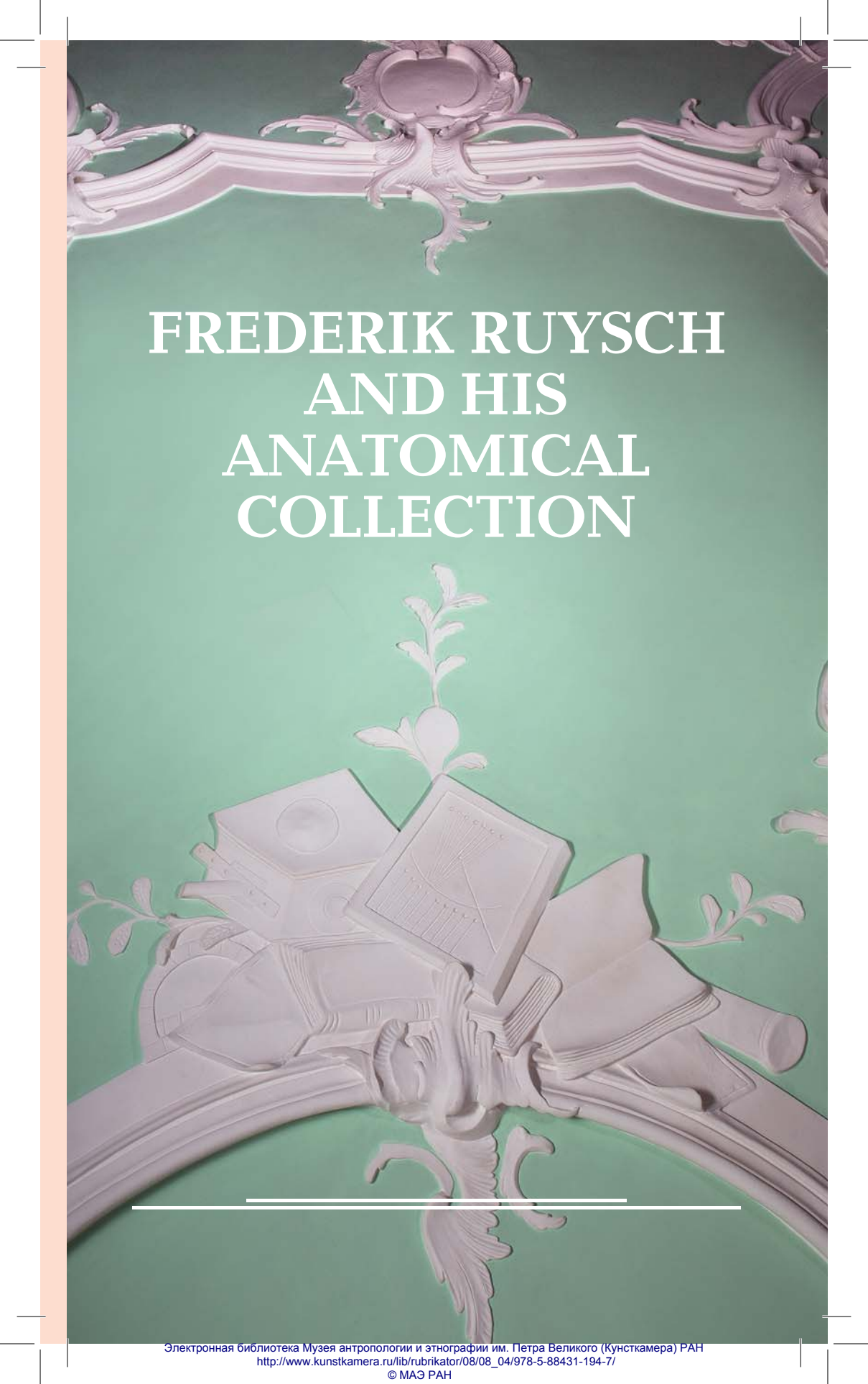
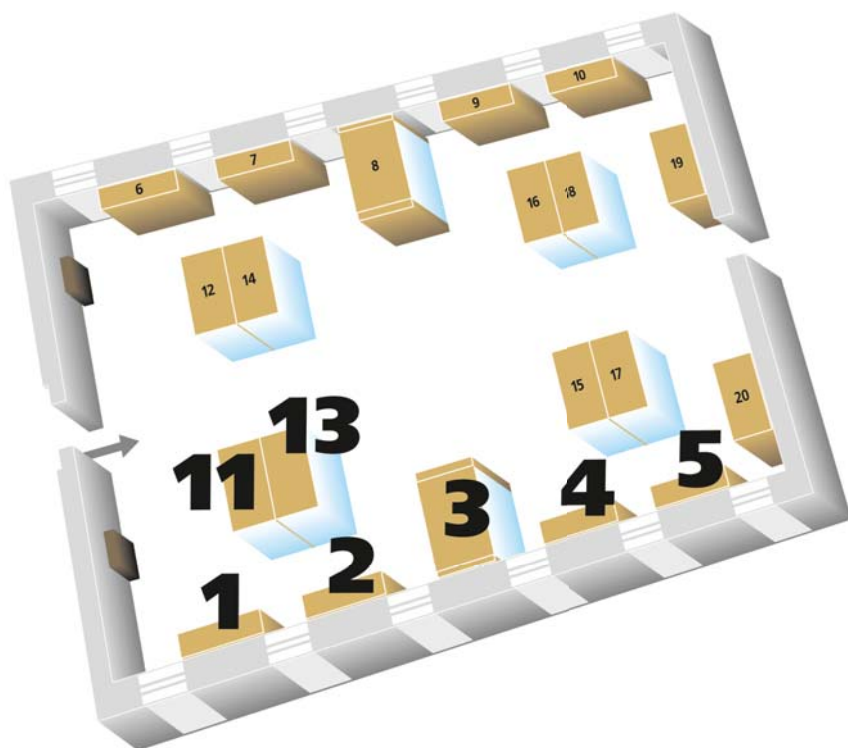




