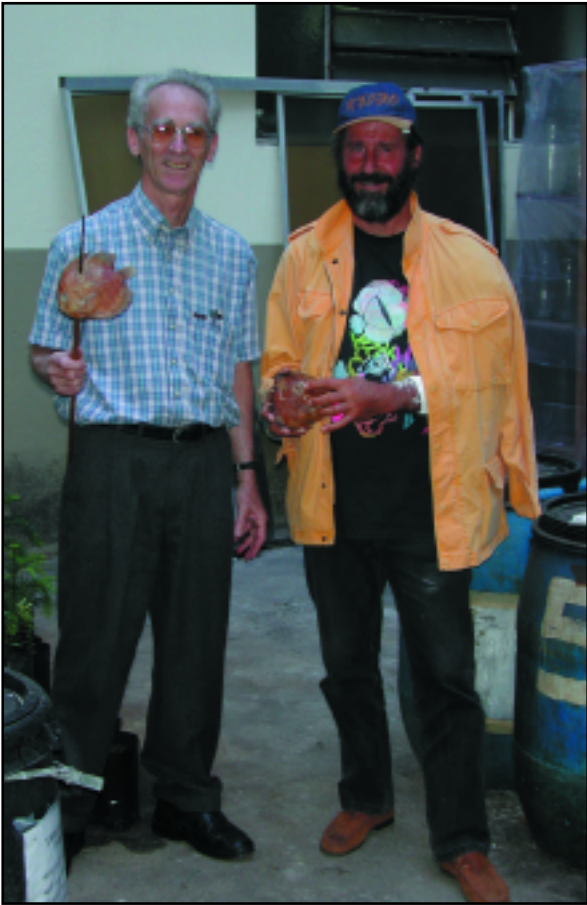


held this unique discus-shaped fish in his hands. Moreover he never made any drawing or wrote anything about it (or perhaps any relevant papers were stolen in Belém (see below) or went up in smoke in the subsequent fire in Vienna – nobody knows).

Be that as it may, one thing is sure – today the “prince of collectors” is at least as well known in scientific and ornamental fish circles worldwide as Herr Sacher among gourmets around the world for his cake. (With the slight difference that the young Sacher didn’t invest as much time and didn’t have to undergo any hardships to achieve his fame.) And by the way, Sacher’s cake is today sent all over the world in boxes, just like live discus!

Natterer had married a Brazilian woman, Maria de Rêgo, in Barcelos (1831) and she bore him three daughters. On his tenth and last expedition (1834-35), accompanied by his family, he lost almost all the material he had collected. Civil war had broken out in Pará. The bloody Cabanagem popular uprising was raging in Belém and other parts of Pará. The province had declared independence from the Portuguese crown pending the proclamation of the majority of Pedro d’Alcântara (Pedro I had abdicated in favour of his first-born, fifteen-year-old son Pedro d’Alcântara, and a council of regents had taken control while the successor to the throne remained a minor). In the city of Belém, at the mouth of the Amazon, from where Natterer planned to embark for home, he was robbed and lost the bulk of his material. Even his extensive collection of live animals, destined for the imperial menagerie, fell victim to the plunderers. They devoured the priceless tapir and other animals on the spot!

Natterer wrote, “...I had to leave all my things to their fate on land with three blacks, I went ashore with the Englishman and



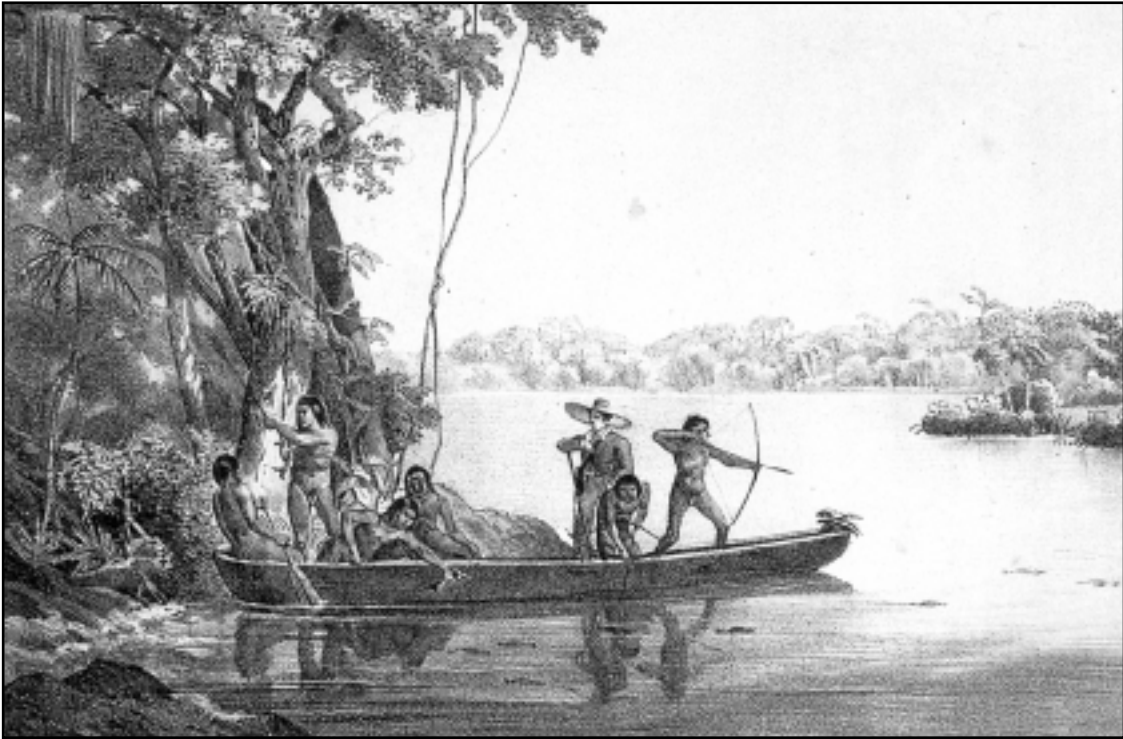
to my house, where I found everything in the greatest state of confusion; almost all my chests had been broken open and the contents scattered; everything of value – my clothes, three airguns, eight firearms, pistols, 600 florins, and many other items stolen.”

