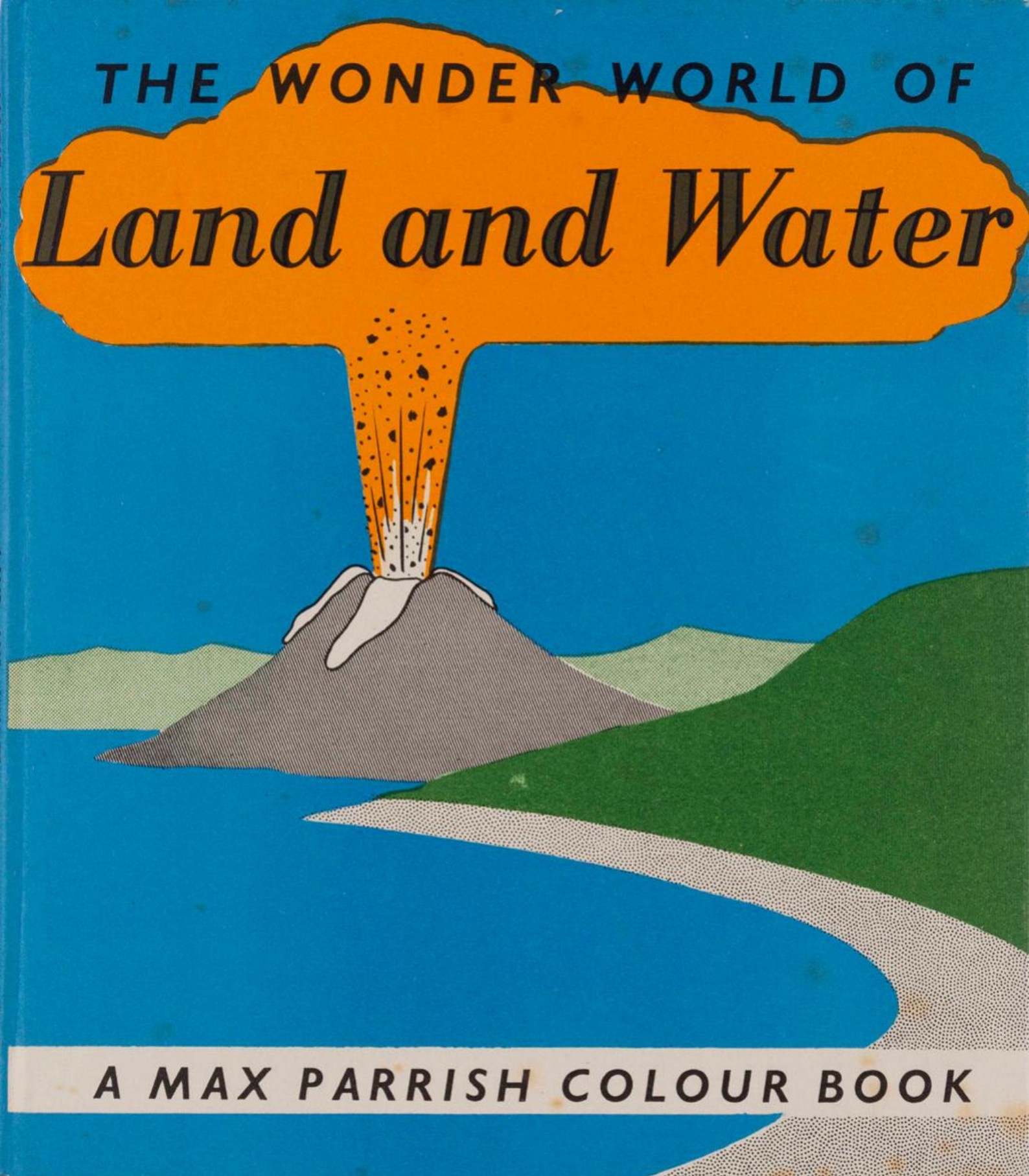
THE WONDER WORLD OF

Land and Water



A MAX PARRISH COLOUR BOOK

A FIERY FURNACE UNDER THE SEA

is one of Nature's many wonders. Under the ground, too, many strange things happen. In these pages you will find why fountains of boiling water gush out of the ground; how a gentle river becomes a raging torrent; what happens when the solid earth cracks and quakes; how the fire under the earth builds an island in the sea, and why a puff of wind may start an avalanche crashing down the mountainside. These things, and many other wonders, are explained clearly and correctly in text, and pictures in colour, which are easy to understand. No doubt you have seen other titles in this famous series; this is just as interesting, just as exciting.

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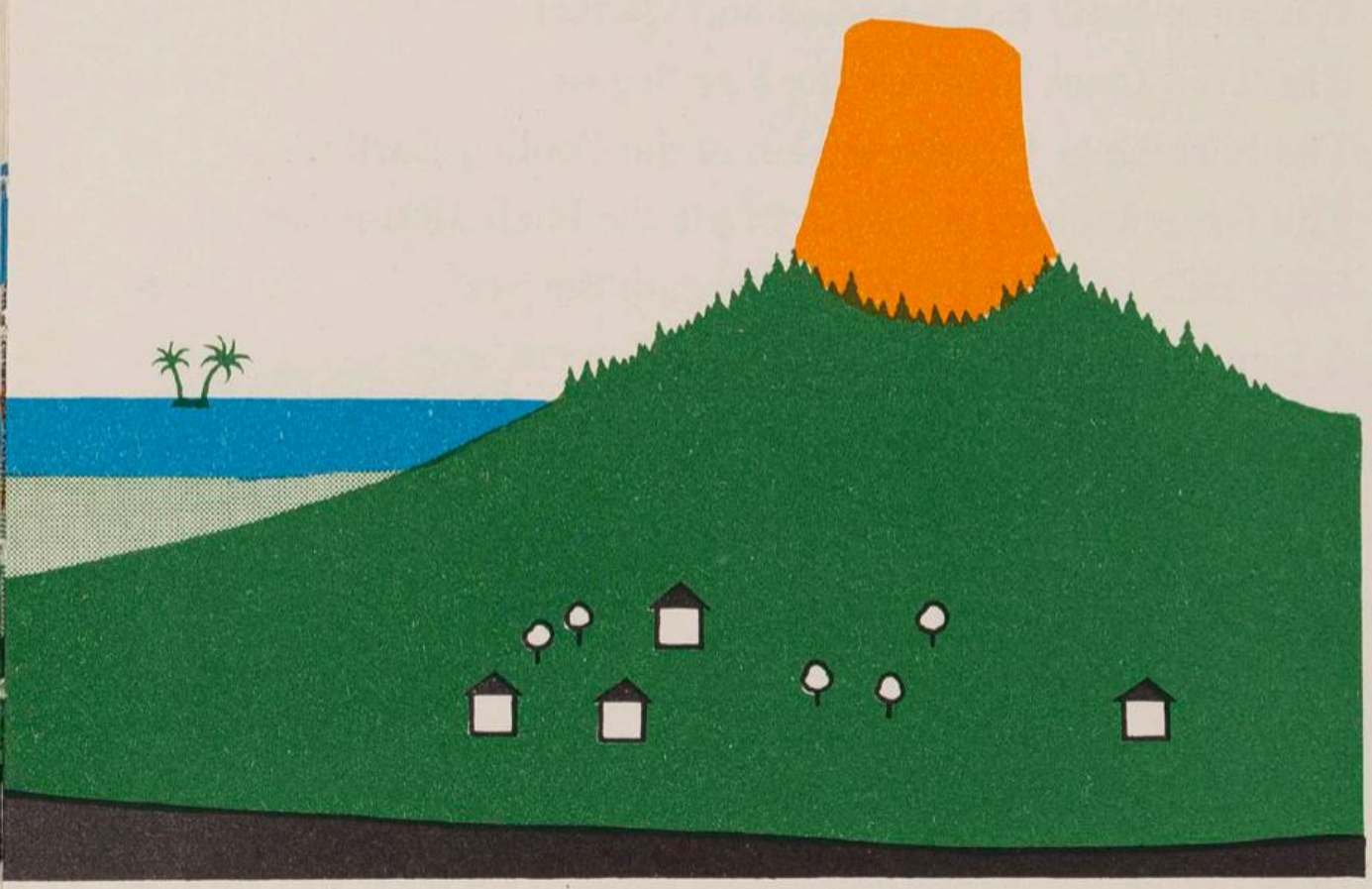


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THE WONDER WORLD OF
Land and Water

Marie Neurath



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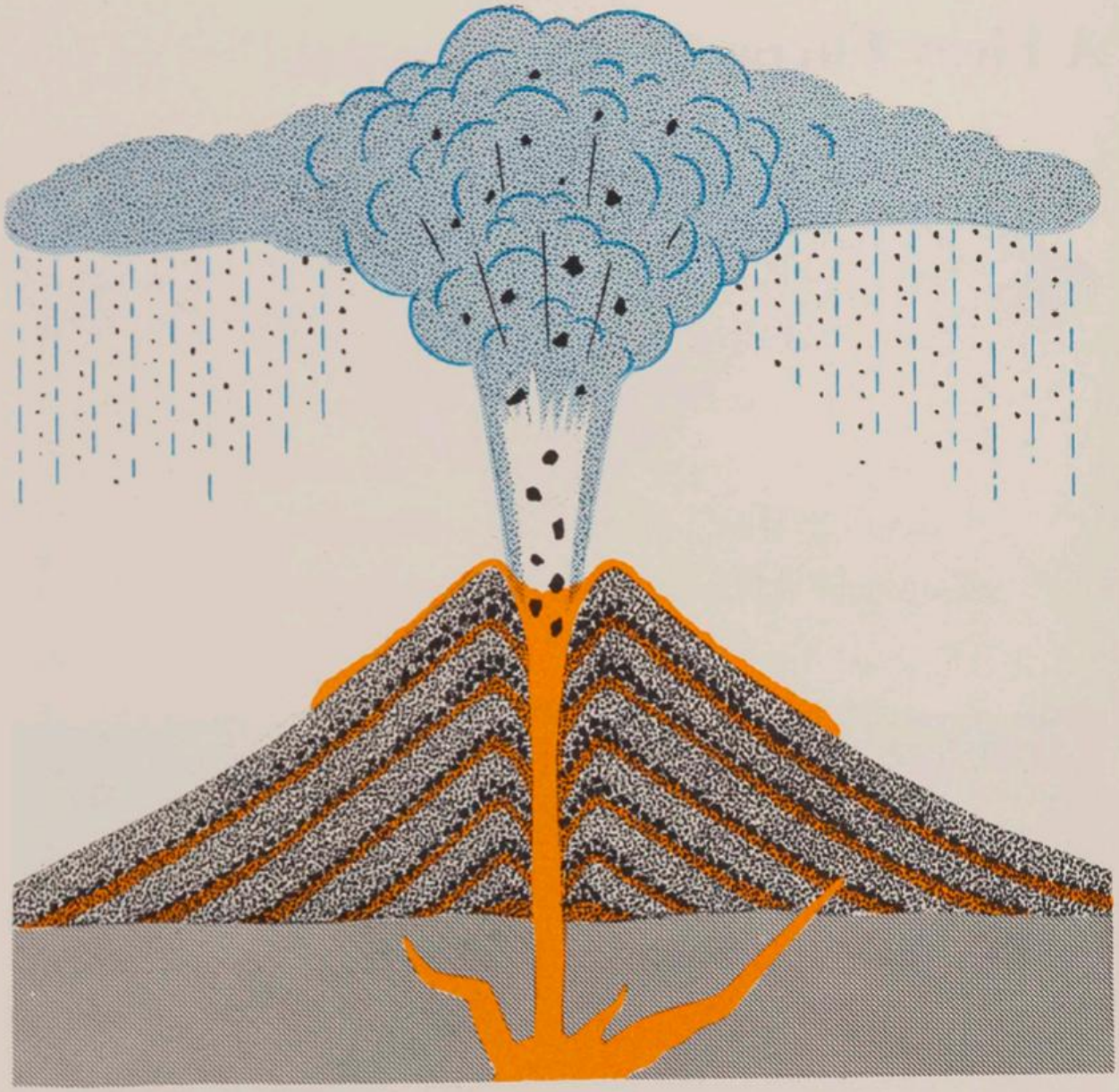
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A Fiery Furnace Under the Sea



Inside the earth on which we live, and inside the earth which is under the sea, are red-hot rock and pressing gases. Sometimes these are thrown out violently, through the mouth of a volcano.

