Translated excerpt

**Jutta Person**
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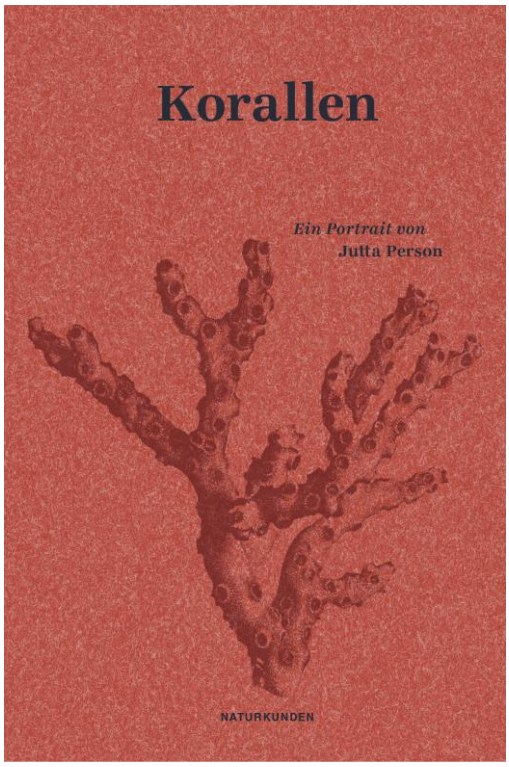
**Jutta Person**
**Corals: A Portrait**

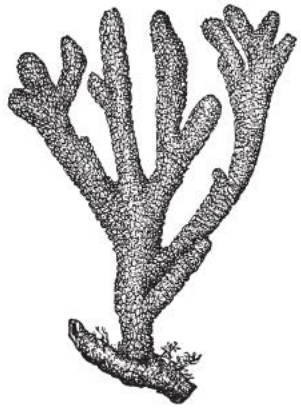
Translated by Allison Brown



**pp. 7–20:**

**Fantastic Creatures of the Sea**

Introduction



The soft ones sway in the seawater. The hard ones stretch out their branches. They are often considered stones, plants, or animals—or petrophytes or zoophytes. They form a network that burgeons in all directions. They are polyps and skeletons, branches and tentacles, gullets and tubes. And there are many of them.

Corals are fantastical creatures whose power of fascination has survived over millennia. As an amulet they ward off the evil eye, protect children, and fight diseases. In antiquity, both poets and scholars believed that these in-between beings had the power of petrifaction. Theophrastus, the Greek naturalist and student of Aristotle, mentions them in his treatise *On Stones*; also Pliny, the author of *Natural History*, and the Greek physician Dioscorides honor their pharmacological potency. Their adaptability is described by Ovid in *Metamorphoses*. He tells about the origin of corals, which develop when sea plants touch the head of the deadly Medusa and then turn to stone. Corals were a reflection of the forces lodged between water and air. In contrast to their magnificent history, however, things could hardly be worse for them. The fact that they are now in danger of extinction due to climate change can only mean that everything humanly possible must be done in order to save them: Because corals are not only ecological and economically essential, they also have a past that, depending on the calculation, goes back hundreds of millions of years. They are also so strange, magical, mysterious, fascinating, and fantastical—in a word: “beautiful”—that the history of their description has always also been a story of running out of adjectives.

Early Modern naturalists saw them as plants whose branches were covered with small blossoms. In the cabinets of curiosities and wonders of premodern collectors, their blood-red and sometimes jet-black branches attested to nature’s role as an artistic creator. Not until the eighteenth century was it documented that the blossoms were actually polyps, tiny animals with tentacles and digestive organs. Another hundred years later, Charles Darwin looked at the coral reefs during his expedition on the Beagle and wondered in

numerous ways what the reef-building corals were actually built upon. The answer: on themselves.

In Germany it was researchers such as Christian Gottfried Ehrenberg, Alexander von Humboldt's companion, and later Ernst Haeckel, the "German Darwin," who in the nineteenth century traveled to the Red Sea and were overwhelmed by the strange beauty of the corals. In the 1820s Ehrenberg explored the "magical world" of the coral forms there, and also Haeckel's concise research report written about fifty years later under the simple title *Arabian Corals* throbs with enthusiasm. After a rather sober description of the various types of coral, Haeckel gradually worked himself into a narrative of oriental rapture: "Down here in the blue depths, everything is actually covered with colorful flowers, and all these delicate flowers are living coral animals," he wrote in his report from the Sinai peninsula. In 1873, of course, the researcher already knew that he was dealing with minuscule animals. Like most other travelers, he could nevertheless not avoid the metaphorical gardens, the images of flowers and underwater dreams of blossoms. The ambiguity between animal and plant remained a reservoir of fascination, at least in linguistic terms, even if zoologists had long since started dissecting the hard and soft corals under the microscope.

