



The Origin of the Oceans

It must have been at the very beginning of my occupation with the problems later developed in my books and in not yet published manuscripts, that I came upon the question of the origin of salts in seas and oceans. The common salt is a substantial ingredient of the oceanic content, or, said differently, the water of the oceans and seas contains a substantial solution of NaCl, or sodium chloride. Even though our blood and tissues abound in sodium chloride, man and animals are not adapted to drink salty water, and life on land could develop only thanks to the evaporation of the water from the surface of seas and oceans, or to distillation—the evaporating water is free from salts. Falling as rain or snow or dew, it feeds underground sources and also glaciers, and through them the brooks and rivers and lakes, and is delivered to our use usually through concrete tubes and metal pipes.

Of the salts of the seas sodium chloride is by far the most abundant. The provenance of it is, however, a riddle. It was, and still is, assumed that the salts in the oceans originated mainly through importation from land, having been dissolved from rocks by flowing rivulets and rivers, themselves fed by underground sources, and the same process working on the rocks of the seabed. Terrestrial formations are rich in sodium, and in eons of time, it is assumed, the sodium washed out of the rocks supplied its content to the oceans; the seas evaporate and the concentration of these salts grows. But the rocks are by far not so rich in chlorine, and hence the problem—from where did chlorine come to contribute its abundance to oceanic water? There is chlorine in source water, but usually not in significant amounts. The proportion of salts in the rivers is very different from their proportion in the seas. River water has many carbonates (80 percent of the salts), fewer sulphates (13 percent) and still fewer chlorides (7 percent). Sea water has many chlorides (89 percent), fewer sulphates (10 percent) and only a few carbonates (0.2 percent). The comparison of these figures makes it clear that rivers cannot be made responsible for most of the salts of the seas. Therefore it is also obvious that there is no proper way of calculating the age of the Earth by comparing the amount of salts in the seas with the annual discharge by the rivers; the most that can be done in this respect is to calculate the rich amount of carbonates in the rivers in their relation to the relatively poor concentration to these salts in the seas; but then there will be no explanation for the rich concentration of chlorides in the seas in comparison with their poor concentration in the rivers.

A part of the salts could be traced to the washing of lands and the floor of the seas; chlorine is known also to be discharged by volcanoes, but to account for the chlorine locked in the seas, volcanic eruptions, whether on land or under the surface of the seas, needed to have taken place on an unimaginable scale—actually, it was figured out, on an impossible scale. Thus it was acknowledged that the provenance of chlorine in the salts of the seas is a problem unsolved.

Paleontological research makes it rather apparent that marine animals in some early age were more closely related to fresh-water fauna; in other words, the salinity of the oceans increased markedly at some age in the past.

The most obvious and permanent effect of a deluge of extraterrestrial origin on the Earth would be the increase in its water volume and of the place occupied by the seas. Presently four-fifths of the Earth are covered with

water. A stupendous addition of water to the Earth should have decreased, not increased its salinity, if the water came down in a pure state. But if the Earth was showered by torrents of hydrogen and water some other ingredients of the Saturnian atmosphere could also have swept across the Earth's orbit.

In the Buddhist book on "The World Cycles," the *Visuddhi-Magga*, where the catastrophes that terminated the world ages are described, it is said:

But when a world cycle perishes by water . . . there arises a cycle-destroying great cloud of salt water. At first it rains with a very fine rain which gradually increases to great torrents which fill one hundred thousand times ten million worlds, and then the mountain peaks of the earth become flooded with saltish water, and hidden from view. And the water is buoyed up on all sides by the wind, and rises upward from the earth until it engulfs the heavens.⁽¹⁾

Volcanoes which were active during the cataclysm of the Deluge and during other cosmic upheavals vomited sulphur, chlorine, and carbonates, and contributed to the composition of the salts of the oceans. Carbonates fell on Earth in large quantities in some of the upheavals, certainly in the one which took place in the middle of the second millennium before the present era, at the very end of the Middle Kingdom in Egypt, an upheaval described in detail in *Worlds in Collision*. But a major portion of the chlorine in which the oceans are so rich must have come from an extraterrestrial source.⁽²⁾

My explanation of the origin of a large portion of the salts of the seas suggests that Saturn is rich not only in water but also in chlorine, either in the form of sodium chloride or in some other combination, or even atomic free. The last solution, of atomic free chlorine, appeared chemically and biologically somewhat difficult to contemplate, because chlorine is a very active element, seeking ties with other elements; biologically because it would be damaging to any plant life, yet there are other indications which point to the possibility of plant life on Saturn.

References

1. The *Visuddhi-Magga*, transl. by H. C. Warren in *Buddhism in Translations* (Cambridge, Mass., 1896), Chap. xiii, p. 327.
2. [The knowledge that the water of the oceans came from the most part from Saturn and that the waters were salty was combined by the Greeks into a metaphor which has the sea being the "tear of Kronos." This tradition originated with the Pythagorean school and may derive ultimately from Egypt. (Plutarch, *De Iside et Osiride*, ch. 32: "According to what the Pythagoreans say, the sea is the tear of Kronos." Clement of Alexandria, *Stromata*, V. 8, 20f.: "This the Pythagoreans believed . . . comparing the sea to a tear of Kronos." The same is found in a fragment of Aristotle in the edition of V. Rose (Teubner, 1886), no. 196. Cf. Porphyry's *Life of Pythagoras* (Nauck ed., p. 39). Cf. also E. Lefebure, *Etudes Egyptologiques*, Vol. III: *Le Mythe osirien* (Paris, 1874), p. 125: . . . *et il faut sans doute regarder comme égyptienne cette croyance des Pythagoriciens rapportée par Plutarch, que la mer était une larme de Kronos. . . .*]