“Almost all the menagerie had been killed apart from a few monkeys, parrots, and parakeets, including the tapir, all the turtles, everything that was edible. My blacks had several times narrowly escaped death. At great risk... every day I returned to the house to get the rest of my things together and pack, and at night I slept on the corvette. Because of lack of time and porters I had to leave some of my things behind, including a large chest with two 12-foot sawfishes and other large fishes that I had collected along the sea coast during the months of February and March...”

Luckily for us, the discus was among the items rescued and thus put to sea aboard a ship of the English navy along with Natterer and his family on 15th September 1835.

After 18 years in Brazil he arrived, along with his wife and three daughters, in Vienna on the 13th August 1836 (Leopoldine’s unlucky number). But the uprooting was too much for his Brazilian wife. Frau Natterer and two of their daughters died. Only Gertrude – the third daughter, named after her father’s “saviour” from the Mato Grosso – survived.

The first discus was described by Heckel four years later in his work *Johann Natterer’s neue Flussfische Brasiliens nach den Beobachtungen und Mittheilungen des Entdeckers beschrieben. Erste Abteilung, die Labroiden*. (Johann Natterer’s new river fishes from Brazil, described from the observations and specimens of the discoverer. Part 1, the



On the opposite page (above) is the most famous Brazilian ichthyologist, Prof. Heraldo Britski (left in the photo, with H. Bleher (with a broken arm) right, visiting the *Museo de Zoologia* in São Paulo after an expedition to the Amazonas), holding a *Symphysodon discus* that was shot with an indian arrow in the Rio Trombetas. (A detail is shown on this page, below.) But under normal circumstances the indians never kill discus, as they regard them as sacred and a symbol of fertility (see Bleher & Linke, 1991a: video *The World of Discus I*), although they have been known to shoot them with bow and arrow for the white man, as can be seen in the engraving from the book *Selecta Genera et Species Piscium* (1829). (How else were the naturalists of those times to obtain their material?). On page 38 (below) we see the holotype of *Symphysodon discus* Heckel, 1840. Natterer’s specimen which was used for the description of the genus and species that remain undisputed to the present day. Unlike so many species, the Heckel discus has not undergone any change in its scientific name, which has remained unchallenged for more than 160 years.

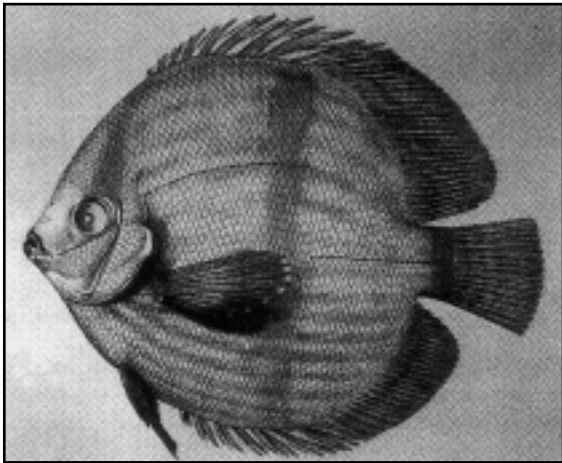


Labroids.) (See also Chapter 2: *Heckel's work*).

Unfortunately the prince of collectors didn't live long after the publication of this work on the cichlids, but died of a pulmonary embolism on 17th June 1843 – very likely the price of the almost unimaginable hardships he had undergone in the Brazilian jungle – without having published his main work on the ornithology of the region. And, of course, with no idea that he would still be honoured, albeit posthumously, in his native land today.

His fellow-countryman, Rudolf Kner (1810-1869), was the first to immortalise Natterer. This son of a high-ranking government official from Linz had planned to become a doctor, but his talents as a naturalist were recognised while he was still at boarding school, at the age of just 15. He nevertheless acceded to the wishes of his father and studied medicine, graduating as a general practitioner and surgeon in 1835. During his studies in Vienna Kner had, however, had regular contact with the *k.k. Naturalien-Cabinet*, and in particular with Johann Jakob Heckel, helping – unpaid, of course – with the collections. And during this time the graduate in agriculture (against his will) and the doctor (against his will) became close friends (See Chapter 2: *Heckel's work*).