"No pen or brush can portray this splendor," Haeckel finally summarized, exhausted in view of the plethora of underwater gardens in the Red Sea. But his impressions do paint a very convincing picture of the inconceivably exotic worlds that Europeans encountered beyond the Mediterranean. Once he had left this sphere of influence—"full of awe we trod for the first time the sacred ground of ancient Asia," the zoologist noted—and when he then also beheld the underwater world, the longing catapulted into a shimmering colonial dream and this researcher from the moderate zone lost all restraint.

The coral story that is perhaps the most wistful—not exotic, yet all the more moving—is told not by a scientist but in a work of literature. *The Leviathan*, originally intended to be called "The Coral Merchant," was written by Joseph Roth, who had been living in exile in France since 1933 and who wrote the novella a year later in Marseille. The main character, the Jewish coral merchant Nissen Piczenik from the small Galician town of Progrody, is a man from a sinking world that Roth continually conjures up through new figures.

"Yes, he longed for the sea on whose bed the corals grew, or rather, as he was convinced, disported themselves,"[1] we can read about the coral merchant. The corals that he sells in his home village to wealthy farmers' wives as jewelry and to protect them from the evil eye are the object of his care and affection. He loves them and he loves the ocean that they represent. He is not at all familiar with the ocean, but he yearns for it with all the force of his continental existence. Nissen Piczenik even stands at the edge of a pond in order to imagine the faraway ocean from the bubbling and gurgling of the soggy ground. There, on the sea floor, the Leviathan watches over the corals, which are part of an ideal world that, however, is presently being inundated by something new: artificial corals made of celluloid—a harbinger of a modernity that will destroy everything. Nissen Piczenik wants to go back to the origins: "Progrody wasn't his home, his home was the ocean."[2] Contrary to what people believed at the time, he was

*Group photo with precious corals: in M.J. Schleiden's Das Meer (The Sea) "madrepores, hydrozoans, and alcyonaria" surround a piece of* Corallium rubrum.

[1] Joseph Roth, *The Leviathan,* trans. Michael Hofmann (New York: W.W. Norton/New Directions, 2002/2011), 9.
[2] Ibid., 49.

convinced of the animallike character of the corals: They romp about on the ocean floor like animals, instead of just growing like plants; that's how he envisions them. And in that he is not really wrong. But not really right either.

Corals were and are the epitome of enigmatic beauty from the ocean depths. And their power to fascinate by no means diminished once the scientist Jean-André Peyssonnel first determined in the 1720s that they were animals. In fact, the fascination seemed instead to grow. Being shifted from the plant to the animal kingdom—into the class of worms, where they were assigned as of the sixth edition of Linné's *Systema naturae* of 1748—was not disenchanting but instead brought further enchantment, perhaps also because for so long they had been viewed as plants capable of petrification. Belief in their salvific nature was also by no means at an end, as, despite the growing strength of the sciences, the ancient faith in a magical, apotropaic power of coral branches persisted. Between hard and soft, between a stable skeleton and a fleshy body, between a petrified mantle and pulsating polyps, new possibilities emerged to imagine an animal that was composed of an infinite number of individual animals and which built cathedrals on the ocean floor.

Jules Michelet's enthusiastic 1861 natural history study *The Sea* even dedicated an entire chapter to corals. For historians of the French Revolution they are nothing less than "the beloved, favored workers of the Deity."[3] These "world makers" form the terrestrial globe at the Creator's behest, letting islands and huge land masses emerge and vanish. Michelet glorifies the supposedly lowly sea dwellers (as he previously did insects, women, and the post-revolutionary lower classes of the population) in an unprecedented manner. He sees all of the planet's female fertility gathered together in the smallest living beings on the ocean floor. Friedrich Schiller still considered the ocean to be hideous, but for Michelet it is beautiful, mysterious, peaceful, and fertile. Above all, however, for this admirer of marine life the discovery of the ocean floor coincides with the discovery of another, either abysmal or fascinating depth. The ocean did not only become the nineteenth century's landscape of the soul, the unfathomable ocean also resembled a new, powerful mass that comes from the depths. "We are many," the unconscious that was discovered toward the end of the century seems to be saying, very much like the Biblical demoniac, whose ego breaks down

[3] Jules Michelet, *The* Sea (New York: Rudd & Carleton, 1861), 149ff, 158.

into its individual parts. What remains are multiplicities that, like the corals, are apparently organized without a head and crown; diligent workers who feed themselves collectively. It is an eerily beautiful dream.