FREDERIK RUYSCH AND HIS ANATOMICAL COLLECTION



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FREDERIK RUYSCH

Frederik Ruysch is often referred to as one of the most prominent researchers of his era. Due to his passion for anatomy and his art of dead bodies' conservation techniques made a big leap forward. Before that, anatomists had always faced many problems related to the fact that dead bodies were decaying fast; and the need to hurry led to numerous mistakes during dissections and in descriptions.

Frederik Ruysch (1638—1731) was born in The Hague in a civil servant's family. He graduated from the University of Franeker where he studied to be a pharmacist. Later, when he already ran his own pharmacy,



▲ *Skeleton of a two-headed, three-handed newborn – a specimen from F. Ruysch's collection on a stand that dates to late 17th century*

The anatomist did not like to display freaks of nature and let others speculate about the causes of various monstrosities.



▲ *Child's skeleton – a specimen from F. Ruysch's collection*

The anatomist mastered the art of preparing children's skeletons in such a way so that they remained bound by natural ligaments.



▲ *Anatomy lesson taught by Frederik Ruysch. By Johann Van Nek. Amsterdam. 1683. From the collection of Amsterdam Historical Museum (the Netherlands)*

In this painting, Dr. Ruysch is raising the umbilical cord of a stillborn baby. A boy holding a skeleton in his hands is Hendrik Ruysch, the Professor's son. This painting was bought by the surgeons' guild and displayed in the Weigh House of Amsterdam, which also accommodated the Anatomical Theater.

he continued his education in the Medical Faculty of the Leiden University. He was engaged in dissections and conservation of blood- and lymphatic vessels, which became popular after Harvey had discovered blood circulation. Originally, he tried to preserve his preparations by removing perishable blood from vessels and filling them with air. The thinnest branches of veins and arteries, when inflated, became visible and allowed for interesting observations, but the process was extremely labour-intensive, so Ruysch sought for a different technique. His friend and contemporary Jan Swammerdam (1637–1680) showed him how to make injections that filled blood vessels with melted and stained wax. Frederik Ruysch refined this technique and reached staggering results.

His preparations retained their natural colour and could be preserved for a very long time in so called Nantes Brandy, distilled with pepper and other spices. In 1666 Ruysch became the City Anatomist of Amsterdam and started to create his home museum (a “Cabinet”).

PREPARATIONS WITH INJECTED VESSELS

Frederik Ruysch's anatomical collection can be divided into three parts: didactic preparations, decorative preparations, and preparations for scientific research. The first group is formed by preparations that were aimed for educational purposes. Inner organs preserved in alcoholic solutions served as visual aids for medical students. Ruysch did not invent conservation in alcohol.

As early as in 1582 a famous French doctor named Ambroise Paré (1510—1590) wrote about the use of spirit for embalming of dead bodies. Frederik Ruysch and another 17th-century Rotterdam lay-anatomist named Louis de Bilz (1624—1669) used Paré's technique.