In the same year that Natterer returned from Brazil, Kner even took up a position as assistant to Heckel at the royal museum, on a salary that was, as he said, “...zum Leben zu wenig, zum Sterben zu viel” (too little to live on, but too much to die on). In 1840, when Heckel's work was published, they made a collecting trip to Dalmatia to investigate the riverine fish fau-



Rudolf Kner, the well-known Austrian ichthyologist (top), painted the first Heckel discus (*S. discus*) (above) in 1842. Meanwhile in 1865, during the Thayer Expedition, J. Burkhardt painted the first green discus (plus a juvenile) (right-hand page), although he didn't know it was a Green at the time.

na. Hardly had they returned when Kner was invited to take up the post of Professor of Natural History and Agriculture at the University of Lemberg. But his new position made no difference to his attachment to ichthyology and his friendship with his mentor, Heckel. Far from it. Kner did the first good drawing (left) of Natterer's remarkable discus in 1842 - Heckel had provided only a rough sketch with his description (page 135). Kner's drawing was the first reasonably accurate illustration of the species *Symphysodon discus*.

Eight years later Kner returned to Vienna and in 1849 took up the newly created chair of zoology at Vienna University. From then on he again had access to the ichthyological collections and began to work on the parts with which he was most familiar and the “*Schätze von Johann Natterer*” (treasures of Johann Natterer) which had thus far remained unstudied (apart from Heckel's work).

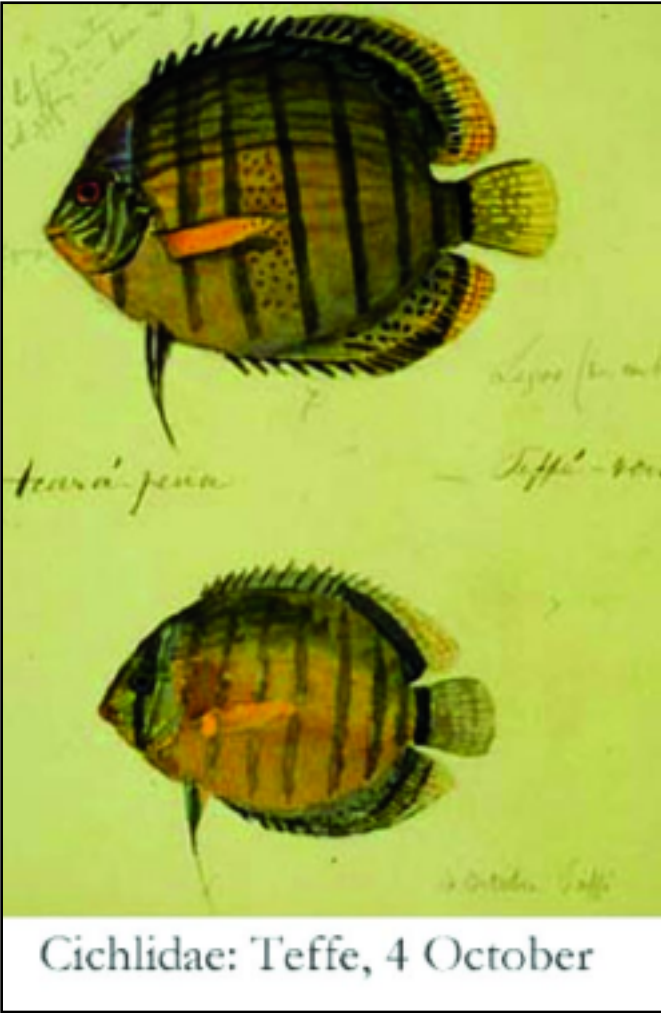
First of all he published *Die Panzerwelse des k.k. Hof-Naturalien-Cabinetes zu Wien* (1853), which was followed by *Die Hypostomiden – Zweite Hauptgruppe der Panzerfische* (1854), which contained numerous new descriptions and remains the standard work on these catfishes to the present day.

After several publications on South American catfishes, following Heckel's death in 1857 Kner worked on Natterer's characins, immortalizing the “prince” for the first time with the piranha species most commonly kept today, *Pygocentrus nattereri* Kner 1858. He described two new genera (*Rhytidodus* and *Bryconops*) and a total of 36 new species, including *Chalceus opalinnus*, which was subsequently recategorised as *Brycon nattereri* Günther 1864 (*ex* Kner). Kner then joined the

ranks of the great ichthyologists through his work on the monumental amount of material that the frigate *Novara* had brought back in 1859 from her three-year circumnavigation of the world. To assist him in this, the professor of zoology engaged a young law student who had changed tack to enter the field of natural history (apparently the fate of all Austrian ichthyologists!). His name was Franz Steindachner (1834-1919), and he was destined to become one of the best known of all ichthyologists internationally. They studied 1,600 specimens from 550 species, their work subsequently appearing in a major publication, *Reise der österreichischen Fregatte Novara um die Erde*, a year after Kner's death in 1868.

As a result of his outstanding work, Steindachner was appointed to the post of head of the fish collections, which had remained vacant since Heckel's death. In the period from 1859 to 1868 he published no less than 55 ichthyological works (about 900 pages), including one on *Sternarchogiton nattereri* (Steindachner, 1868). This was followed by further species named in honour of their discoverer, which still remain valid today. In 1876, *Corydoras nattereri*, *Leporinus nattereri*, *Copella nattereri*, *Achiropsis nattereri*, and *Thalassophryne nattereri*. And in the years that followed, *Anchoviella nattereri* (Steindachner, 1879), *Trachydoras nattereri* (Steindachner, 1881), *Aphyocharax nattereri* (Steindachner, 1882), and *Farlowella nattereri* Steindachner, 1910.

