

# Dr. M. Bach, “The Aquarium” (1868)

## Abstract

Historians of knowledge study the artifacts of learning wherever they are found, including in the home. In nineteenth-century Germany, such artifacts included maps and globes, which children displayed in their bedrooms; microscopes, which men set up in their parlors; and chemical pesticides, which women used to kill cockroaches in their kitchens. This excerpt introduces yet another artifact of learning in German homes: the aquarium. As the excerpt makes clear, aquariums were more than ornaments; they were invitations to domestic inquiry and instruction, opportunities to nurture the intellectual curiosities of a population that was becoming increasingly educated in the natural sciences. As such, aquariums helped transform domestic living spaces into sites of knowledge.

## Source

### The Aquarium

A strange and wonderful interrelationship exists between animals and plant life: by breathing, animals continuously take in oxygen as the indispensable condition of life and, in return, they give back by exhaling carbon, namely in the form of carbon dioxide; while the plant, through equal force of necessity, takes in carbon dioxide and emits oxygen. Thus, the one provides the other, as an indispensable requirement, with what it itself can no longer use for life: the one serves the other.

But the interrelationship between animal and plant does not end there. Whereas the plant derives its food from the air, the water, and the earth, the animal must take its food chiefly from the plant world or even from the animal kingdom.

As soon as this economy of living beings was understood, it was not long before the idea arose to select precisely those animals and plants that exist in such intimate interrelationship and to put them together in a container to thereby possess a picture of the world in miniature. An aquarium is precisely such a container. These sorts of containers were first assembled in England and exhibited there at the first World's Fair [in 1851]. Other similar containers, but ones whose sole purpose was to offer a more detailed look at the way of life of one animal or another, were already available before that. “All true naturalists,” says Professor Roßmässler <sup>[1]</sup>, “who are concerned not only with preserving the dried mummies of plants and animals to study the characteristics of their external form, and to whom life is the most important thing, have been wont, from the very first days of nature inquiry, to tether the living things they were studying to their immediate proximity, their work desk, so as to be able to eavesdrop time and again, every day and hour, on the transformations and manifestations of these living things.” In the rooms of such a naturalist one therefore always notices numerous containers, little boxes, glasses, bottles, tin cans, and pots, which almost gives the impression of a small apothecary. All these containers are filled with marvelous creatures or with all kinds of plants, which are then observed and studied from time to time with the greatest attention. One cannot say that these various containers are mere room decorations. That is why some naturalists now use the aquarium to carry out necessary observations regarding the transformation and way of life of some animals. A well-appointed aquarium is, in fact, a friendly room ornament and at the same time a rich source of the most pleasurable entertainment and instruction, even for laymen in the natural sciences.

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The contents of the aquarium were chosen in this way and no other because the goal was precisely to use them alone to depict a world in miniature or, as one might also put it, the world in a glass. The creatures that were brought together in this way could exist immediately, and did not require continued feeding, provided that they were not deprived of the necessary forces of light and heat. It was not even necessary to change the water from time to time, since it always remained clear and pure. Each of the aforementioned creatures contributed to the subsistence of the other, or, to put it differently, the one lived from the other. So they formed a world of their own, and at the same time, the very same life processes and manifestations that are found in the economy of living beings on earth were also represented in this glass.

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We said above that goldfish swim about briskly in a glass container assembled in the manner described, a sight rarely seen when they are kept in the customary way; on the contrary, under the usual conditions, the goldfish often die off, even in cases of otherwise very careful maintenance, especially if they are abundantly fed with wafers. Their constant swimming near the surface as the water gets old shows that they lack oxygen. A small number of plants would remedy that problem.

Even in the case of leeches kept in apothecaries, it would be worth experimenting to see if they would not fare better in a container with plants.

3. To return to the aquariums, it will be easy to understand, after the previous reflections, that it is not exactly easy to achieve the right balance in the composition of an aquarium, so that no one substance predominates and that none is too lacking. But should one or the other occur, disturbances will arise that could progress to the point that everything perishes.

These difficulties are likely also the reason why aquariums are still so seldom found to this day, even though they offer such rich instruction and delightful entertainment. The problem that usually appears first is that the water in the container goes bad; it happens very quickly especially if one animal or another in it dies. The water becomes cloudy from the putrefaction of the corpse, takes on a foul smell, and finally causes the death of all the remaining animals. Therefore, if you have not been careful enough in assembling the composition of the aquarium, or if you want to observe the transformation and way of life of a single animal, without procuring the other appropriate animals or plants, then you must decide to remove at least half of the water every day and replace it with fresh water. This is best done with a rubber hose, though that is not only time consuming, but also unpleasant.

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4. If you have a larger aquarium, ideally a rectangular one, then you can of course also accommodate more and different kinds of animals in it. We had the opportunity to see one that contained, apart from plants, various kinds of aquatic snails, fish, a few aquatic lizards, and aquatic beetles. The latter included the great diving beetle (*Dytiscus marginalis*) and the even bigger *Hydrophilus piceus*. Apart from the goldfish, the container also had a few meat-eating fish from the Rhine. The aquatic snails were *Limnaeus stagnalis*, *Planorbis corneus* and so on.

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The inhabitants of the shores of the Baltic and North seas have the unique advantage of being able to set up, in addition to containers with fresh water, sea water aquariums as well. The latter contain of course only sea plants and sea animals. The sea has no lack of marvelously shaped animals and plants of every kind to populate these aquariums. Attempts have been made to make sea water artificially, so that one can create sea aquariums

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also at a distance from the sea. However, that endeavor seems to have encountered too many obstacles and has been abandoned as a result.

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## NOTES

[1] For readers who want to know even more about aquariums than what is presented here, we recommend Roßmäßler's engagingly written and richly illustrated book: *Das Süßwasser-Aquarium*. Leipzig. H. Mendelsohn.

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