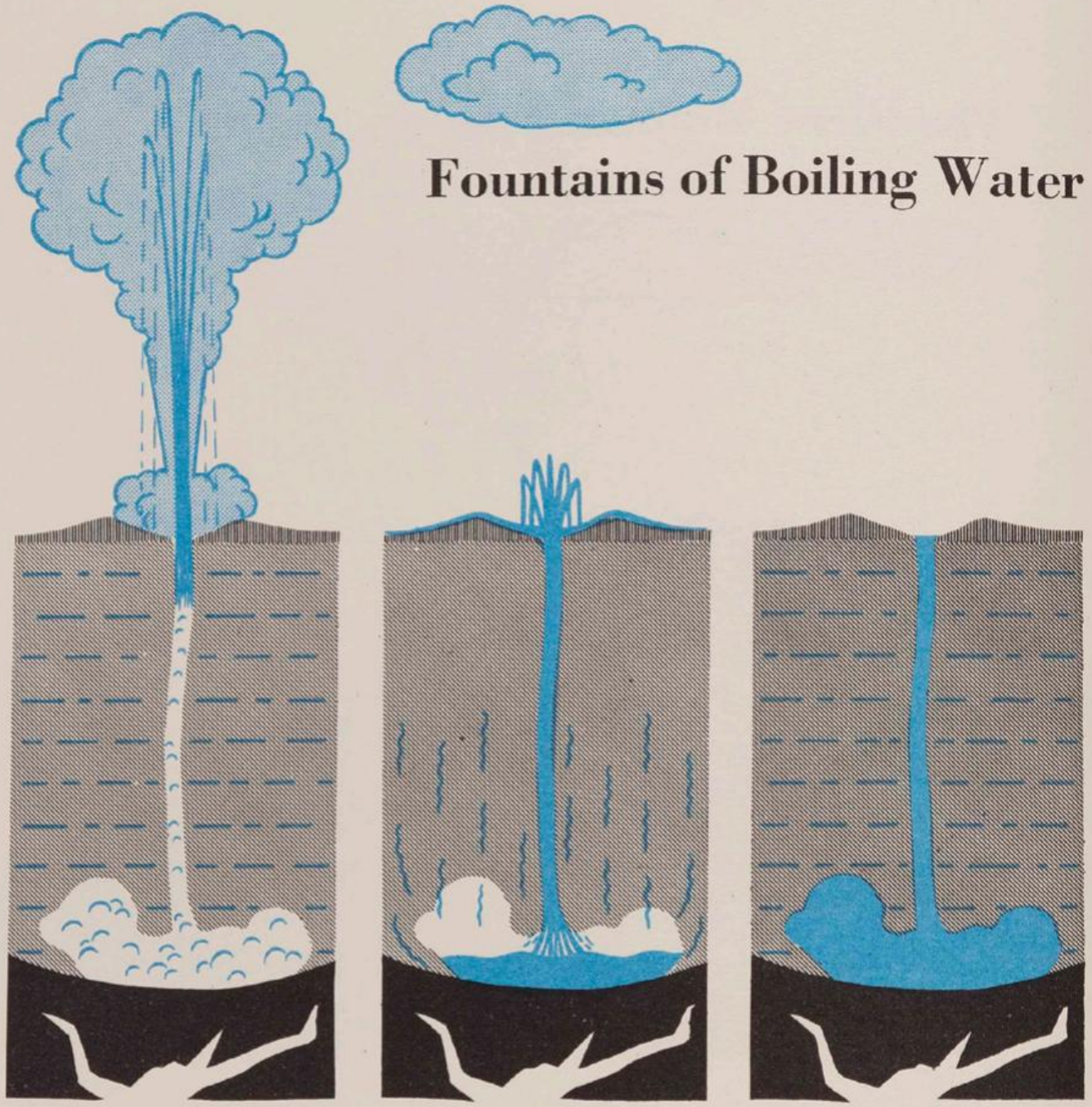


Each time a volcano bursts out, the liquid rolls down the sides and cools into hard rock. Layers of ash and stone fall on top, and the steam falls as rain. Slowly a cone-shaped mountain grows. Can you count how many times this volcano has burst out?

The Fiery Mountain Grows and Dies



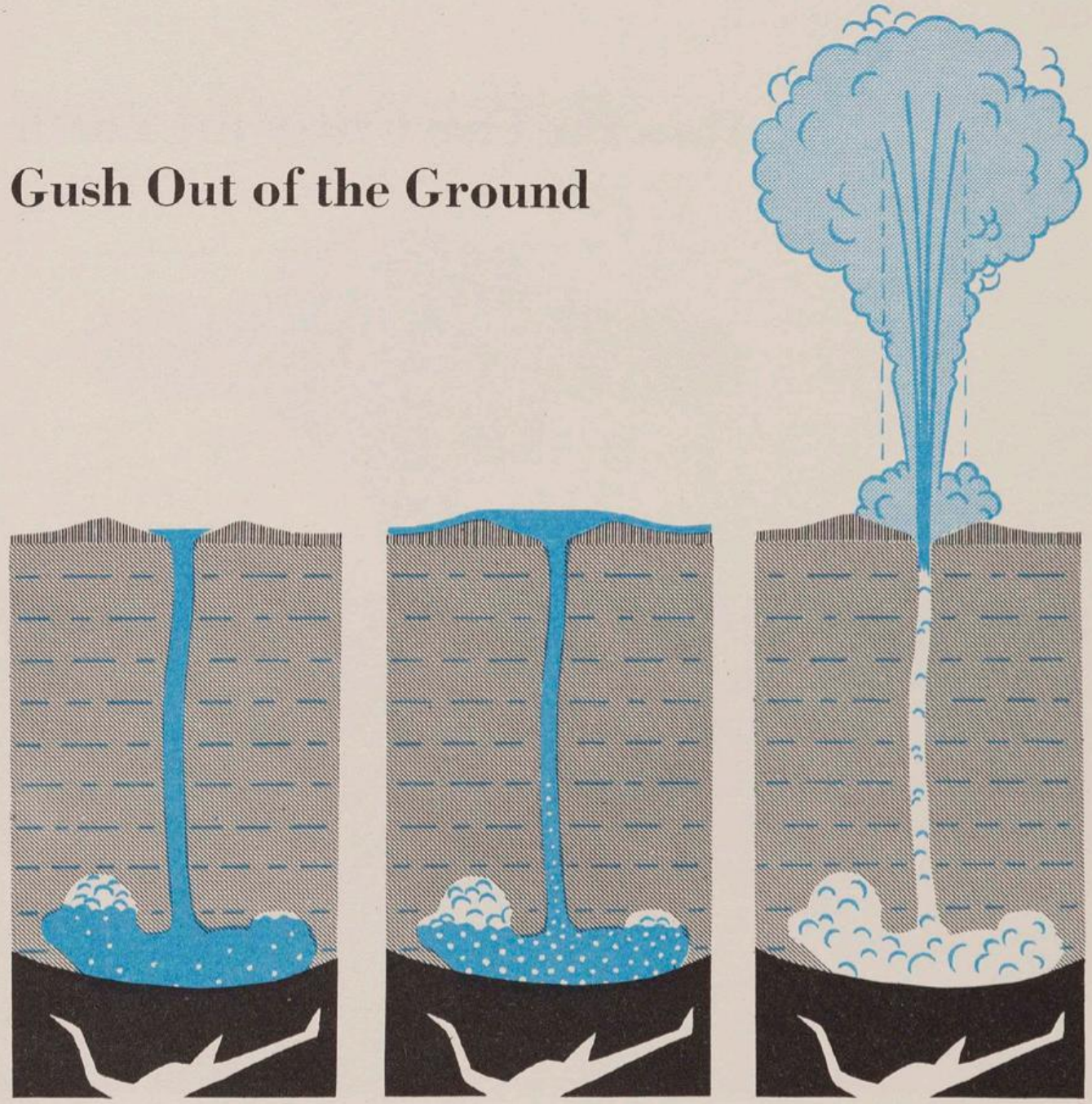
Inside a 'dead' volcano the long narrow shaft down the middle is blocked with cold ashes and hardened rock. Then rain may form a lake in the wide mouth at the top. People can live on its slopes, but a 'dead' volcano can suddenly burst into life again!



Fountains of Boiling Water

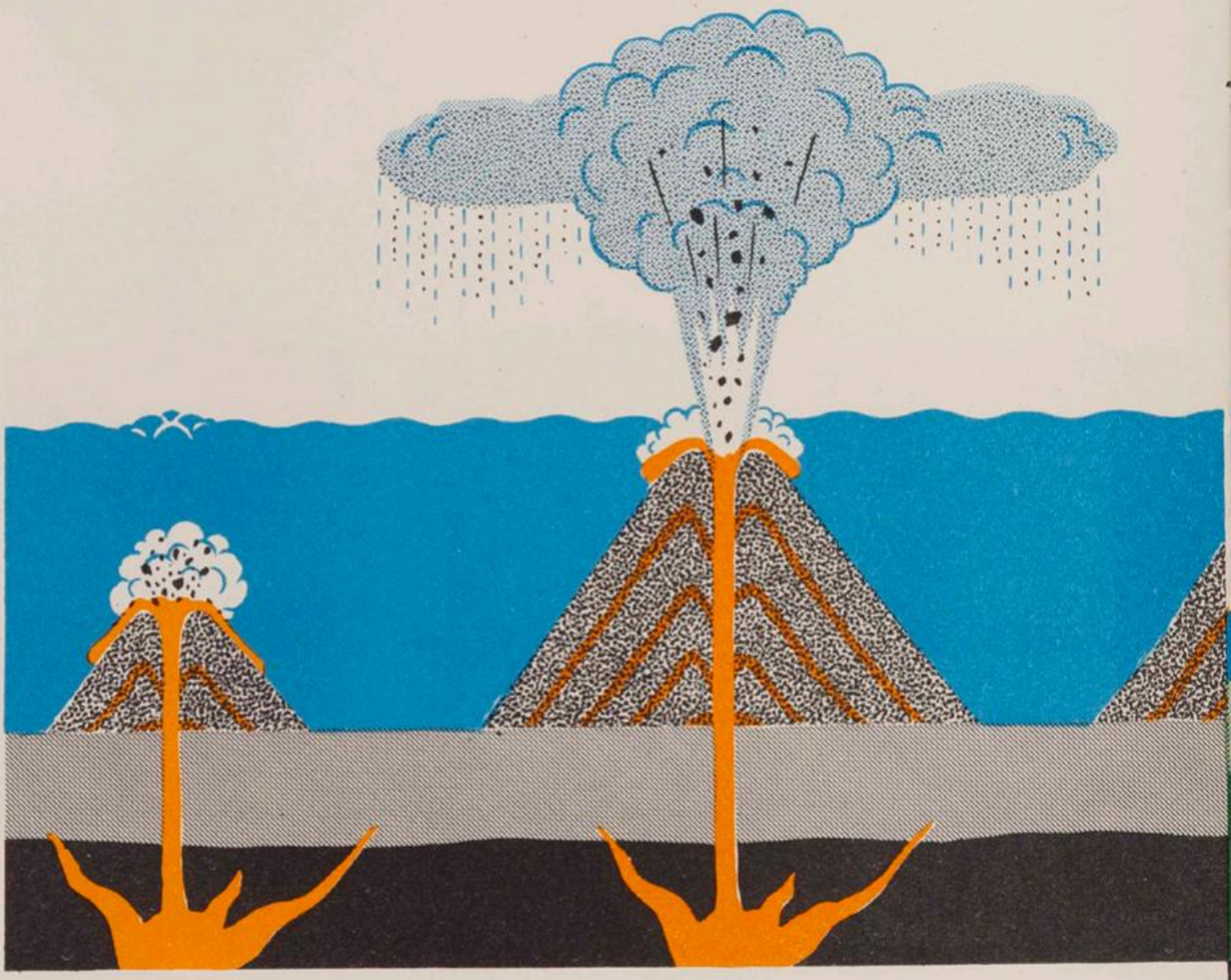
Strange fountains may be found near volcanoes. Steam and water burst out from a hole in the earth. Then the fountain dies down, and the water flows back into the hot rocks underneath.