Interestingly this extraordinary man made collections in South America for the second time in 1903, at the age of 69 (his first visit was during the Hassler Expedition, which covered almost all of the New World, in the company of the world-famous ichthyologist Jean Louis Rodophe Agassiz (1807-1873), Swiss by birth but living in America). He didn't bring any discus back from this



trip – or, if he did, I can find no information on it. What I have discovered, however, is that he was possibly distantly involved with the second discus discovery – earlier than Jobert (see next page). But whether or not Steindachner, who at Agassiz's invitation travelled to America in 1868 to study the collections of the Thayer Expedition, saw any discus there, remains unknown.

**THE SECOND DISCUS**

Credit for the discovery of the second discus has usually been given to a Frenchman, Clément Jobert, who fancied himself as an architect, although he was really a naturalist and doctor of physiology. But it now looks as if he wasn't after all the “second discoverer” of the discus as previously assumed.

The famous Thayer Expedition (New York-Brazil-New York, 1865-66), financed by the Boston merchant Nathaniel Thayer and led by Louis Agassiz, returned from Brazil with some 34,000 fish specimens. The expedition had collected at 156 sites including around Ega (= Teffé; both place-names are cited, but they are one and the same – Tef-fé (nowadays Tefé) was formerly called Eda and Ega ), where Agassiz and his colleagues apparently netted green discus at the site THAYER138 (the label reads: “LAGO TEFFÉ?; EDA, collectors L. Agassiz *et al.*, collection date 14 IX-22 X 1865”). Agassiz's companions included Jacques Burkhardt (1808-1867) (the man with the white beard, right), his “personal artist”, who on the 4th October 1865 painted an adult green discus (see on page 41), along with a younger specimen which does not yet show the typical red dots, but whose anal fin clearly demonstrates that it is likewise a Green.

These are the first known colour illustrations of a discus. Thus Agassiz and his companions (centre) must have had these fishes in their hands in 1865, at the place where the Rio Tefé enters the



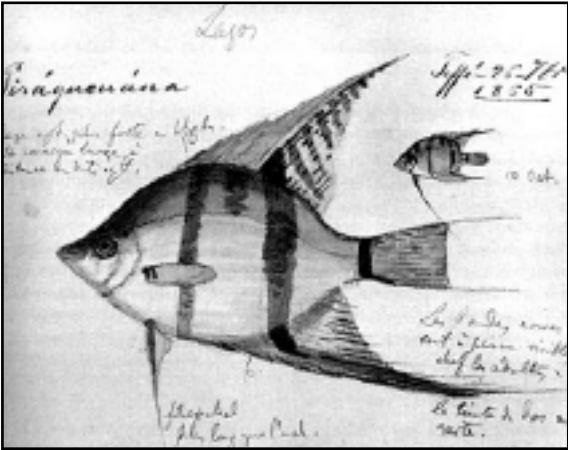
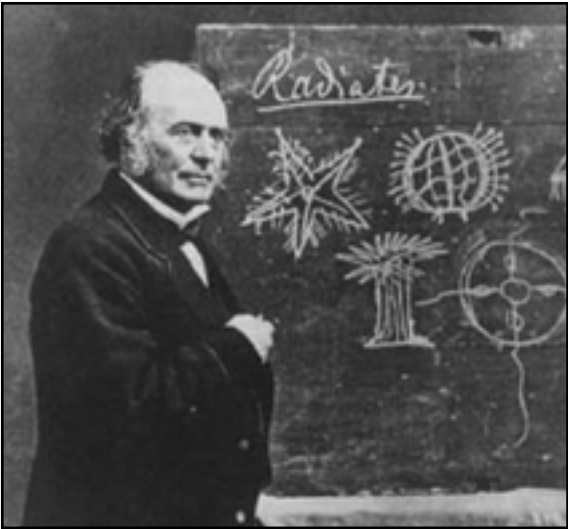
lake of the same name, without realising that they were a second species.

Burkhardt painted some 2000 fishes in watercolours. These detailed paintings remained unpublished and after many years were passed to the ichthyologist George S. Myers around 1940, with the words “...maybe you can find something interesting among these paintings, otherwise I am sure you have a fire once in a while in California...” And it was not until a few years ago that they resurfaced in Cambridge, Massachusets (in the Museum of Comparative Zoology at Harvard University, where most of the fishes from the Thayer Expedition are stored). His discus painting can now be displayed for the first time in this book.

Jobert, meanwhile, netted a further two green discus some 13 years later, in the same place (or, at least, somewhere around Lago Tefé), and also collected additional specimens elsewhere (the precise number is in question – see Chapter 2: *Pellegrin’s description*).

Unfortunately not very much is known about Dr. Clément Jobert. Even in his birthplace of Lyon there are today no records to be found of his birth or death. There is no biography, and the Internet has no entries under his name (except under *curare*, see below), although he was a well-known physiologist. All that remains is a number of his works, published between 1870-1881, in museum libraries.