The fact that corals often serve as symbols and concepts lies perhaps in the both beautiful and eerie components of this multiplicity. They are petrified nature and inherently art. Between a calcareous skeleton and polyp flesh, organic and inorganic matter and life and death merge, and more than that the corals rest on the dead that they themselves produced. Their sex remains hard to determine. With the head of Medusa as their mythic origin they have a highly uncanny past. And a teeming present: They are “multitudes on the ocean floor,” one could claim, following philosophers Toni Negri and Michael Hardt. Or a “web which is not one,” modifying a citation of the philosopher Luce Irigaray. Their recursive ramifications permit thinking to wander in all directions: vanishing lines instead of closed systems.

*Eugen von Ransonnet-Villez was the first underwater painter worldwide. He traveled with his diving bell to Ceylon in 1864 and painted the ocean floor. With a skull.*

They also have powerful philosophical relatives: The rhizome of the theorists Gilles Deleuze and Félix Guattari is the picture of a network that functions according to a similar principle. Instead of dictatorial trees there are antiauthoritarian mycelia, which allow interconnections

and crossing over. The authors of *A Thousand Plateaus* did not bet on corals, possibly because of the speeds: Rhizomes grow incredibly fast, while corals are often infinitely slow. Some require decades to grow only a few centimeters. Sociologist and philosopher Roger Caillois, who showed an affinity for Surrealism and liked asymmetrical animals, was looking for a way of thinking that was fitting to “diagonal science,” which closely resembles the metaphorical profile of corals. Diagonal thinking aims to bring together areas that are purportedly separate: modern sciences and a form of knowledge that could be characterized as poetic or fantastic. Caillois often occupied himself with stones and with the phenomenon of petrification, and also mentioned sea fans and whips, as well as corals. In that which is apparently lifeless he found an animate use of forms: He followed the “beds of symbols,” connecting that which had long been separated in modernity: nature and culture.

Anyone who seeks new networks and alternative connections might also think of corals. On top of that, they do not only stand for themselves but also constitute an entire ecosystem, which in turn also means at a metaphorical level: No one grows just for themselves. Probably the greatest attention and appreciation—as concepts and also as real, highly endangered living beings and ecosystems—that corals and coral reefs enjoy presently comes from Donna Haraway. The American scientific theorist, biologist, and activist clearly shows how the human species must go through a fundamental change in thinking. First and foremost by no longer viewing other species as secondary. She instead makes the case for “tentacular thinking” and advocates ending the present global overexploitation of resources.

“The tentacular are not disembodied figures; they are cnidarians, spiders, fingery beings like humans and raccoons, squid, jellyfish, neural extravaganzas, fibrous entities, flagellated beings, myofibril braids, matted and felted microbial and fungal tangles, probing creepers, swelling roots, reaching and climbing tendrilled ones,” but also “nets and networks,” writes Haraway. Corals and coral reefs become the iconic figures of a system that is completely new to grasp. “We need another figure, a thousand names of something else, to erupt out of

the Anthropocene into another, big-enough story,"[4] Haraway continues. The image she proposes is the snake-like Medusa with her many allies and descendants.

The following pages will often mention the precious red coral *Corallium rubrum* because it plays an influential role in Europe's cultural history. The biological cosmos of the corals is of course infinitely larger: It extends from the madrepores, which build stony reefs, to the soft corals, which garnished the first aquariums of the nineteenth century with exotic floweriness. There are leather corals (Sinularia), Stolonifera, bubble corals (Plerogyra), brain corals, cauliflower (or raspberry) corals, elkhorn corals, lettuce corals, fire corals, tree (or carnation) corals (Nephtheidae), cup corals, flowerpot corals (Goniopora), star corals, whip (or wire) corals (Cirrhipathes), fan corals (or sea fans), knotted fan corals, organ pipe corals, plate or mushroom corals (Fungia), as well as sea anemones, sea pens, and gorgonians, to name just some of them covering a wide range of orders and families.