Gush Out of the Ground



Soon the water begins to boil again. Steam tries to press out, and finally it throws out the column of water and rushes out itself. Now it no longer presses, and the water can flow back.

How the Fire Under the Earth



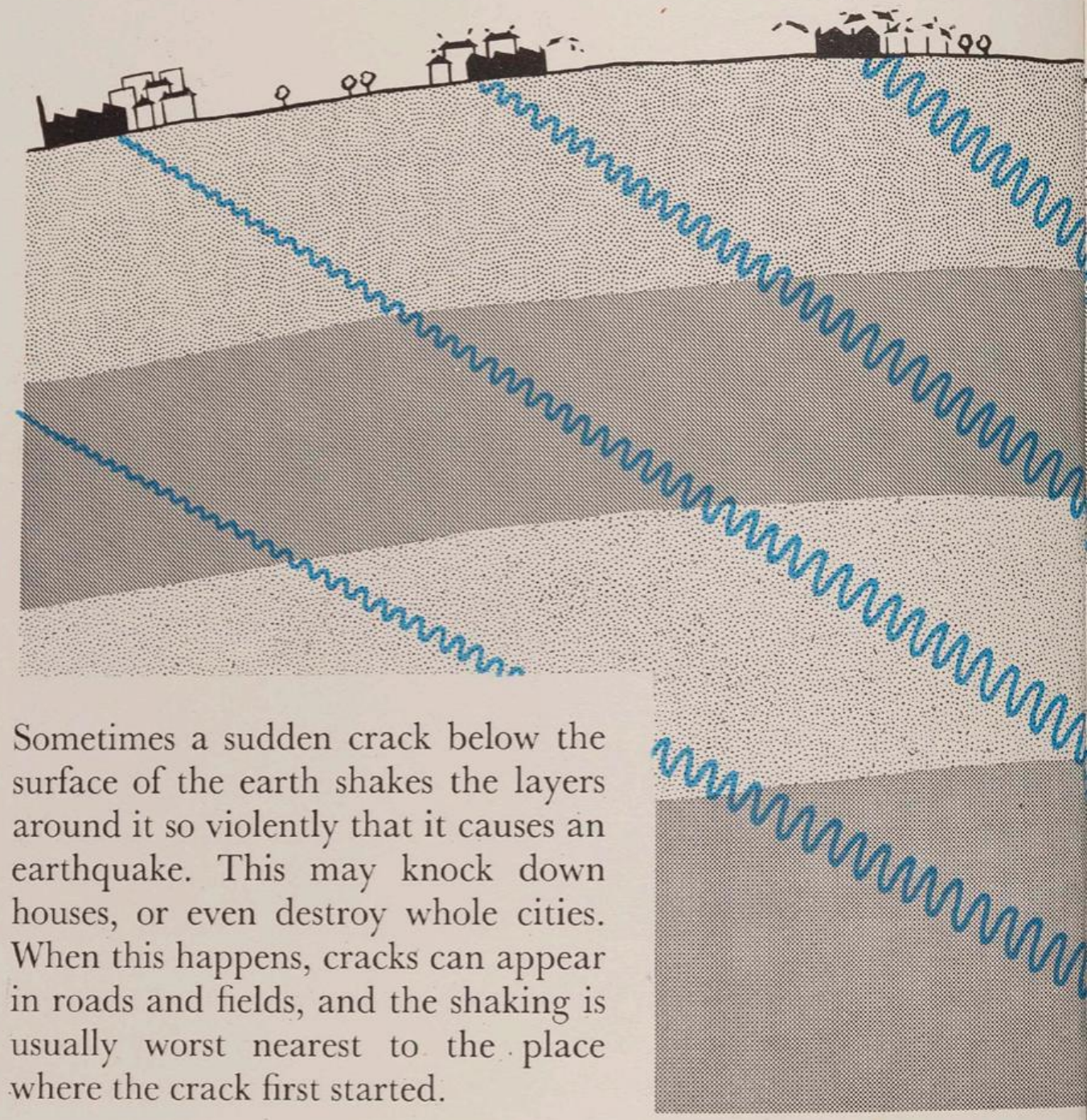
When a volcano bursts into action under the sea, it can build itself up rapidly until its top may rise above the waves. Then red-hot rocks and ashes are thrown up and fall back in the sea.

Builds an Island in the Sea

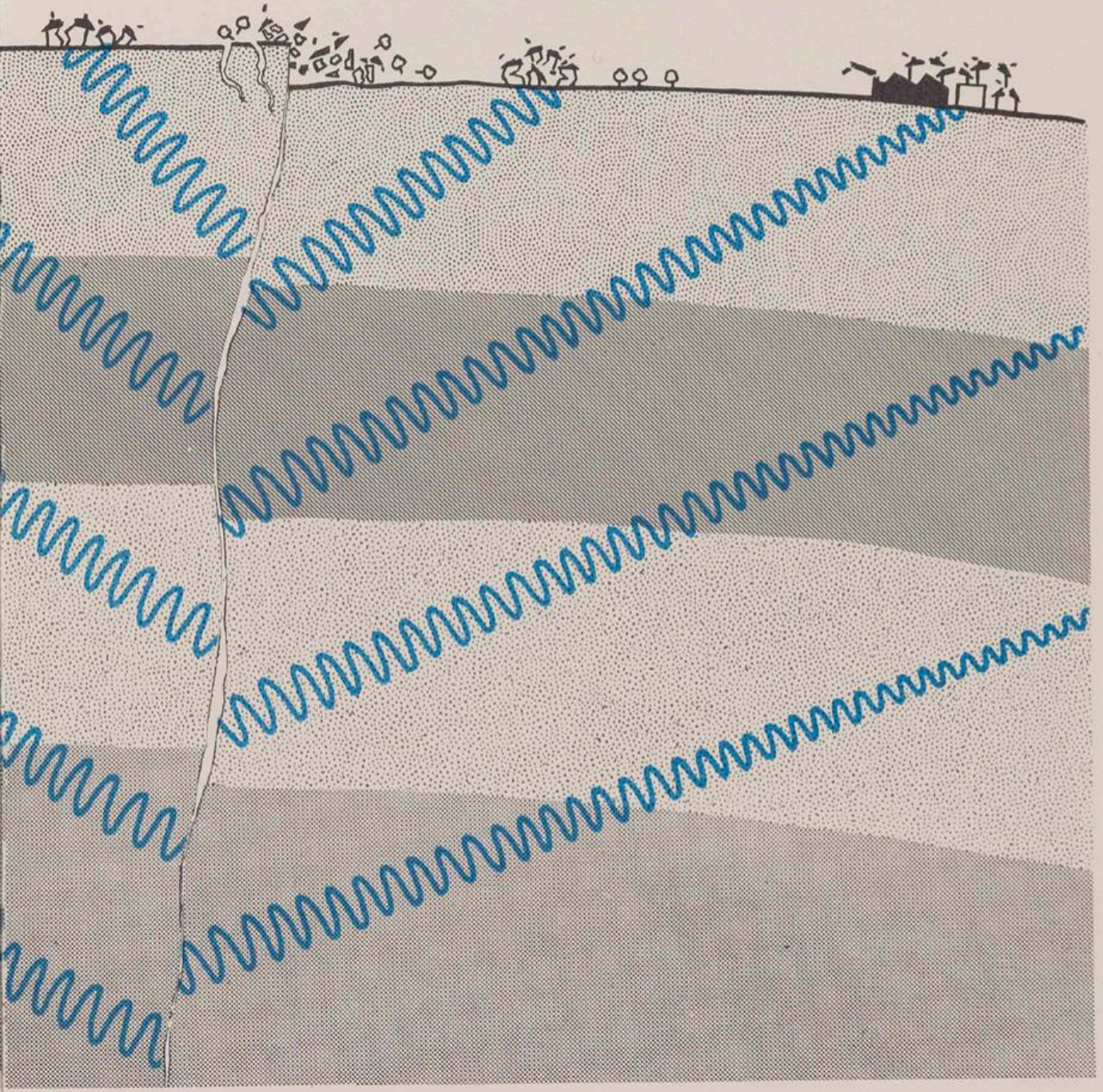


Such a volcano, when it is 'dead', makes an island in the sea, and plants and animals and people can live on it. Sometimes, we think, islands like this have disappeared under the sea again.