Jobert studied the sensory organs of various animals (mainly those of mammals, including humans) from 1870 to 1876 and the respiratory organs of terrestrial crabs (1875). He published material on the optical organs of cirrhipeds (with Georges



Pochet in 1876); and, after (or during?) his time in Brazil, on the *curare* poison (1878) and diseases affecting Brazilian coffee pickers (1878). He also researched the evolution of insect genera (1881). But he wrote only three papers on fishes: in 1870, on the evolution of their sensory organs; in 1877 on the evolution of their respiratory systems; and in 1878 on the anatomical and physiological factors that led to the evolution of the respiratory organs in fishes. He undertook one or more (?) research expeditions to Brazil in the 1870s and made collections in cooperation with the Brazilian government. He travelled to Rio Grande do Sul and the mysterious Serra do Estrello (= Mountains of the Stars, not found on any map, but possibly a contemporary name for the mountains around Petropolis), bringing back *inter alia* a new species of characin which his fellow-countryman Pellegrin described in 1909, naming a new subgenus after its discoverer – *Characidium (Jobertina) interruptum*. But more of that later.

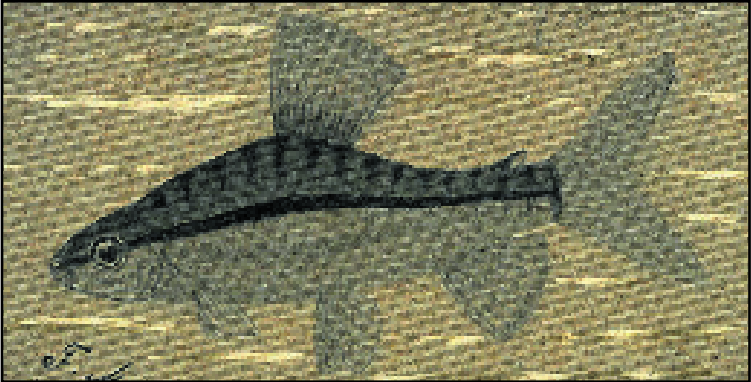
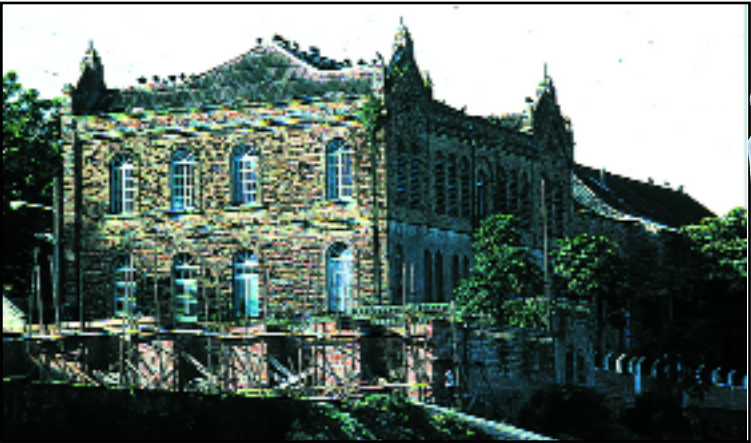
However, he spent the longest time in the Amazon region, from which he brought back in 1878 what M. León Vaillant described in 1880 as a *magnifique collection* (magnificent collection). And this included three or four specimens of discus which Pellegrin described in 1904 as *Symphysodon discus* Heckel var. *aequifasciata* var. *nov.* (see Chapter 2: *Pellegrin’s Description*).

Jobert collected mainly (or exclusively) in seven places: in Pará (= Belém) and on the island of Marajó; in the mouth region of the Xingu; around Santarém; Manaus and Barra do Rio Negro (= Manaus); around Teffé (= Tefé); Tonantins (on the Solimões); and in Calderón (= Calderão or Tabatinga). The four discus subse-

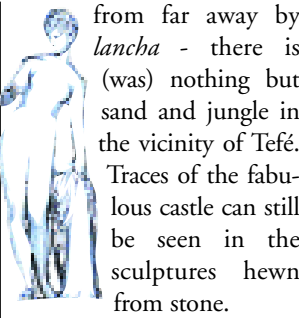
quently studied by Pellegrin were collected at Santarém (1), Teffé (2), and Calderón (1). A further specimen collected at Barra do Rio Negro (= *S. discus*), was not included in Pellegrin’s description.

However, during my researches into Jobert (with the aid of the world-famous characin expert Jacques Géry) I came across a number of very interesting stories that I would like to relate briefly here.

Dr. Clément Jobert was interested in architecture (as a hobby?), and decided to build a miniature version of the Chateau de Versailles at Tefé, on the edge of Lago Tefé, right in the middle of what was then the deepest Brazilian jungle. Apparently the mind-blowing heat and almost 100% humidity proved too much for him (and perhaps led to his early death (all traces of him disappear after 1881), the fate of so many explorers before and after him). Be that as it may, he did in fact start to translate his dream into reality, as evidenced by the presence on the lake shore even today of frescos and palatial steps leading up to the Prefecture. And the original structure of the *chateau* itself – or, rather, its beginnings – is still standing, and has been occupied by Jesuits for more than 100 years. It was the first massive (stone) building by the lake, and the stone must have been brought



Jobert, the “second” discoverer of the discus – the “architect” – started building a residence resembling the palace of Versailles on the shore of Lago Tefé, a structure full of wonderful, lavish, and artistic ideas. Today only the walls and various sculptures remain (top, right, & centre). The palace built by the “Sun King” Louis XIV in 1678 was the pattern for many others, for example King Ludovic II’s Linderhof, Frederick the Great of Prussia’s Sans Souci in Potsdam, and Prince Miklós Esterházy’s “Hungarian Versailles”, Fertőd. Their names became immortalised - but Jobert is remembered only in the names of a few fishes such as *Jobertina* (above).



from far away by *lancha* - there is (was) nothing but sand and jungle in the vicinity of Tefé. Traces of the fabulous castle can still be seen in the sculptures hewn from stone. The “architect” – as I will call him – was, however, also interested in something quite different: the production of the *curare* poison of the Tikuna indians (also written as Ticuna, Tecuna, or Tukuna). He visited this tribe in the vicinity of Tabatinga, where he also found a discus – a Blue? – which Pellegrin described 25 years later as var. *aequifasciata*, as mentioned above (but this specimen cannot be found anywhere – see Chapter 2: *Pellegrin’s description*).