Due to Ruysch's unique technique of injecting blood vessels, his preparations demonstrated the extensiveness of their network. The anatomist's syringe containing a coloured liquid composition penetrated into all organs of a dead body and allowed for discovery of the smallest branches of blood vessels that could not be seen otherwise and had been unknown. Ruysch even came to a conclusion that all human organs consisted of blood vessels, and other tissues merely served to support the network of veins. Indeed, if you look closely, for example, at the preparation of a small intestine, you get the impression that it is filled with blood vessels. In his catalogues Ruysch described the structure of the blood vessels system and its topography: "Branches of blood vessels that distribute blood through mesentery are divided into branches so small, that they can sometimes compete with a spider's web".

Ruysch eagerly shared his anatomical knowledge, but never his secret techniques for dead bodies' conservation. Due to his unique methods he earned enough to invest in his research and be pretty well off. Keeping techniques secret was a customary practice at that time.



▲ Human small intestine turned inside out — a specimen from F. Ruysch's collection

The colored injections allows to see the vascular system of the mucous membrane and makes all fibers visible.

Apart from preparations of various organs arranged in small pyramids as they were in the early 18th-century *Kunstkamera*, visitors can see two panels formed by various shells that resemble those from Albert Seba's collection.



▲ An injected specimen of eyelids from F. Ruysch's collection

J.V. Bacmeister, the author of the Museum's guide-book and catalogue, wrote in 1776: "What a fineness in all these parts, and what a tenderness in their preparation!"



SHELLS [showcase #1]. Snails demonstrate a great variety of shapes. For centuries, they have played an important role in people's lives and served as food. Many peoples used snail shells as decorations, and in some parts of the world they were also used as money (in some regions of Oceania until the 20th century). Shells of cowry, that are found in South-East Asia, were used as monetary units first in China and Japan, and then in India and Indo-China, where they became the only currency in the beginning of AD. In the pre-historic times, they spread as far as Northern Europe. Today shells are used as decorations, as a material for cameos, etc. For 16th—17th—century collectors, many-coloured shells were attractive and desired items, for which Albert Seba's collection are bright evidence.

GOMOLA CRAB [showcase #2]. People have known crabs for many centuries. Many myths of the Inca, Aztecs and ancient Egyptians are related to them. Together with lobsters, shrimps, etc. they form the order of ten-legged crustaceans. The crab represented in this showcase is found in the Mediterranean Sea and the tropical region of the Atlantic Ocean. Most crabs are predators. There are also terrestrial crabs, for example the species referred to as the palm thief, or the coconut crab. It feeds it selves with fruits of different palms that fall to the ground, but also attacks its sick fellow specimen. The idea that the palm thief climbs coconut trees to throw coconuts down is false. It cannot climb up trees, nor climb them down. In fact, there is no relation between this species and coconut trees, since this crab is found on many islands where there are no coconut trees at all. You can also see an image of the palm thief on a drawing by Maria Sybilla Merian found at the end of this room.



▲ *Crabs.*
Watercolor by M.S. Merian. 1704—1705.
From the collection of the St. Petersburg
Branch of the Archive of the Academy of
Sciences

HORNY CORAL [showcase #2]. Horny corals colonies can be extremely diverse. They can be pinnate, treelike or fan-shaped. For corals found in warm waters, branching in one plane is typical. These graceful horny corals can be bright yellow, red or even violet. They form whole underwater forests that remind of autumn foliage.

EMBRYO PREPARATIONS

Ruysch created preparations of embryos of all stages of their development. In the late 17th — early 18th century, visitors to Ruysch's home museum could trace the foetal development from when it is as small as a pea, until it is to be born. According to Ruysch's contemporaries, of greatest interest were the preparations of a four-month-old foetus inside the womb, and of a foetus "as big as a rye grain" with placenta and the umbilical cord.

Ruysch was never short of exhibits for his anatomical museum. In late 17th — early 18th century around 6000 babies were born in Amsterdam each year, and, unfortunately, not all childbirths were problem-free and went without complications. Since Ruysch started to train midwives, they began to bring him premature stillborn babies or foetuses from miscarriages and abortions. In his catalogue, Ruysch supplemented the descriptions of exhibits with various comments. He wanted to make anatomy accessible for everybody, to diminish the natural aversion stirred up by death, and to emphasize the transience of life. He often accompanied his exhibits with aphorisms about the vanity of life. Latin sayings and the symbols of transience all served the same purpose as the decorations: to diminish the disgust that people feel at the sight of a dead body.