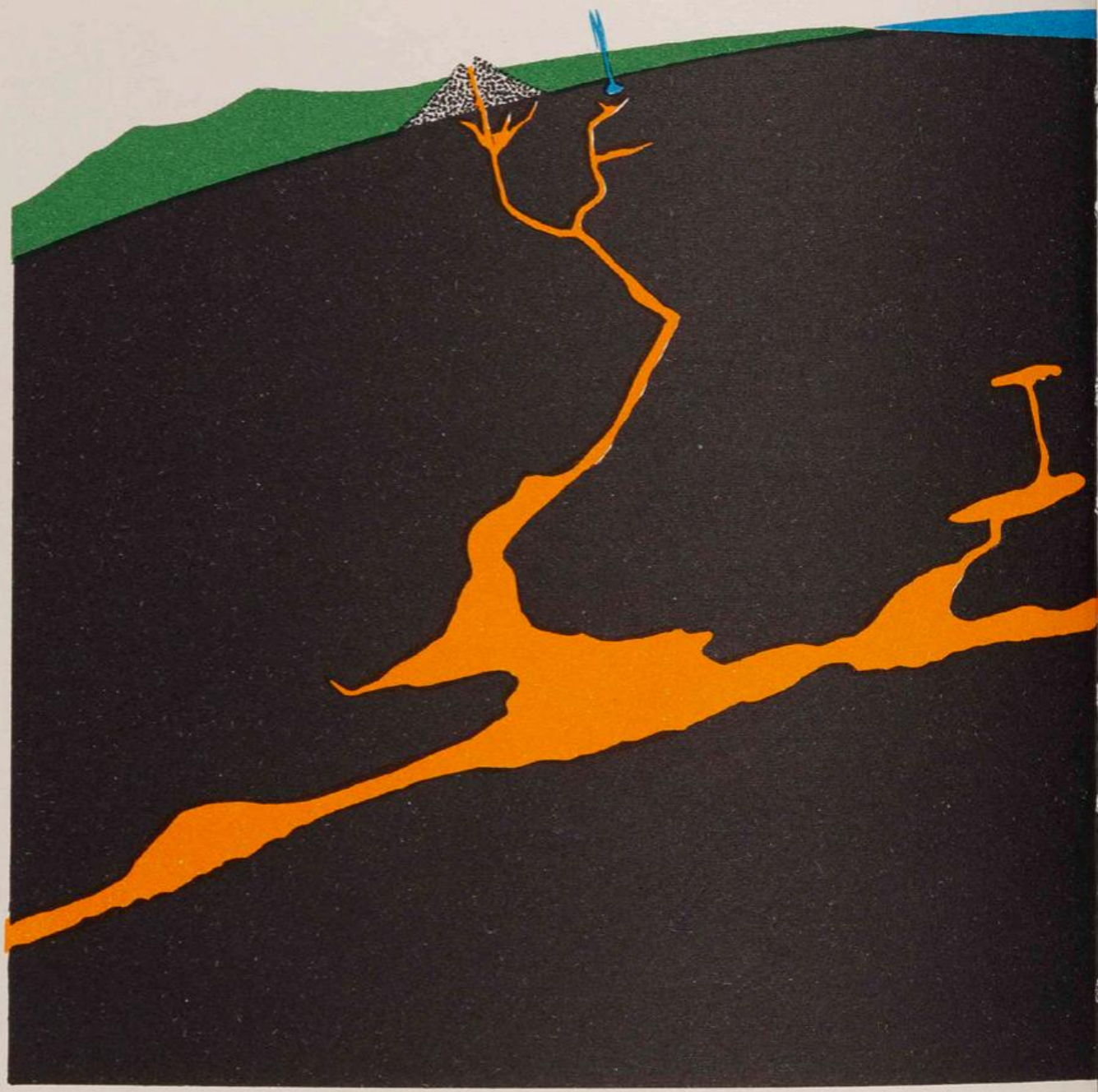
When the Solid Earth Cracks and Quakes



Sometimes a sudden crack below the surface of the earth shakes the layers around it so violently that it causes an earthquake. This may knock down houses, or even destroy whole cities. When this happens, cracks can appear in roads and fields, and the shaking is usually worst nearest to the place where the crack first started.



The Thin Crust in which the Fire Begins

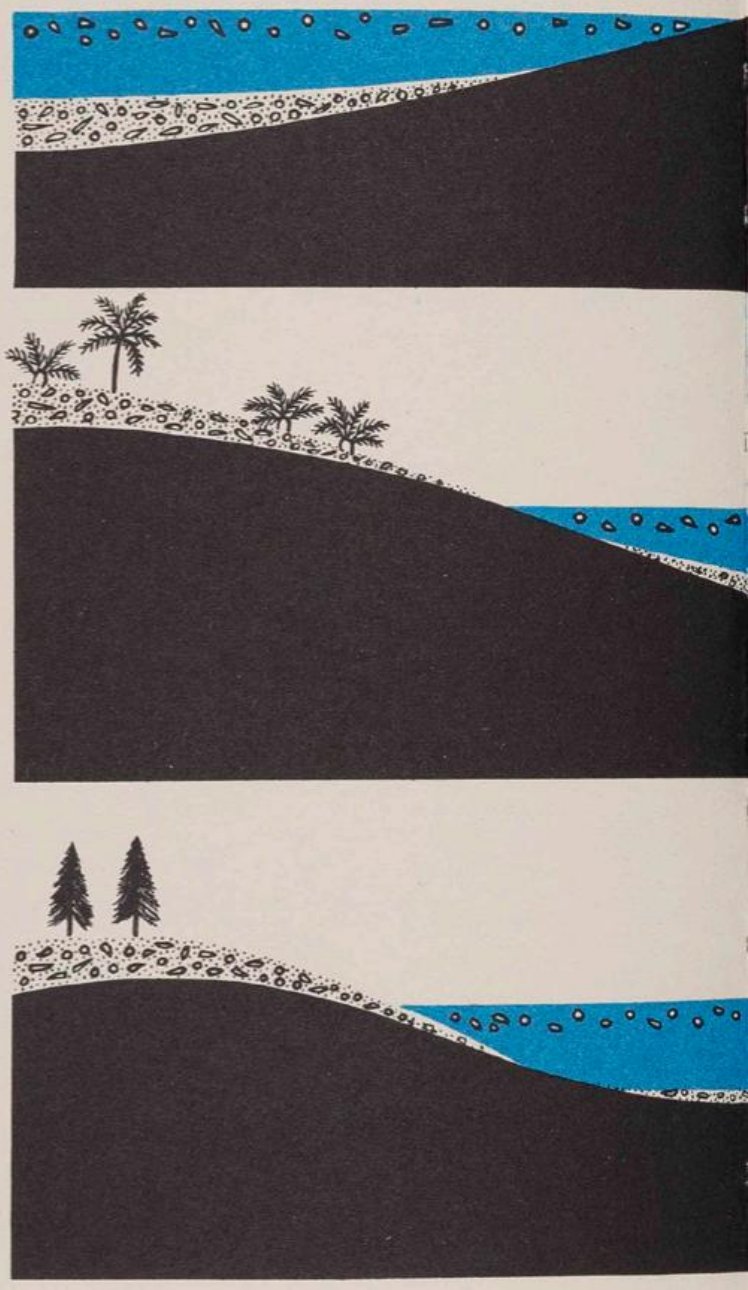


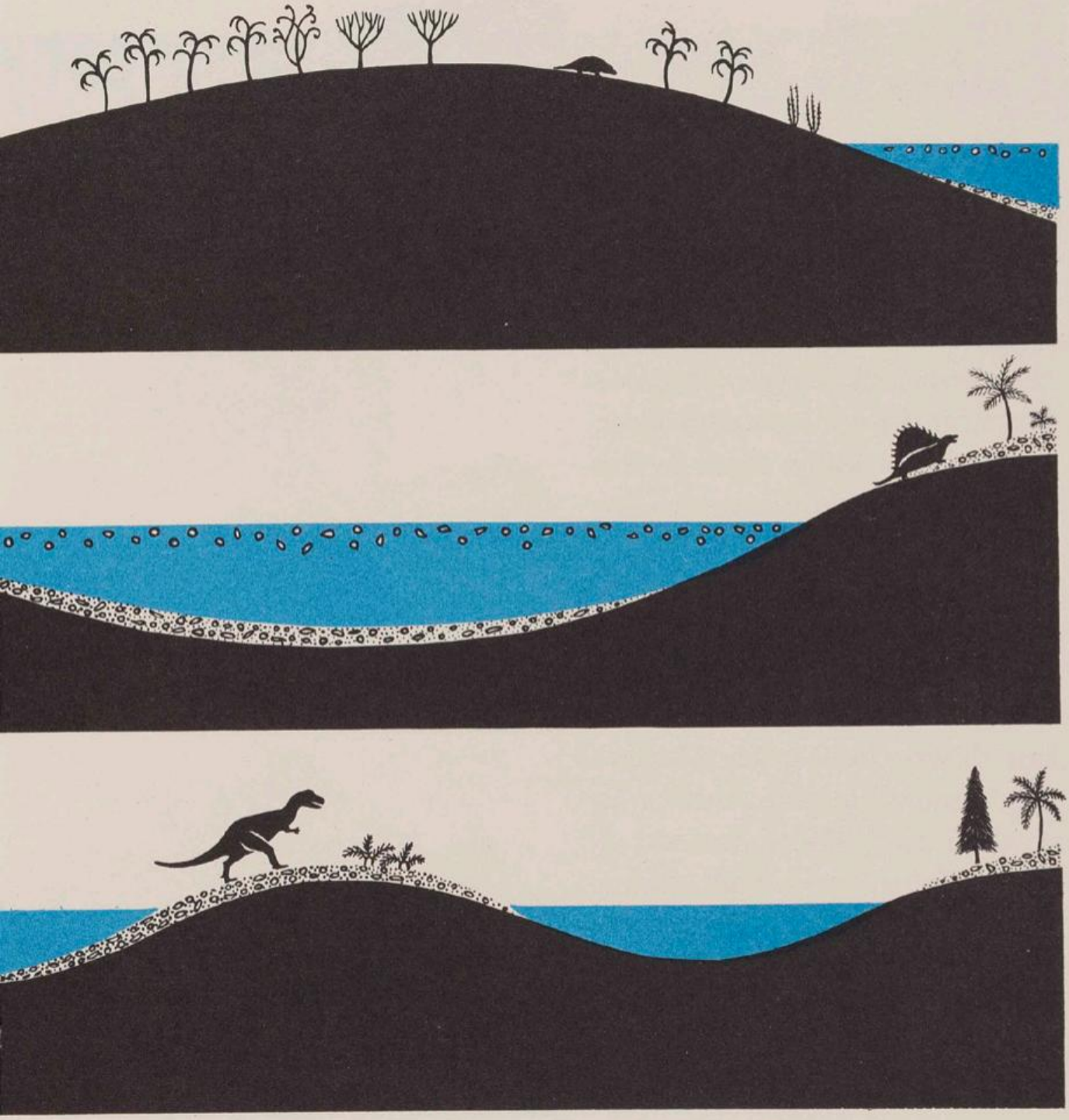


Where are the fiery furnaces underneath the earth? They are somewhere in the thin crust which makes the top covering—not very far down compared with the great distance to the middle of the earth. Nobody is yet quite sure what makes these pockets of red-hot rock and pressing gases.

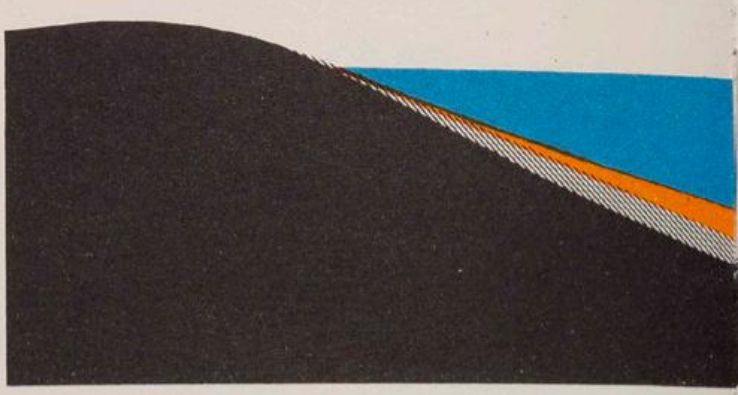
The Shrinking, Wrinkling Skin of the Cooling Earth

When an apple gets old and dry, it shrinks and the skin wrinkles. Many millions of years ago, the earth cooled down and shrank, and wrinkles formed on its surface. We know them today as mountains and hills and the high parts of the ocean bed. The wrinkling went on for a very long time, and the sea filled the hollows. Plants grew and animals lived on the dry land. Small creatures lived in the sea, and when they died, their shells and skeletons helped to make, after millions of years, solid chalk. Then the earth's surface wrinkled again, and the chalk became dry land. So we find hills of chalk, made from shells and skeletons of creatures who had lived in the sea.