Apropos of which, it is interesting to note that Harald Schultz is also said to have caught the so-called “Blue discus” at Tabatinga – albeit some 80 years later. Moreover Schultz too sought out this indian tribe, only somewhat further to the north-east, and made a film about it (see also *discoveries in the 20th century*, below).

Back in Belém de Pará following his researches in Tabatinga, Jobert wrote as follows to French toxicologists *Sur la préparation du curare* (on the preparation of *curare*), describing in detail how the Tecuna indians (as



he calls them) produce the *curare* poison:

“*Le Dr Jobert a pu faire préparer devant lui l’un des meilleurs curares américains, celui des Indiens Tecunas, au Calderão (Brésil), non loin de la frontière péruvienne. C’est un poison purement végétal.*

*Les éléments principaux de la préparation sont:*

1° *L’Urari uva, plante grimpante, du type des Strychnées (peut-être le Strychnos castal-nae de M. de Weddell);*

2° *L’Eko ou Pani du Maharão, plante grimpante offrant les caractères des Menispermacées (peut-être le Cocculus toniferus de M. de Weddell).*

*Les éléments accessoires sont:*

3° *Une Aroïdée, le Taja;*

4° *L’Eoné ou Mucuna-ea-ha (Didelphys cancrivora?), qui a le port d’une Amarantacée);*

5° *Trois Pipéracées (du genre Artanthe?)*

6° *Le Tau-ma-gere ou Langue de Toucan.*

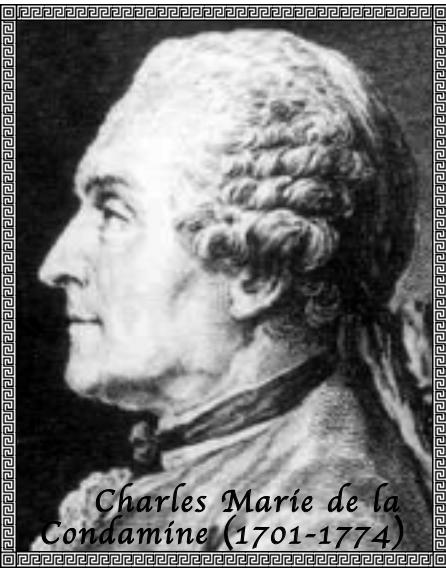
*Ces plants ont été photographiées par M. Jobert, qui en rapportera des échantillons en Europe et pourra en donner une détermination plus exacte.*

*Voici comment les Indiens procédèrent à la préparation du poison:*

*Ils râclèrent la première pour écorce, fort mince, des rameaux les plus développés de l’Urari et de l’Eko, et mêlèrent ces râpures dans la proportion de 4 parties de la première pour 1 partie de la seconde.*

*Ce mélange, pétri la main, placé ensuite dans un entonnoir en feuille de palmier, fut épuisé à l’eau froide, qu’on reversa sept ou huit fois. Le liquide prit alors une teinte rouge. L’Indien le fit bouillir avec des fragments de tige de Taja et de Mucura, pendant environ six heures, jusqu’à l’amener à une consistance épaisse. On ajouta à ce liquide la râpure des ... ?*

(“Dr Jobert was able to observe the preparation of several American *curares*, those of the Tecuna indians at Calderão (Brazil), not far from the frontier with Peru. *Curare* is a strictly vegetable poison.



The main ingredients in its preparation are as follows:

1. The *Urari uva*, a climbing plant of the nightshade type (perhaps the *Strychnos castal-nae* of M. de Weddell);

2. The *Eko* or *Pani du Maharão*, a climbing plant exhibiting the characteristics of the Menispermaceae (perhaps the *Cocculus toniferus* of M. de Weddell).

The secondary ingredients are as follows:

3. An aroid, the *Taja*;

4. The *Eoné* or *Mucuna-ea-ha* (*Didelphys cancrivora?*), which has the habit of the Amaranaceae);

5. Three Piperaceae (genus *Artanthe?*)

6. The *Tau-ma-gere* or *Langue de Toucan*.

These plants were photographed by M. Jobert, who brought samples back to Europe and was thus able to provide a more precise determination.

Here is the way the indians prepare the poison:

First of all they finely scrape the most developed stems of the *Urari* and the *Eko* in order to obtain their bark, which is then mixed in the ratio of four parts of the former to one part of the latter.

This mixture is kneaded by hand and then placed in a funnel made from a palm leaf and squeezed out into cold water, which is passed through seven or eight times. The liquid thereby takes on a red colour. The indian boils pieces of *Taja* and *Mucura* stem in this liquid for about six hours until a thick consistency is achieved. The next ingredient to be added to the liquid is the bark of the...” (The text ends at this point.))