Ruysch did not arrange his preparations in showcases according to some subject principle: his main purpose was to arrange them in such a way, so that they were "a pleasure to the eye". He wrote that it would have been very easy to arrange his collection in a different way, for example to "fill one showcase exclusively with human hearts dissected in different manners, another showcase with babies and the third with babies' heads. But this would not gladden one's eye". He appealed to his visitors' feelings and tried to make his exposition more attractive. For example, visitors' attention was always captured by a seven-month-old fetus of an Ethiopian girl with an injected placenta fragment, and at the entrance they were "greeted" by three baby skeletons: a skeleton of a four-year-old with toys in its hands, a skeleton of a five-year-old with a silk thread on which there hang an embalmed heart, and a skeleton of a girl wiping away her tears with



▲ *Injected placenta blood vessels with tissue fragments — a specimen from F. Ruysch's collection*

Numerous blood vessels' branches are visible.

a handkerchief. In his catalogue, the anatomist supplemented the descriptions of preparations with his comments. He pointed to the anatomical differences between skeletons of boys and girls, children and adults. Ruysch did his best to demonstrate his art in his exposition.

RUYSCH'S "CABINET"

The term “cabinet” used to denote secretaries with small sections or drawers where old coins or jewellery were kept. We can see an image of such cabinet with “rarities” on a painting by J.G. Heinz (1666). In the 16th century cabinets were collections of any items that in their totality were a reflection of the world. Rarities were attached special importance, as it was considered that they rendered the versatility and diversity of the world. Later, the word “cabinet” began to be used to denote a room (kamera in German), where a

collection of rarities was kept. Often, such rooms were also referred to as wunderkamas, i.e. rooms of wonders, curiosities. The word kunstkamera was used to define a chamber where artistic objects were kept. However, wunderkamas and kunstkamas were, in fact, quite similar, and soon these terms became interchangeable.



▲ *Cabinet of rarities. J.G. Heinz. 1666.
From the collection of the Friedenstein
Castle, Gotha, Germany*

The word “museum” refers to a public institution, but originally it denoted a place dedicated to muses and inhabited by the nine goddesses who patronized fine arts. In the 16th—17th centuries, museums, as well as in cabinets, spread around Europe, thus emphasizing the inheritance of antique traditions.

Ruysch’s museum-cabinet contained not only his anatomical preparations. As well as many other collectors of his time, he accumulated various “naturalia”: exotic animals,

fishes, birds and insects, as well as a herbarium, as Ruysch was a Professor of Botany. He also published catalogues of his cabinets, so that everyone could get familiar with the contents of his collections. Ruysch realized that not all people are capable of admiring the beauty of the Divine Providence: the human body. So he tried to decorate his anatomical preparations, so that they enraptured even those who were ignorant in the sphere of anatomy. With the help of his daughter Rachel, he covered lines of the cuts of babies’ arms and legs from their bodies with fabric and lace so that they looked attractive. He sometimes placed another, smaller preparation in a hand that looked pink due to injections, and a scorpion (a symbol of danger) near or under a baby’s leg. The virtuous anatomist decorated the tiny dead embryos and fetuses with bonnets

and wreaths, so that the embalmed bodies looked as if they were alive and sleeping. A visitor to the Museum expressed his impression of Ruysch's collection in the following words: "A perfect necropolis, where everyone is sleeping but is ready to speak as soon as they wake up".

In this showcase you can see the anatomist's decorative preparations that he tried to turn into aesthetic objects. His art and mastery of the injection technique is best revealed in the filling of the thinnest blood vessels of the periosteal coverage and the membrane (at the inner surface) of a child's skull.



- ▼ *Specimen of a newborn's hand from F. Ruysch's collection. The skin looks pink due to the injection*

An aesthetic-decorative preparation typical of Ruysch's collection.



- ▲ *A child's brainpan with injected blood vessels of the periosteum and the pachymeninx — a specimen from F. Ruysch's collection*

- ▼ *Specimen from F. Ruysch's collection — an embryo and an injected baby's leg*





BEETLES [showcase #3]. Insects are a huge group of creatures which all have the same constitution: a pair of horns, three pairs of legs, and bodies divided into the head, chest and belly. There are more species of insects than of any other animals or plants.

Beetles have always attracted collectors' attention. In the left part of the box, different types of bugs are displayed: ground beetles, stag beetles and leaf-cutting beetles. Here you also find the so-called leaf-horned beetles: flower chafers, scarabs, may beetles and the unicorn beetle. Many of them can be found in the central part of Russia.



▲ *Collection of beetles. On loan from the Zoological museum collections*

In the right section, there is a leaf insect's larva from Australia in the centre, and on both sides of it you can see darkling beetles, a burying beetle and a silver water beetle. Beneath them are longhorn beetles and jewel beetles.