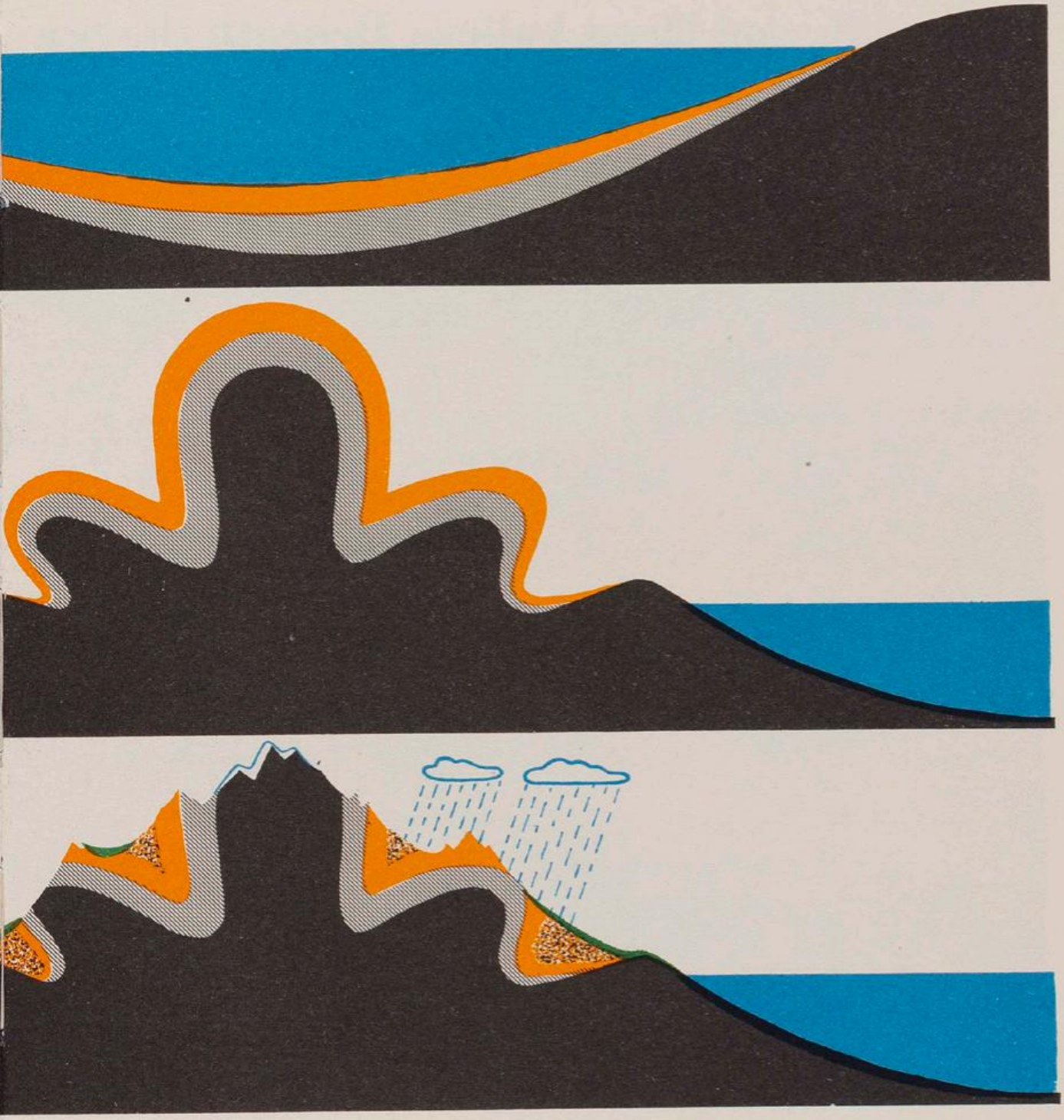
The Great Upheavals which Made the High Mountains



Sometimes the wrinkling of the earth took place with great force, and huge wrinkles were formed. We know these as the mighty mountain ranges of the earth. For millions of years strong winds and ice and snow broke up the rock, and rain poured down on the mountains, and rivers and streams ran down their sides. Gradually some of the softer rock was washed away. Now, instead of great folds, we find sharp peaks, steep cliffs and deep valleys; the soft rock appears in some places, in others the hard rock beneath has been laid bare.







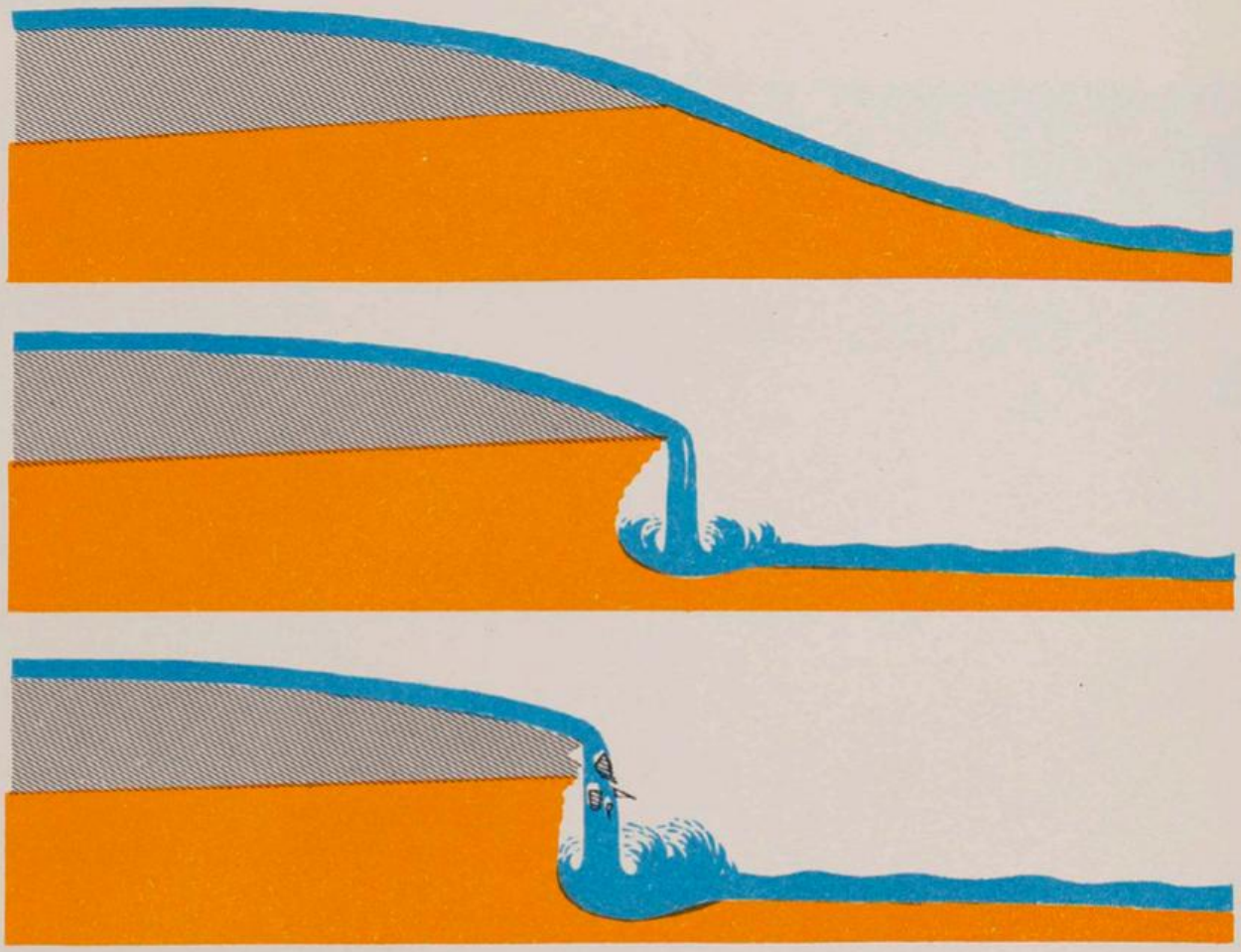
High Hills and Deep Valleys Beneath the Sea



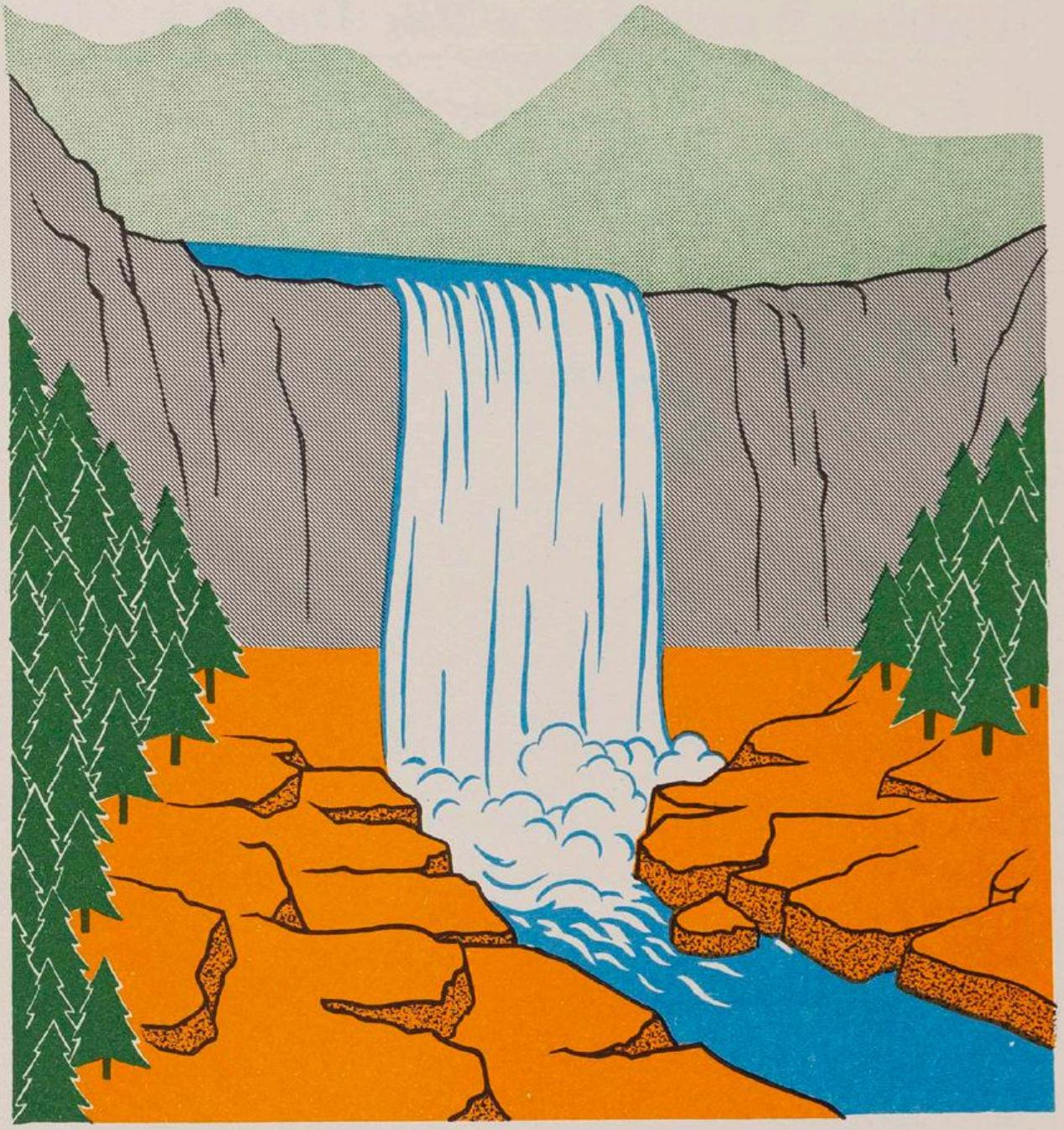
A strange underwater world lies beneath the sea, but it is really like the earth's surface on dry land. Near the land, the sea-bed slopes gently down. Then sometimes it falls suddenly away. Steep canyons cut into the slopes, and valleys into the sea-bed; mountains and volcanoes rise above it.