Jobert was in all probability the first to reveal the millennia-old secret of the indians – the composition of the poison with many names – different tribes or dialects variously pronounce it *woonari*, *woorara*, *curari*, *cururu*, *ourari*, *wourali*, or similar.

And this brings me to the European discoverer of this indian arrow-poison, Sir Walter Raleigh (sometimes spelt Raleigh) (1552-1618). This courtier, poet, explorer, and

adventurer travelled the Orinoco on two occasions, in search of “*El Dorado*”. As early as 1595 he brought the poison (but not Eldorado!) back from his first expedition. This remarkable “all-rounder”, a knight of noble blood and long-time favourite of Queen Elizabeth I as well as Captain of her Royal Guard (and lover?), was in 1592 imprisoned by Her Majesty in the Tower of London when she learnt of his secret marriage to Elizabeth Throckmorton, a maid of honour at the court. However, he was soon released again to resolve a dispute over a captured *carraque* (a Portuguese galleon) filled with treasure – only he could deal with the matter, as the expedition had been planned by him. And in 1595 he began his quest for *El Dorado*. The following year, after returning, without having found his goal, with just a few pieces of gold and the arrow poison, he published his first book, *Discovery of Guiana*, in which he wrote as follows on the subject:

“The fourth are called Aoraras, and are as black as negroes, but have smooth hair; and these are very valiant, or rather desperate, people, and have the most strong poison on their arrows, and most dangerous, of all nations, of which I will speak somewhat, being a digression not unnecessary.

There was nothing whereof I was more curious than to find out the true remedies of these poisoned arrows. For besides the mortality of the wound they make, the party shot endureth the

most insufferable torment in the world, and abideth a most ugly and lamentable death, sometimes dying stark mad, sometimes their bowels breaking out of their bellies; which are presently discoloured as black as pitch, and so unsavory as no man can endure to cure or to attend them.

And it is more strange to know that in all this time there was never Spaniard, either by gift or torment, that could attain to the true knowledge of the cure, although they have martyred and put to invented torture I know not how many of them. But everyone of these Indians know it not, no, not one among thousands, but their soothsayers and priests, who do conceal it, and only teach it but from the father to the son.”

Sir Walter never found out either. Around 1600 he was proclaimed Governor of Jersey, but his luck was running out. Because of political unrest over Essex’s purported treason and execution, and because his enemies claimed he was against the accession of James I (in 1603), he fell from favour. He was removed from office, stripped of his property, and accused – without any actual proof – of plotting treason with Spain. In addition he had supposedly plotted to kill the king and enthrone Arabella Stuart in his place. But he was reprieved from the scaffold and instead sent back to the Tower. Here he devoted himself to science and literature, and began his never completed *History of the World*.



Top: a woodcut dating from 1848 showing Ticuna indian women, in typical costume, dancing. Jobert visited the Ticuna at Calderão – which was also where he collected a discus and studied the curare poison in which the indians dipped their blow-pipe darts in order to kill their prey (above). Jobert established that they derived the poison from *Strychnos castalnae*, *Cocculus toxiferus*, and *Didelphys cancrivora*, a plant of the arum family they called *taja* , and three species of Piperaceae (*Artanthe* spp.). They extracted the sap from these plants (without the bark) and boiled it in water (sometimes mixed with poison from snakes, ants, and frogs) for 2 days, and then let it dry out.



Raleigh was released in 1616 and shortly thereafter headed off to the Orinoco again, in search of gold. He was warned to leave the Spanish colonists in peace. This expedition was blessed with neither gold nor discus (of course, there are no *Symphysodon* in the Orinoco system – see Chapter 3: *Distribution*), and hence a failure. But his companion, Laurence Kemys, captured a Spanish settlement, and after Raleigh returned to his native land the Spanish ambassador asked the English crown to punish him (for something that he hadn't done).

Before he was finally executed at the Tower of London in 1618, Raleigh fingered the headsman's axe and declared, "This is a sharp medicine, but it is a physician for all diseases." It appears his last thoughts were of *curare*. Perhaps he was thinking about the contrast of *curare* being a slow painful death...

Unusually for those days, his wife was allowed to claim his head, which she had embalmed and kept constantly with her for 29 years, until her own death.

Before returning to Jobert, the second discoverer, I would like to make another digression, this time on a very well-known Frenchman, de la Condamine, an officer with a passion for the lathe. He was a bit touched – as Jobert with his Versailles – constantly preoccupied with the possibility of controlling and thus automating the turning process by fitting templates

to the lathe, for example to produce portrait medallions. Tradition has it that he invented an apparatus for mass-producing cameos using portrait templates. He also developed, *inter alia*, a technique for the automated engraving of patterns on flat surfaces. His lectures on his work to the French Academy of Sciences are preserved in the annals of the Academy.

Charles Marie de la Condamine (1701-1774), was, however, primarily a mathematician, physicist, explorer, and geographer. La Condamine was sent to Ecuador in 1735 to measure the Earth at the Equator. He was the first European to make a scientific study of the Amazon region (he even collected about 30 fish species in Lago Tefé – but no discus) and he mapped the Amazon by following it by raft from the Andes to its mouth. La



Condamine had already made adventurous expeditions to Algeria, Alexandria, Palestine, Cyprus, and Constantinople.