All corals belong to the phylum of the Cnidaria (which also include other marine animals such as jellyfish). The Cnidaria have cnidocytes, stinging cells in their tentacles consisting of a capsule that fires a toxin in a fraction of a second like an arrow, targeting potential prey or attackers. For our purposes, the most significant class within the Cnidaria are the anthozoans. The vast majority of corals belong to the anthozoans, which include the subclasses of hexacorals and octocorals, having six or eight axes of symmetry, respectively. They have six or eight or more septa, or radial skeletal partitions, dividing their stomachs into that number of compartments. A coral polyp is a long, sack- or tube-like structure with a crown of tentacles around a central opening at the upper edge. Food enters the gastrovascular canal through the mouth and the tentacles shovel it into the gastrovascular cavity, a kind of stomach. The waste has to leave through the same opening, that is, the mouth is also the anus. Depending on the group, they eat plankton as well as small fish. Corals hunt at night, which means they extend their tentacles in the dark and (at least in part) draw them back into their body interior during the day. The coral body of the hexacorals is a hard, calcareous skeleton; in the octocorals it consists of small calcareous

[4] Donna Haraway, "Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene," in *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2016), 30–57, here: 32, 52; also published in e-flux, *Journal* 75 (September 2016).

spicules located in the interior of the body. The madrepores, which belong to the hexacorals, use their calcareous skeleton to build reefs—and entire land masses if we consider longer periods in the earth's history. From that perspective we are giants who sit on the shoulders of dwarfed polyps, or rather their calcareous skeletons.

The sex life of the corals is impressively diverse: There are sexual and asexual forms of reproduction. In addition, there is the possibility that new fragments grow onto them. As regards sexual reproduction, which often depends on the moon's phases, there is a massive spawning of sperm and egg cells, a spectacular "spawning orgy," as the reef expert Heinz Krimmer put it: "How do the corals decide during which of the twelve full moons in the year it gets going? Even more amazing is the fact that numerous, totally different species participate, probably also animals that are not in the least related to corals."[5] It is obvious that the methods of reproduction of corals have led

*Polyps waiting for plankton: They each fish for food with eight pinnate tentacles. Precious corals taken from* Brehm's Tierleben (Brehm's Life of Animals) *of 1911.*

[5] Heinz Krimmer, *Netzwerk Korallenriff: Wertvoller als Google, Apple und Co.* (Stuttgart: Kosmos, 2017), 39.

to con fusion in the various epochs of the history of science.
Most of the stony, reef-building corals live symbiotically with microalgaes, the zooxanthellae, which, in addition to the prey caught by polyps, have a second source of energy available, which is often the main one. These plant-like protozoans, or dinoflagellates**,** that are stored in the corals and which give them their color, require sunlight in order to carry out photosynthesis. They release most of the substances thereby generated to the corals. As a result of climate change, which is causing seawater temperatures to rise and the oceans to become more acidic, this complex interplay is thrown out of balance, and the corals become stressed. In warmer water temperatures, zooxanthellae begin to produce toxins and are expelled by the corals in a defensive reaction. Consequently, the corals do not only lose their color and become bleached, they also risk starvation. The bleaching of the corals can last several weeks, but if the temperature does not drop, allowing the microalgaes to return, the stony corals will die. Not only climate change is affecting the coral reefs all over the world; on top of that, the oceans are becoming increasingly polluted, such as through agricultural pollutants or plastic refuse, improperly operating fisheries and reckless tourism. These stressors (as biologists call them) collectively form a destructive conflict situation that cannot be resolved by pushing a single button, as paleontologist and geobiologist Reinhold Leinfelder has emphasized. Reef specialist Leinfelder wrote “We have to do a lot of things at once.”[6] Regarding the main problems, the obvious is true: Human beings are the coral reefs’ greatest stressor.

The fact that corals are at the same time admired as magical objects—or rather as the strangest of living beings—is not a contradiction. They are animals, but also oscillate between nature and art, animate and inanimate, limestone architecture and tiny dwellers. These polymorphous invertebrates might challenge our categories of thought more than any other creatures. Lacking a central nervous system, they nevertheless build temples, castles, parks and cities of great complexity, which in turn can mean that complexity might be something different than what we generally believe.

[6] Reinhold Leinfelder, “Ist das Sterben der Korallenriffe noch aufzuhalten?” *Frankfurter Allgemeine—Wissen* (October 17, 2018).