A Gentle Flow Becomes a Roaring Torrent

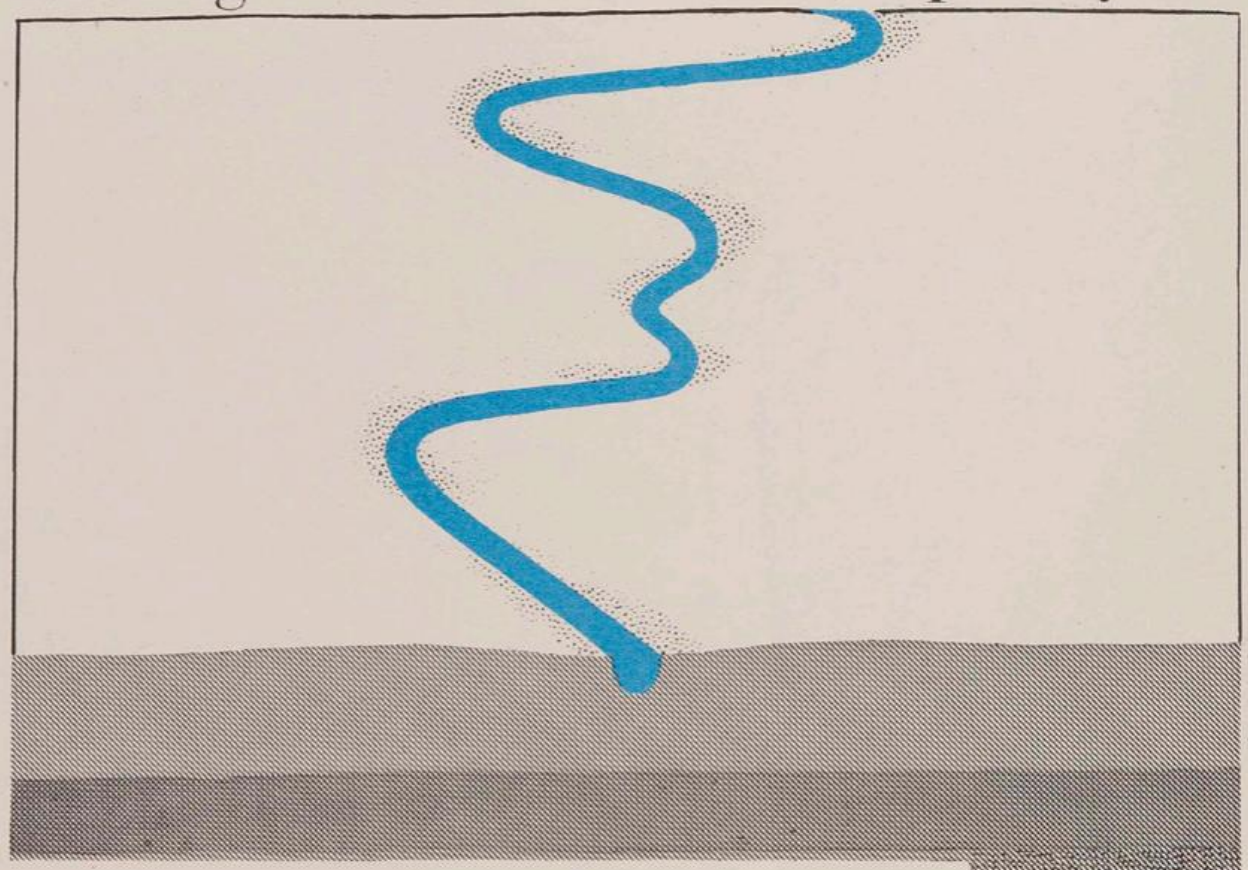


Flowing water wears away soft rock more quickly than harder rock. Where a river flows from harder to softer ground, a step will be formed. As water rushes over this step, it digs deeper into the softer ground and undermines the jutting ledge of harder rock. Now this has lost its support and breaks away in pieces, and the water falls sharply from a greater and greater height.



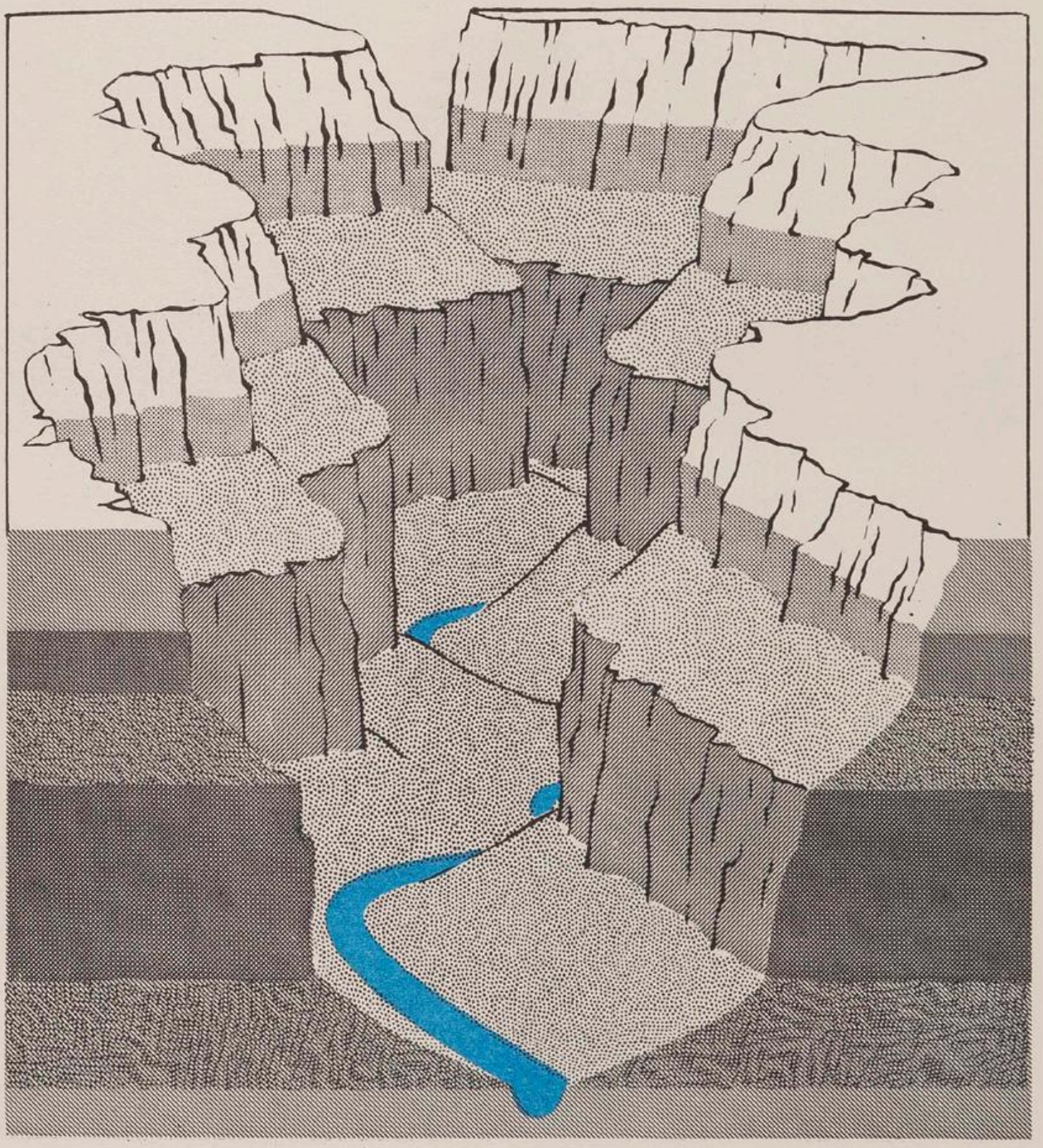
What was a gentle flow, becomes a splashing, roaring waterfall.

Rushing Waters Cut a Mile-Deep Canyon in

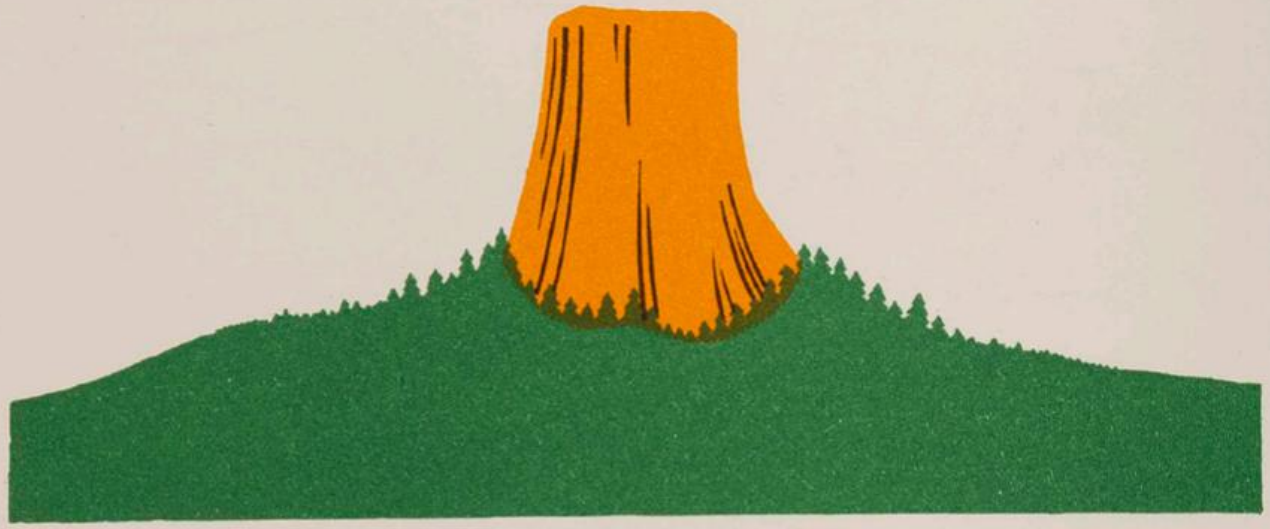


Sometimes, to dry Arizona, come sudden, very heavy rains. Long ages ago they fell on a rolling plain. The rushing waters cut channels in the earth, sweeping the dry, loose soil and rock before them. More rains fell, and cut the channels deeper, for thousands of years. Now, the main channel is a mile deep, with sides of coloured rock: The Grand Canyon. Far below, the torrent races, cutting deeper and deeper.