In Europe at that time learned people were still debating whether the polar circumference of the Earth was greater than the equatorial. The King of France and the French Royal Academy of Sciences had commissioned two expeditions in order to answer this question. One was shipped to Lapland (under the leadership of the Swedish physicist Anders Celsius) and the second to Ecuador. La Condamine initially set off with the second group, along with Louis Godin and the mathematician Pierre Bouguer.

When, in 1735, they landed in Colombia they had to cross the Isthmus of Panama on foot in order to sail on to Ecuador. La Condamine marched through the rainforest with Pedro Vin-

cente Maldonado, the local Governor and a mathematician. They sailed up the river Esmeraldas and climbed over the Andes, reaching Quito, in Ecuador, on the 4th June, 1736, and completing all their measurements by 1739. When the news came from Lapland that the polar survey was finished and had proved that the Earth was flattened at the poles, La Condamine decided to remain in South America. For an additional four years he explored, performed scientific research, and mapped part of the Andes and the Amazon,

finally returning to France in 1745.

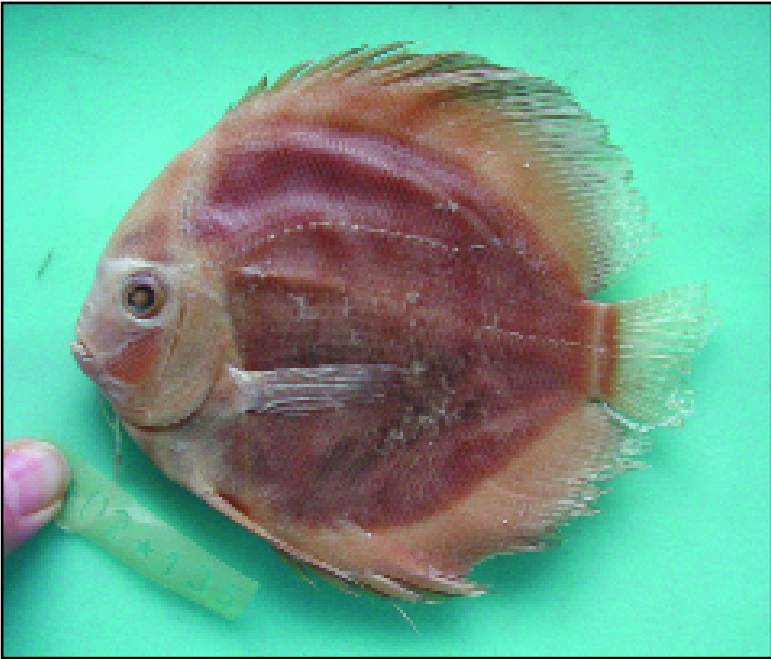
His 10 year adventure was documented in his *Journal du Voyage fait par l'ordre du Roi à l'équateur*, published in 1751, in which he also mentions his experiences with *curare*. La Condamine also originated the idea of vaccination against smallpox (later developed by Edward Jenner), which he had suffered as a child.

I am telling the story of these adventurous pioneers here not just because they by and large achieved something unique, but also because, like so many, they failed to receive the laurels they had earned – far from it. And because they performed a certain amount of scientific research, far in advance of everyone else, even though neither of them brought back discus (although La

Condamine did follow the "discus route" for many years). Or maybe they did and we simply don't know it...

We do know, however, that Natterer's was the first recorded discovery – albeit just one individual. And almost 30 years later Agassiz and his companions were second. But Jobert's three or four specimens were the ones described as the second (sub)species, although he was the third to collect discus.

In fact the "architect" did not receive the honour he deserved until after his death (it is well known that people often do not become famous until they are dead). In 1880 M. Léon Vaillant published on the freshwater rays that Jobert had collected in Calderón; on species of "Siluridae" – including a species that he named *Otocinclus joberti* after its collector (the species was later transferred to the genus *Hypoptopoma*); and many more – but I do not know whether Jobert ever knew of this. Then, in 1902, Pellegrin wrote a lengthy paper on the cichlids from Jobert's collection (*Cichlidés du Brésil rapportés par M. Jobert*), in which he mentioned the *Symphysodon discus* Heckel it included, without going into further detail. This was, however, rectified two years later when, as already men-



The three discus shown here are the original specimens that Jobert collected in 1878 (there was supposedly also a fourth specimen from Calderón). The fish on the left-hand page has the locality given as Santarém (Nr. 02-130[1]) – it is quite clearly a blue discus! The specimens above came from Tefé (02-134-135[2]) and are definitely greens. The adult fish (top) exhibits the typical pattern of markings in the anal fin, and the appreciably smaller specimen from Tefé (above) as yet has no markings, as is typical in Tefé wild-caughts; they first appear at an age of 8-12 months – often even later.

tioned, he described these fishes as a new variety, *aequifasciata*. And in 1909 he published a work on a characin of the family Characidae from the Serra do Estrello, which he described as *Characidium (Jobertina) interruptum*. The crowning accolade came in 1977 when Jacques Géry elevated the subgenus to generic status. Though, of course, Jobert was no longer around to know of this, or indeed that in 1993 and later the name was disputed and synonymised by some authors. But that is science (or rather, scientists).

Dr. Clément Jobert's discus have now gone to their eternal home in the vaults beneath the Musée d'Histoire Naturelle de Paris, in France, where they rest alongside numerous other cichlids, including *Pterophyllum altum*, likewise described by Pellegrin in 1904 – which, however, has never been found syntopic with discus in nature.