CORALS [showcases #3-5]. The word "coral" usually calls up associations with something rigid, though fragile, and we rarely realize that they are living creatures. Only as late as in 1723 a French ship's doctor called Peyssonel discovered that coral reefs were not plants, but colonies of coelenterates that have massive calcareous skeletons. They are the most primitive multi-cellular animals, and their name originates from the fact that they only have one cavity: the intestinal cavity. They can form colonies of different shapes: bushes, trees, fans, etc. An individual coral is a sedentary polyp whose body has a stem that connects it to the colony. On the upper end of a polyp is a mouth opening, surrounded by tentacles that grip food.



The white coral (showcase #3) looks like a beautiful small tree. Its skeleton consists of alternating horny and calcareous sections. It refers to gorgonian corals and is called *Izidella*. It is found in the Mediterranean Sea and in the Bay of Biscay at the depth of 220 to 1000 meters. Like many other deep-water species, it has a plate with root emergencies that help it hold to the bottom.

► *Horny coral.
On loan from the
Zoological museum
collections*

*The coral's numerous
branches remind
of human blood vessels'.*



On the coast of the Indian Ocean and the Red Sea trading black corals (showcase #3) is considered a profitable business. Its brownish-black stems (soft tissues and the upper layer of the skeleton is peeled off) are used to make rosaries, other decorations and amulets.

In showcase #4 you can also see skeletons of two gorgonian coral colonies: *Leptogorgia* from the Atlantic Ocean and *Primnoa* from the Barents Sea.

Organ-pipe corals have a peculiar constitution (showcase #5). Fragments of bright crimson corals can be found on the sandy beaches of atolls and coral islands. These fragments, devoid of soft tissues, consist of numerous small pipes and remind of an organ. During the high tide, the polyps lean out of the pipes and spread their tentacles. Then, the colony turns green, as this is the colour of the polyps themselves. When endangered, the polyps immediately retreat back into the pipes, and the coral becomes crimson again. Organ-pipe corals are wide spread in tropical reefs.

THE ART OF EMBALMMENT

In the early 1690s Frederik Ruysch, together with his son, brought his embalming technique to perfection. They were looking for a liquid that would harden after being injected into the smallest blood vessels. Melted wax which Ruysch originally used, allowed reaching good results, but the anatomist was looking for a more ideal substance. He experimented a lot, and eventually discovered a new liquid for his injections that yielded amazing results. The art of filling tiny blood vessels, including capillaries, with this liquid resulted in new discoveries in anatomy. Ruysch was able to see “all arteries penetrating the inner organs and turning into veins”. He enjoyed his new technique, which it took him 34 years to discover. He managed to achieve an illusion that a “dead person was revived, and the body looks as natural as if it were alive. It seems that the body has everything except a soul; all limbs are flexible; the skin, the tissues and even the inner organs look very natural, and some of them are even pink as if they belonged to a living person”. Recent investigations proof that he used oxid of mercury as the main ingredient for staining.

Ruysch kept his technique of embalming and staining dead bodies secret. This was a usual practice for that time, as neither the government nor anyone else paid for the anatomist's experimental work, his searches and expenses. He viewed the methods he developed as his property. The composition Ruysch used must have contained essential oils and resins that gradually impregnated his preparations and they lost their natural appearance. Already in late 18th century they lost their natural colour and darkened. Although today it is possible to determine what substances Ruysch used for his preparations, the secret of his technique still has not been disclosed completely.

In his cabinet, in the centre of each showcase Ruysch placed a composition made up by gallstones and bladder stones, between which he arranged dried calves' blood vessels injected with a coloured (stained) liquid. Among them there were tiny embryo skeletons,



▲ *Newborn's head — a mummified injected specimen from F. Ruysch's collection*



▲ *Baby's arm with partially uncovered skin — a mummified specimen from F. Ruysch's collection*



▲ *Anatomical composition by F. Ruysch. Drawing by Cornelius Huyberts, 1701–1715*

In F. Ruysch's home museum, he placed compositions with embryo skeletons in the center of each large showcase, which were to convey the idea of the 'vanity of vanities'.

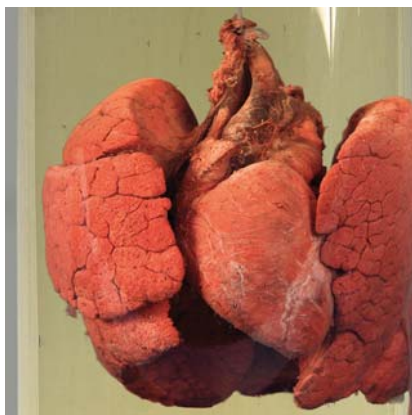
whose purpose was to convey the message of the “vanity of vanities”. These skeletons, touching and sorrowful at the same time, were true evidences of lives that were never to be lived, and eloquently spoke about the tragedy and unfairness of destiny, so even if they had not been accompanied by an aphorism by Plautus (“Like a meadow flower, I sprouted quickly, but then was pulled up straight away”), they still stirred up the feeling of defencelessness in front of the inevitable destiny.