the Solid Rock



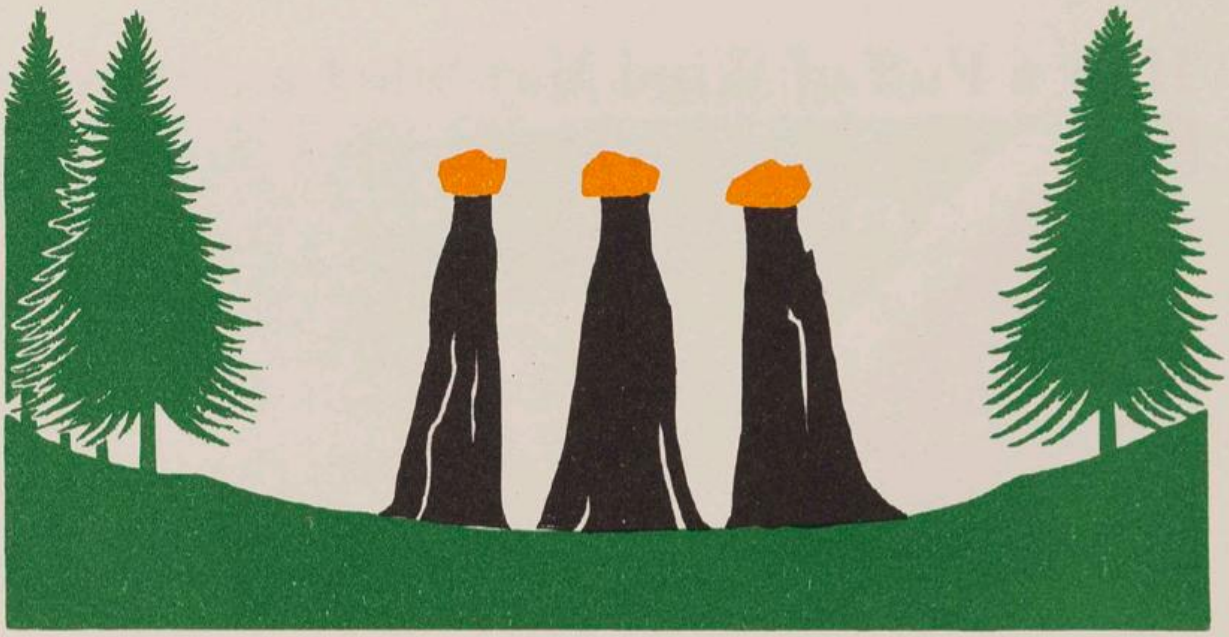
Tall Towers which Stand Alone



Today the Devil's Pillar towers high above the ground; once it was a 'dead' volcano. But rain and wind gradually swept down the rocks and earth on its slopes to the foot of the cone. Then only the harder rock in the middle was left behind.







These tall pillars stand alone in a woodland valley. Many, many years ago, hard boulders rested on the level ground. Gradually, the rains washed away the earth around them, but left the earth beneath them firm. Now these strange, tall pillars remain.