**pp. 97–100:**

**Expeditions into the Animal Kingdom**

Peyssonnel discovers the animal nature of the corals

The coral branch that has been placed in a kind of miniature goldfish bowl for the purpose of observation is an animal. Or part of an animal. Or part of a widely burgeoning animal conglomerate. The details were still rather unclear in the early eighteenth century. It is certain, however, that the coral is resting in the hand of the scientist who was the first to recognize that it belongs to the animal kingdom and the first to systematically examine it. The French natural scientist, physician, and world explorer Jean-André Peyssonnel looks rather melancholy, if not to say slightly dejected, in his portrait, even if the elegant gesture with which his left hand presents the coral glass gives a somewhat tenacious impression. This picture conveys an understated “And yet it moves!” And it is a fact that the coral, with its polyps that recoil when touched, does not

*“And yet it moves”: Jean-André Peyssonnel (1694–1759) recognized that the recoiling blossoms of the corals are actually animals. It took a long time before people believed him.*

belong to the plant kingdom. From this perspective, we can understand the crestfallen glance of a man who was correct and who knew that everyone else was mistaken. But those are of course merely speculative attempts to read from his furrowed brow and elegant hand position the little that is known about Peyssonnel.

In any case, Peyssonnel would have had good reason to be melancholy. After all, it took more than twenty years and half of his scientific career, which almost came to naught, before his groundbreaking observation in 1725 was finally acknowledged. Peyssonnel removed the corals from the kingdom of minerals, plants, and petrophytes, where they had been assigned since ancient times. But not until the mid-eighteenth century did his discovery assert itself in the French scientific community, which up to then had consistently ignored him and held firmly to the belief that the coral branches were covered with small flowers. As a scientist, Peyssonnel was insightful for yet another reason. He and his story let us ponder when something can start being recognized as true, and how strongly the established status of research and institutional mechanisms of power can sometimes oppose innovative ideas. Furthermore, Peyssonnel was an observer and experimenter, and here the new scientific paradigms of the Enlightenment stood out in a virtually exemplary manner (even though in the case of the corals this took quite a while).

Peyssonnel was perhaps also inspired by curiosity, because he spent the second half of his life in the French colony of Guadeloupe in the Antilles, and because while in the Caribbean he held firmly to his fascination with corals, even though at first no one in Europe was at all interested in his discovery.

In fact, the corals had only a short time earlier found a place in the plant kingdom, after millennia of detours that led them close to the kingdom of rocks and minerals. The Greek word *korállion* can apparently be derived in various etymological attempts from the Hebrew *goral* or the Arabic *ğaral,* both of which mean “pebble” or “small stone.” Since antiquity the corals had been viewed as sea plants that turned to stone when exposed to air.

It is actually astounding that the notion of the mutability of the corals had such a long shelf-life even among nature scientists. Or rather, the amazement comes in precisely when one imagines how this firmly established scientific mythology ultimately came to an end: A seventeenth-century Sicilian botanist went to sea with the coral fishers and held his hand underwater. Paolo Boccone, acclaimed for his plant studies throughout all of Europe,

wanted to verify if a transformation from soft to hard actually does take place when the corals are pulled from the water into the air. And he could prove nothing of the sort. His *Recherches et observations naturelles* of 1674, which he wrote in French, the language of the international scientific elite, included twenty-nine letters of his correspondence with scholars throughout Europe about natural phenomena that led from the corals to the plants of Sicily to fossils and fish.

**p. 162:**

**Precious Coral**

***Corallium rubrum***

Red Coral

*Corail rouge*

The mother of all corals, at least in Europe. Precious corals have since ancient times been attributed with far-reaching magical and healing powers. They protect against lightning and bad weather at sea, and help—according to the Greek doctor Dioscurides—in the case of bloody sputum, fleshy outgrowths, urinary retention, and an enlarged spleen. Above all, however, people believed that a coral cornicello would ward off the evil eye. For centuries, coral jewelry and amulets were very popular, due to their red color but also because the belief that they had magical powers never disappeared entirely (or was superseded by religious traditions): Jesus wore a coral amulet just as the young women of the Renaissance did. Precious corals

belong to the octocoral anthozoans and are close relatives of the gorgonians or other sea fans. The bushlike or shrublike colonies have brilliant red branches that are supported by small calcareous spicules (sclerites). The branches have bright white polyps, each of which has eight tentacles that capture zooplankton from the water. On the Red List of Threatened Species, *Corallium rubrum* ranks among those in the “endangered” category. The generally overfished precious corals live at a depth of 5 to 800 meters in the Mediterranean Sea and in the eastern Atlantic, where they prefer rocky ground and slopes in semi-shade. They grow only a few millimeters each year and can live to be eighty to one hundred years old.