On our display, we have reconstructed Ruysch's installation with tiny skeletons that, according to the anatomist's intention, represented two philosophers: the laughing Democritus and the crying Heraclitus. The “Democritus” is holding a sickle and is laughing at life as if he were exclaiming “Since life is so full of troubles, I silently rejoice at the fact that I'm freed from them by death”. The “Heraclitus” is weeping into a handkerchief made of human mesentery (a thin membrane supporting the intestines) and exclaims: “We, deprived of the sweetness of life and weaned, are pulled out by the evil death and buried in a dark grave”.

Ruysch decorated his tiny dead embryos with bonnets and wreaths, and concealed the lines of cuts with laces or fringed kerchiefs to make his preparations look attractive and to avoid scaring visitors off. He was a great stimulant of the study of anatomy. He used to accompany his preparations with quotations from antique authors to emphasize the transience and tragedy of human fate.

FREDERIK RUYSCH'S TECHNIQUE

Ruysch made a number of important discoveries in the sphere of human anatomy. He discovered the embryonic artery of the vitreous humour and studied the bronchial and pulmonary arteries. These discoveries became possible due to his refined injection technique, which allowed examining the tiniest blood vessels that could only be seen in a microscope on a sunny day. We should keep in mind that at that time microscopes were quite primitive, and no artificial lighting was used. The anatomist developed a technique that allowed him to inject a minimally viscous liquid that could penetrate into the smallest capillary branches and that solidified later, which provided for the durability of Ruysch's preparations. Injections had to be made with a certain force, so that the liquid penetrated deep enough, but at the same time, not too hard to avoid unwanted blood vessels' ruptures. Ruysch's embalming technique allowed demonstrating the blood vessels that became invisible right after a person's death. Ruysch's contemporary Professor Herman Boerhaave (1668—1738) wrote the following rapturous words about his preparations:



▲ *Injected specimen from F. Ruysch's collection — a baby's heart and lungs*



▲ *Injected specimen from F. Ruysch's collection — a baby's kidneys*

“In the liver blood vessels resemble small hanging nests, in the testicles they look like clews, in the kidneys they are bended in arches at different angles, in the intestines they look like tree branches, and in the iris they form circles and rays”. Ruysch was confident that his preparations provided for the development of anatomy. However, he was often accused of trickery, and some people claimed that he painted his preparations. In fact, if one looks at the bright preparations of lungs and a baby's heart and kidneys, one cannot help wondering if their outer surface had been painted. To prove that the accusations were false, Ruysch once washed his preparation with soap and sand in front of a big audience.

When Ruysch sold his collection in 1717 to Peter I, the Russian tsar insisted that the anatomist disclosed his secret to him. Ruysch produced an instruction explaining how to make preparations and handed this document to a notary. After he had received the money, the notary gave this document to Peter's representative. Since then, many people tried to get hold of it. A French anatomist tried to wheedle the secret from Robert Areskin,

the tsar's court physician. After his death, no signs of this document could be found. Ruysch's student Bernhard Siegfried Albinus (1697—1770), who also specialized in injections, expressed an idea that the point was not only in the recipe itself, but also mainly in Ruysch's amazing skilfulness. The old anatomist also anticipated this when he wrote the following words: "It is easier to criticize my work than to reproduce it, which future generations will realize only after I'm dead".

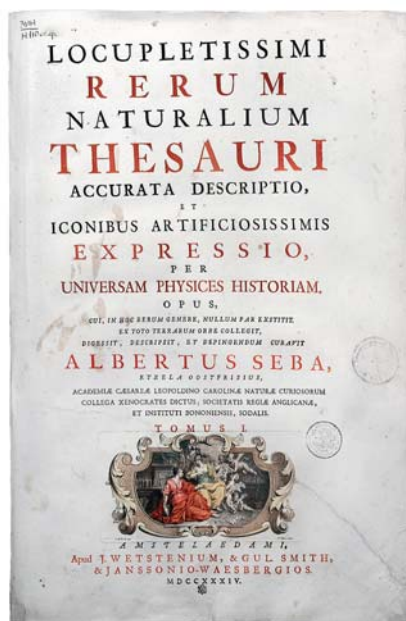
FREDERIK RUYSCH AND ALBERT SEBA

During his two trips to the Netherlands, Peter I took great interest in the collections brought together by Dutch collectors.

