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Ririro

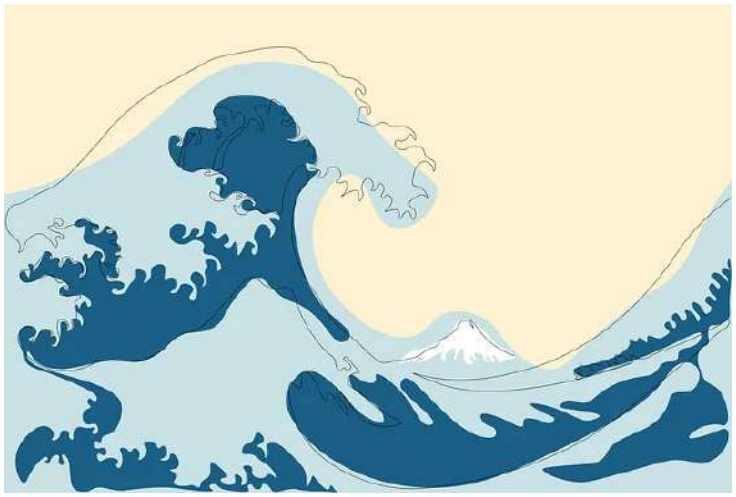
IMAGINATION OVER KNOWLEDGE

Ririro

Waves, Salt and Seaweed

Where do the waves come from?" asked Jules. "The sea is very terrible, they say, when it is angry."
"Yes, my dear Jules, very terrible. I shall never forget those great moving ridges, capped with foam, that toss a heavy ship like a nutshell, carry it one moment on their monstrous backs, then let it plunge into the liquid valley that intervenes. Oh! How small and weak one feels on those four planks, mounting and plunging at the will of the waves! If the nutshell springs a leak under the furious blows of the billows, may the good God have pity on us! The shattered boat would disappear in fathomless depths."
"In the chasm you told us about?" Claire asked.
"In those chasms from which no one returns. The shattered boat would be swallowed up in the sea, and nothing of you would be left but a remembrance, if there were people left on the earth who loved you."
"So the sea ought always to be calm," said Jules.
"It would be a pity, my child, if the sea were always at rest. This calm would be incompatible with the health of the seas, which must be violently stirred up to keep them free from taint and to dissolve the air necessary to their animal and vegetable population. For the ocean of waters, as for the atmosphere or ocean of air, there is need of a salutary agitation—of storms that churn up, renew, and vivify the waters.

"The wind disturbs the surface of the ocean. If it comes in gusts, it creates waves that leap with foaming crest and break against one another. If it is strong and continuous, it chases the waters in long swells, in waves or surges that advance from the open in parallel lines, succeed one another with a majestic uniformity, and one after another rush booming on to the shore. These movements, however tumultuous they may be, affect only the surface of the sea; thirty meters down the water is calm, even in the most violent storms.
"In our seas the height of the biggest waves is not more than two or three meters; but in some parts of the South Sea the waves, in exceptional weather, rise to ten or twelve meters. They are veritable chains of moving hills with broad and deep valleys between. Whipped by the wind, their summits throw up clouds of foam and roll up in formidable volume with a force sufficient to shatter the largest vessels under their weight.



"The power of the waves borders on the abnormal. There, where the shore, rising vertically from the water, presents itself fully to the assaults of the sea, the shock is so violent that the earth trembles under one's feet. The most solid dikes are demolished and swept away;

enormous blocks are torn off, dragged along the ground, sometimes thrown over jetties, where they roll like mere pebbles.

"It is to the continual action of waves that cliffs are due, that is to say the vertical escarpments serving in some places as shore for the sea. Such escarpments are seen on the coasts of the English Channel, both in France and in England. Unceasingly the ocean undermines them, causes pieces to fall down which it triturates into pebbles, and makes its way so much farther inland. History has preserved the memory of towers, dwellings, even villages, that have had to be abandoned little by little on account of similar landslides, and that today have entirely disappeared beneath the waves."

"Stirred up like that, the waters of the sea are not likely to become putrid," remarked Jules.

"The movement of the waves alone would not suffice to insure the incorruptibility of sea-water. Another cause of salubrity comes in here. The waters of the sea hold in solution numerous substances that give it an extremely disagreeable taste, but prevent its corruption."

"Then you cannot drink sea-water?" Emile asked.

"No, not even if you were extremely thirst."

"And what taste has sea-water?"

"A taste at once bitter and salt, offensive to the palate and causing nausea. That taste comes from the dissolved substances. The most abundant is ordinary salt, the salt we use for seasoning our food."

"Salt, however," objected Jules, "has no disagreeable taste, although one cannot drink a glass of salt water."
"Doubtless; but in the waters of the sea it is accompanied by many other dissolved substances whose taste is very disagreeable. The degree of salt varies in different seas. A liter of water in the Mediterranean contains 44 grams of saline substances; a liter of water in the Atlantic Ocean contains only 32.
"An attempt has been made to estimate, approximately, the total quantity of salt contained in the ocean. Were the ocean dried up and all its saline ingredients left at the bottom, they would suffice to cover the whole surface of the earth with a uniform layer ten meters thick."
"Oh, what a lot of salt!" cried Emile. "We should never see the end of it, however much we salted our food. Then salt is obtained from the sea?"
"Certainly. A low, level stretch of seashore is selected, basins are dug, shallow but of considerable extent; these are called salt marshes. Then the sea-water is admitted to these basins. When they are full, the communication with the sea is closed. The work on salt marshes is done in the summer. The heat of the sun causes the water to evaporate little by little, and the salt remains in a crystalline crust that is removed with rakes. The accumulated salt is piled up in a big heap to let it drain."
"If we should put a plate of salt water in the sun, would that be doing in a small way what is done in the salt marshes?" asked Jules.

"Exactly: the water would disappear, evaporated by the sun, and the salt would remain in the plate."
"There are lots of fish in the sea, I know," said Claire, "small, large, and monstrous. The sardine, cod, anchovy, tunny-fish, and ever so many more come to us from the sea. There are also mollusks, as you call them, also animals that cover themselves with a shell; then enormous crabs with claws bigger than a man's fist; and a lot of other creatures that I don't know. What do they all live on?"
"First, they eat one another a good deal. The weakest becomes the prey of a stronger one, which in its turn finds its master and becomes food for it. But it is plain that if the inhabitants of the sea had no other resource than devouring one another, sooner or later nourishment would fail them and they would perish.
"Therefore, in this matter of nutrition, things are ordered in the sea much as they are on land. Plants furnish alimentary matter. Certain species feed on the plant, others devour those that eat the plant; so that, directly or indirectly, vegetation really nourishes them all."
"I understand," said Jules. "A sheep browses the grass, a wolf eats the sheep, and so it is the grass that nourishes the wolf. There are, then, plants in the sea?"
"In great abundance. Our prairies are not more grassy than the bottom of the sea. Only, marine plants differ much from land ones. They never have blossoms, never anything that can be likened to leaves, never any roots. They attach themselves to rocks by a stickiness at their base, without being able to draw nourishment from

them. They feed on water and not on the soil. Some resemble sticky thongs, folded ribbons, long manes; others take the form of little tufted buds, soft top-knots, wavy plumes; still others are slashed in strips, rolled in spirals, or shaped like coarse, slimy threads. Some are olive-green, or pale rose-color; others are honey-yellow, or bright red. These odd plants are called seaweeds."