One of them was Albert Seba (1665—1736), who was born in Germany and in 1700 opened his German Pharmacy in Amsterdam. Apart from buying exotic medications brought by sailors of the East- and West-Indian Companies from Indonesia and South America, he acquired rare animals, insects, shells, stones and pieces of art. Collecting naturalia and rarities became his life work. As early as in 1711 Albert Seba offered his services for the delivery of medicines to Russia, and soon the supplies to the tsar's pharmacy reached a great scale: the turnover was 30 thousand guilders a year.

In 1715 Seba offered to sell his collection to Russia, which he did for 15 thousand guilders, and on September 17th, 1716 it safely arrived to St. Petersburg on two ships. Two years later it was displayed in the Kunstkamera, which was then located in a mansion that had belonged to Kikin, a disgraced boyar. Citizens of the cold city of St. Petersburg got a chance to see 120 species of lizards, snakes, crocodiles, tortoises, amphibians, as well as dozens of species of birds and warm-blooded animals from the tropical regions of the Old and the New World. This also delighted foreign visitors to the young northern capital of Russia. Unfortunately, not all of the exhibits have preserved until our days, but we still can take a look at some of them. Of special notice is a marvellous catalogue of Seba's collections, the frontispiece of whose first volume is represented here.

While in Holland, Peter I bought another amazing collection created by Frederik Ruysch (1638—1731), the famous anatomist. Ruysch developed a unique method of preservation of dead human bodies by injecting liquid



▲ Front page of the first volume of the catalog of Albert Seba's collection. 1734



INDUSTRIA

Præsidio VERITATIS munita, SCIENTIARUM incitata AMORE, adjuva TEMPORE, suam sibi undequaque, instar APUM, colligens Suppellectilem, cum PHYSICA disserit de variis Naturæ operibus, admiratione dignis, quæ in triplici Animantium, Vegetantium, Fossiliumque Regni divitiis, ex omni ORBIS TERRARUM plaga, Naturæ ac Navigationis admeniculo, comparatis, detexit: nonnullis interim GENIIS assidentibus, qui, admirandorum intenti spectaculo, de his inter se conferunt, dum alii duo, ex alto delapsi, indefessos INDUSTRIÆ labores Laureo Serto, et immortal. Gloria, remunerari gestiunt.

▲ Frontispiece of the first volume of the catalog of Albert Seba's collection. 1734

In the center of the allegorical painting there is the Goddess of Truth. The light she radiates with the support of the omnipotent Time, helps Science to comprehend nature.

wax-like substance into the blood vessels. Ruysch's preparations looked as if they were filled with real blood, and the skin had a natural colour due to blood vessels filled with a red liquid that looked through it. The anatomist's preparations formed a rich collection that his contemporaries referred to as the eighth wonder of the world. "All bodies, all organs embalmed by him, preserved their colour, shine and the freshness of youth. You could take them for live people resting, their bodies in a natural paralysis of sleep. One can even say that Ruysch discovered the secret of reviving the dead. His mummies are discoveries of life, compared to which, the Egyptian mummies are visions of death. It feels as if a person goes on living in one, and goes on dying in the other." These words belong to Ruysch's contemporary Bernard Fontenelle (1657—1757), Secretary of the Parisian Academy of Sciences and they fully



▲ F. Ruysch's home museum. Print by Cornelius Huyberts on the front page of the «Complete works» by F. Ruysch. 1720s



▲ *Wood snake.
Specimen by A. Seba (?) on loan from the
Zoological museum collections*

explain the great popularity of Ruysch's home museum. People went there to satisfy their thirst for wonders, so typical of the Baroque era. The art of anatomy exceeded simple craftsmanship and turned into a magical power of the artist who managed to overcome the decay of death. One should just look at the preparation of a baby's head that fully agrees with this.

In the mid-17th century conservation techniques were not yet discovered, so the researchers of anatomy had to compete with time, as dead bodies were decaying quickly. Ruysch's great achievement lay in the fact that he managed to create preparations in such a way, so that they remained suitable for research and educational purposes for many years.

Ruysch's collection contained not only his anatomical preparations, but also rare animals brought by Dutch sailors from all over the world. The abundance of exotic animals in Ruysch's collection never failed to enrapture his contemporaries. "Here animals are preserved in spirit, such as: monkeys of different types, birds, snakes, frogs, fishes and other amazing creatures, including an animal the size of a large mouse, that has no fur and delivers posterity through its back, where there were more than 20 little..." — these are the impressions of a visit to Ruysch's "Cabinet" left by a Russian man named M.A. Venevitinov. The animal that impressed him so greatly is the Surinam toad *Pipa pipa*. On our display, you can see this preparation, as well as its image in the catalogue.

The acquisition of this collection by Peter I was a huge event not only for the anatomist, but also Europe-wide. Peter paid 30 thousand guilders for it, which equals approximately a million dollars in modern terms.



SURINAM TODA PIPA PIPA WITH THE YOUNG [showcase #11].

This amphibian bears its young in a way unusual for other Surinamese frogs and toads. Its spawn is carried by the male to the female's back, where special cells are formed in the thick spongiöse skin. In these cells spawn and larva develop for two and a half months. They leave their mother's back when they have grown enough and are ready for independent life.

GUITARFISH [showcase #11]. Guitarfish are spread in the oceans and seas with cold or moderately warm waters. Normally, they are not very big and lead sedentary near-bottom life.

SPURDOG SHARK [showcase #11]. The spurdog, which is usually one meter long, is found in moderately warm and moderately cold waters of the northern and southern hemispheres. It lives in shoals and is caught for food in the UK, Norway, Japan and China.

COMMON IGUANA [showcase #11]. The common iguana is wide spread in Central America. These lizards, which can be up 180 cm long, live on trees growing near the water. If there's a threat of danger, they hide in water, where they can swim and dive very well.

GEOEMYDA TORTOISES [showcase #11]. This Latin term unites a large group of tortoises that consists of 15 species, nine of which are found in South-East Asia, and six in Central and South America. Among the American species, there are not only water tortoises, but also terrestrial tortoises. They all are found in the region between South and East Mexico to Columbia and Ecuador. One of the most beautiful representatives of the Geoemyda tortoises is displayed on our exposition.



▲ *Specimen of Surinam toad Pipa Pipa with its young's*



BRONZE-BACK [showcase #11]. Bronze-backs are found in India, Indonesia, on Ceylon and in tropical America. They are thin greenish-bronze shiny snakes with black stripes on their bodies.

South-Asian bronze-backs can make long gliding jumps.



◀ *Cane toad.
On loan from
the Zoological
museum
collections*

CANE TOAD. The American cane toad is the only amphibian found in brackish waters. Indians used the poisonous excretions of cane toads to soak their arrowheads before a hunt to paralyze wounded prey. This poison is quite strong, but has no effect on people, provided their skin is unbroken.



SUCK-FISH [showcase #11]. With the help of an oval sucker-like organ, these fish take a firm hold against the skin of different “masters” — large fish, whales, tortoises, etc., which helps sucker-fish cover large distances. They are found in tropical and sub-tropical waters. Different species of suck-fish have different degrees of affection with their masters and of the ability to lead independent life. Shark suckerfish can hardly exist without their masters at all.

► *Shells.
On loan from
the Zoological
museum
collections*



SHELLS [showcase #11]. Most probably, these shells (*Neptunia* and *Fissurella*) were part of Albert Seba’s collection; and the largest spider-shell was even named after him. These molluscs are found in the shallow regions of the Pacific Ocean, the Red Sea and near the coast of Eastern Arabia.

Neptunia is found in cold waters — near the eastern and northern coast of Iceland, Greenland and Great Britain, and *Fissurella* is found near the Cabo Verde Archipelago.

PANGOLIN [showcase #11]. The pangolin feeds on live termites, ants and their eggs. It is hard to provide such diet in captivity. These strange-looking animals covered in scales, which makes them look like huge strobiles, are found in Africa and Asia. In Africa people believe that pangolin scales are a charm that protects its owner from a lion’s teeth and claws. In local folk medicine and sorcery everything has value: pangolin’s scales, skin, bones and fur. In Indonesia people used to make armours from pangolin shells,



▲ *Indian pangolin.
Stuffed animal on loan from the
Zoological museum collections*

and it was believed that one couldn't pierce such armours with an arrow. In the 17th century all European collectors wanted to get hold of this amazing animal.

ARMADILLO [showcase #11]. Almost all armadillos are found in South America. Their shells remind of ringed armour. When rolled up, an armadillo looks like a cannonball. To unroll it, even a jaguar must try hard. Armadillos feed on worms, snails, snakes, insects, and berries; they don't disdain carrion. They endure captivity quite well; so many armadillos were brought to Europe where they never failed to stir curiosity and astonishment.



▲ *Nine-banded armadillo.
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