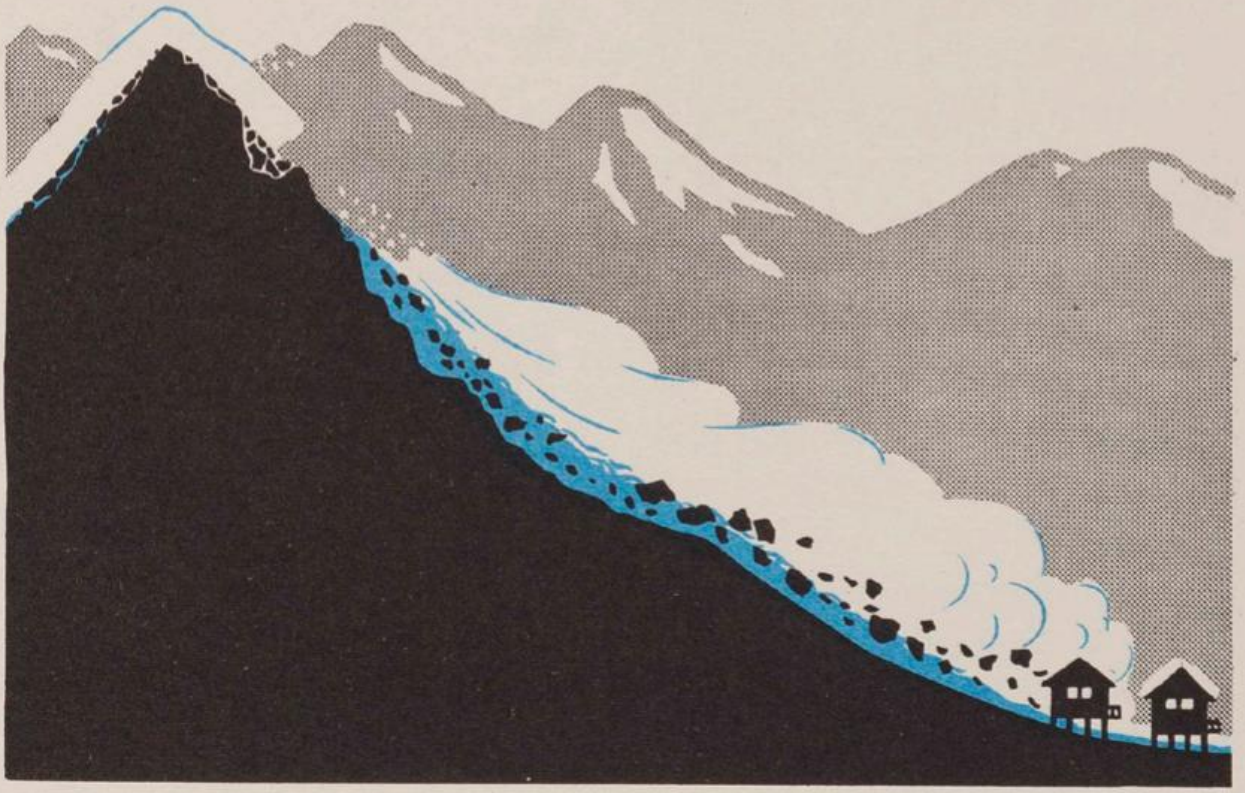


How a Puff of Wind May Start an Avalanche

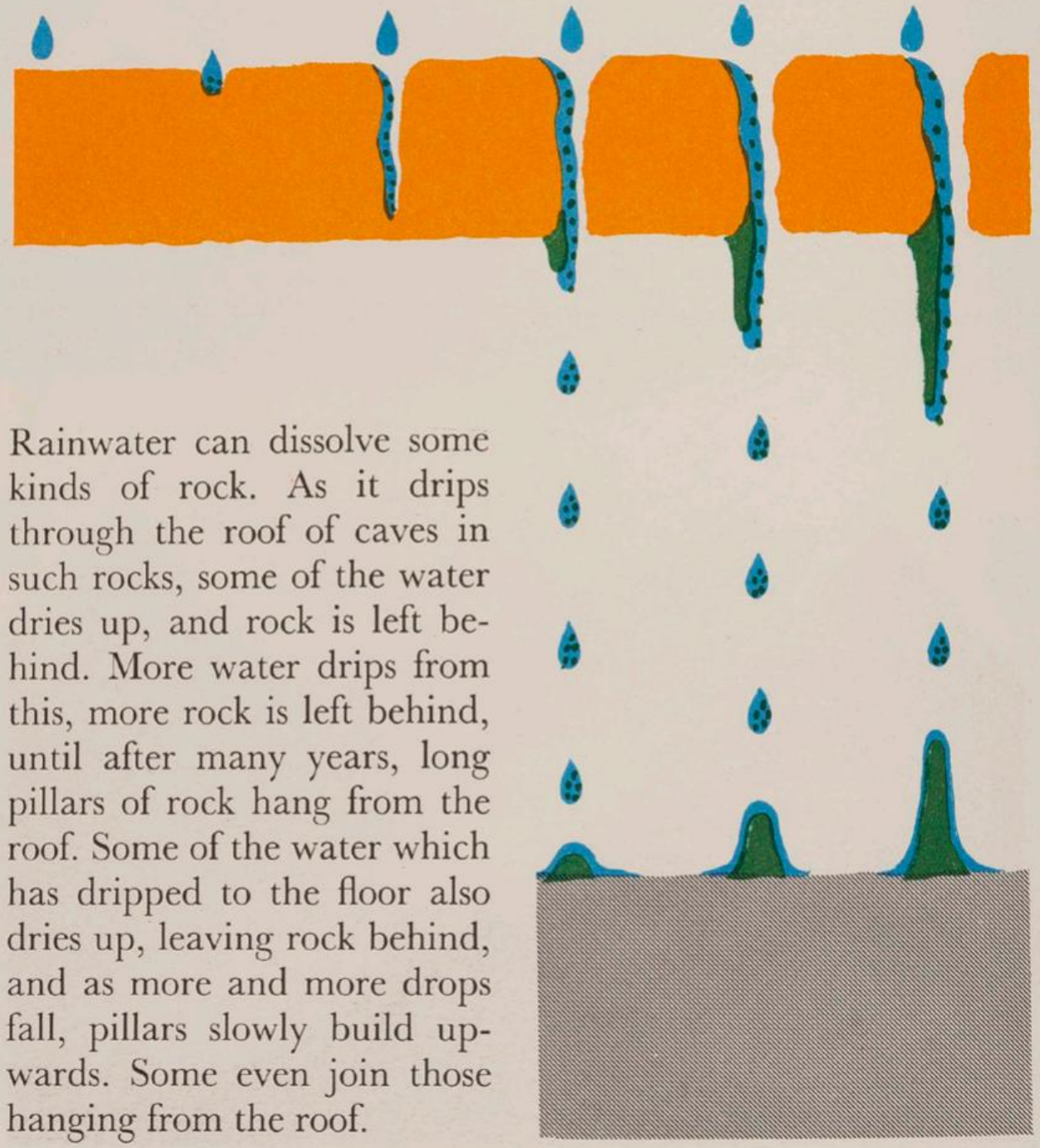


Crashing Down the Mountainside

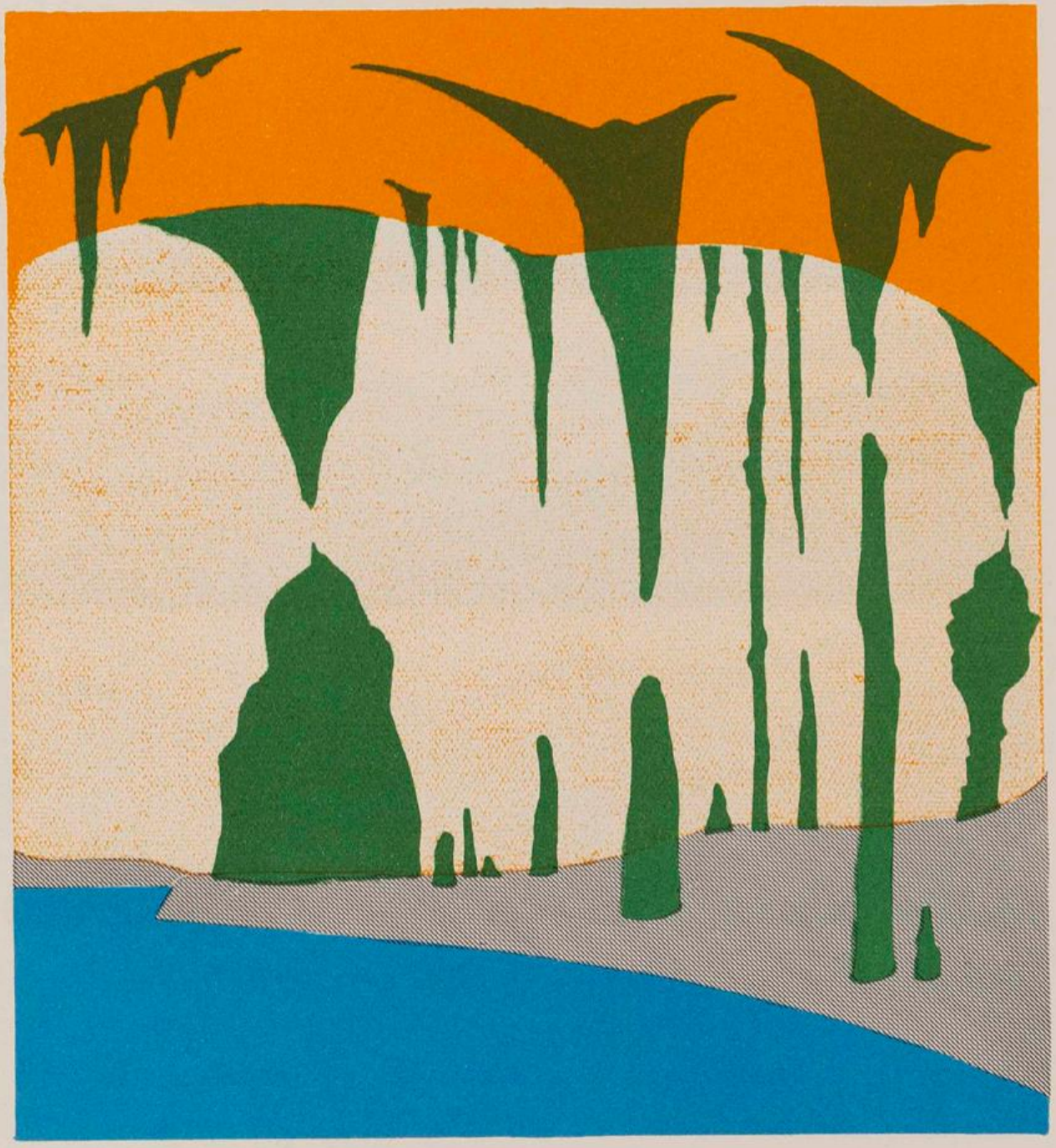
As snow falls on the high mountains, it piles up in thick layers. Under its heavy weight, ice forms, settling in the cracks of the rocks and causing them to break and loosen. When warmer weather comes, the ice melts and soon the mass of snow rests only on slippery rock and loose stones. A puff of wind can set it crashing down the mountainside, uprooting trees and knocking down houses on its way.



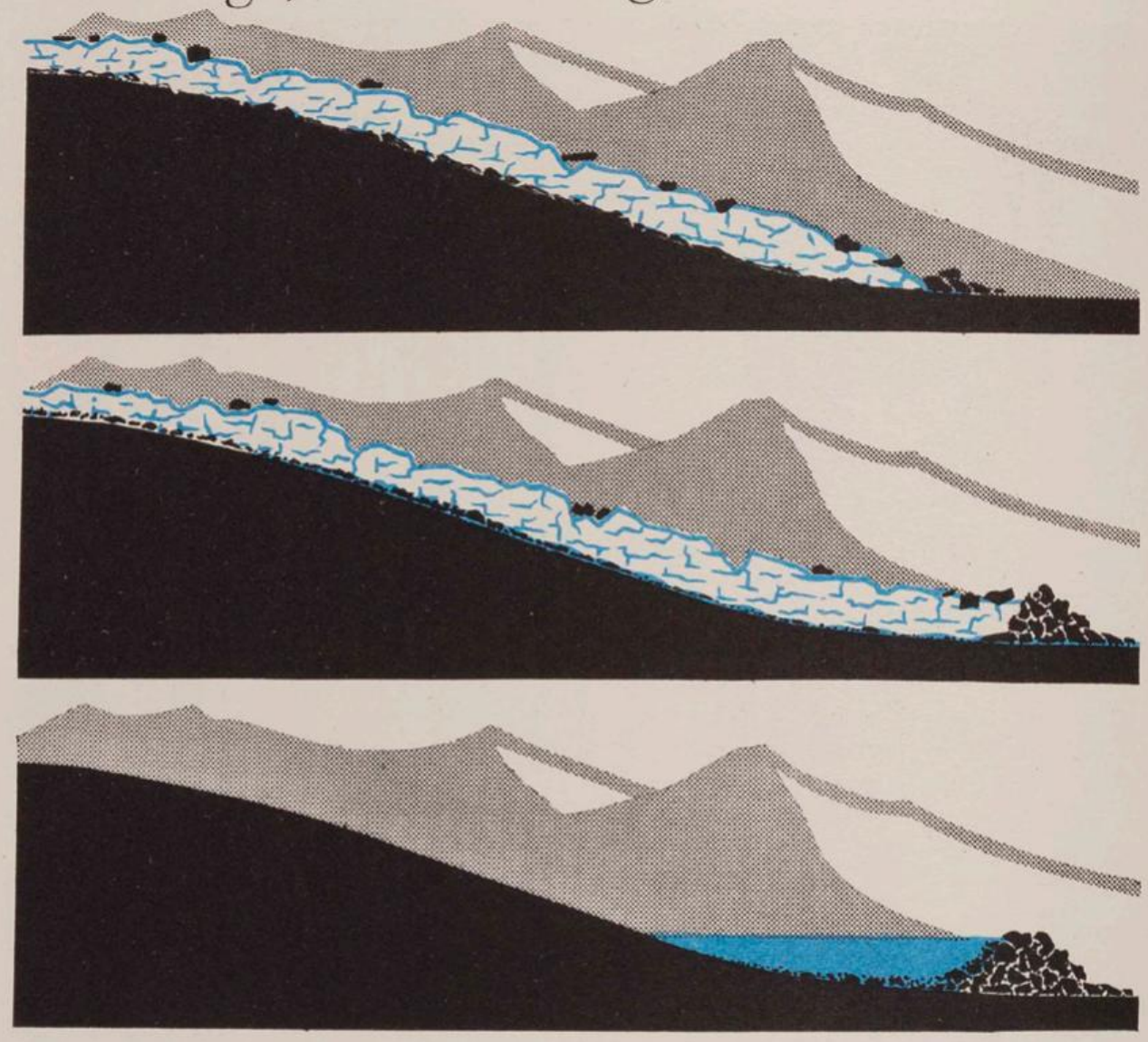
The Cave of Strange Pillars



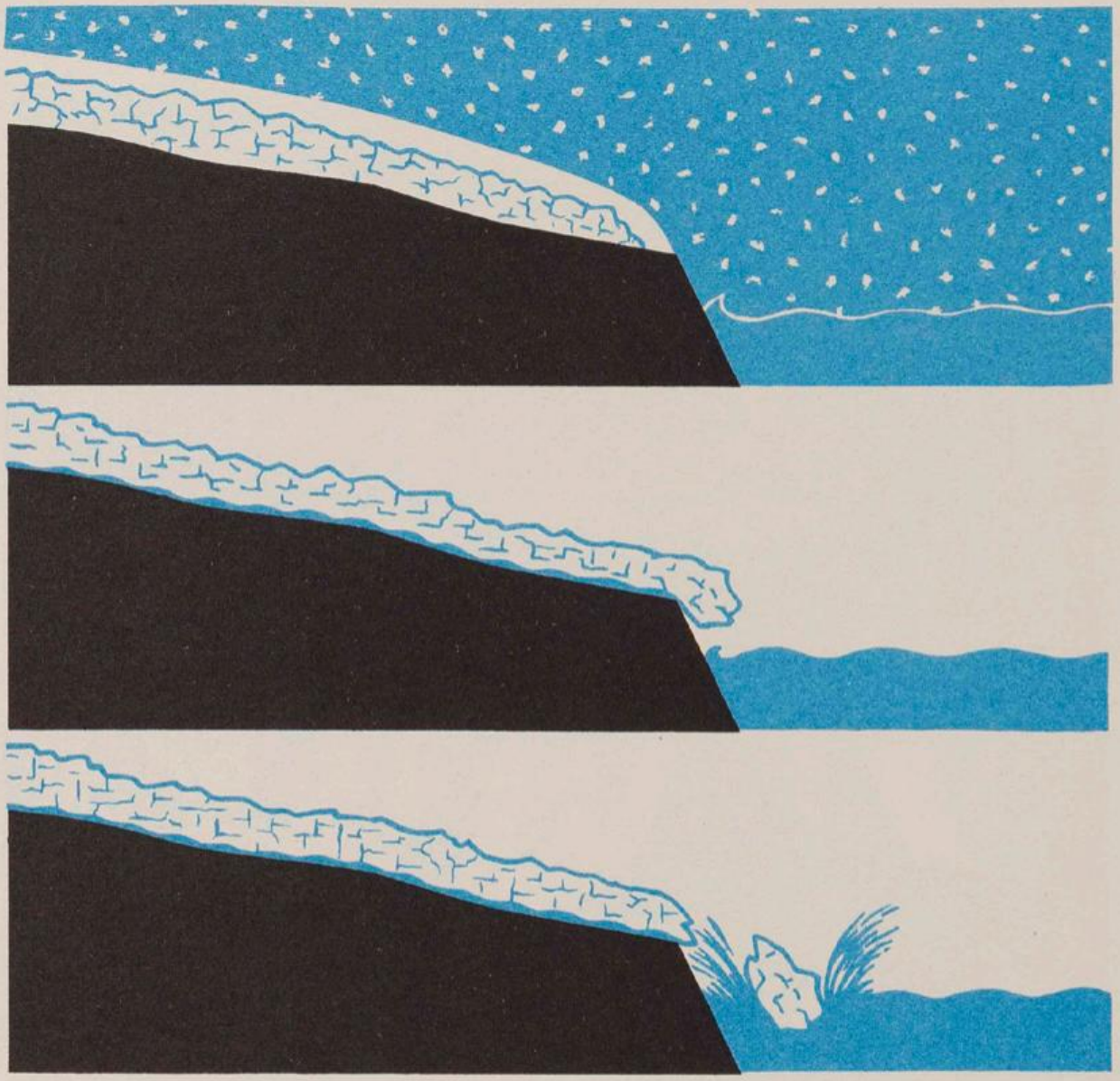
Rainwater can dissolve some kinds of rock. As it drips through the roof of caves in such rocks, some of the water dries up, and rock is left behind. More water drips from this, more rock is left behind, until after many years, long pillars of rock hang from the roof. Some of the water which has dripped to the floor also dries up, leaving rock behind, and as more and more drops fall, pillars slowly build upwards. Some even join those hanging from the roof.



The Huge, Slow-Moving Rivers of Ice

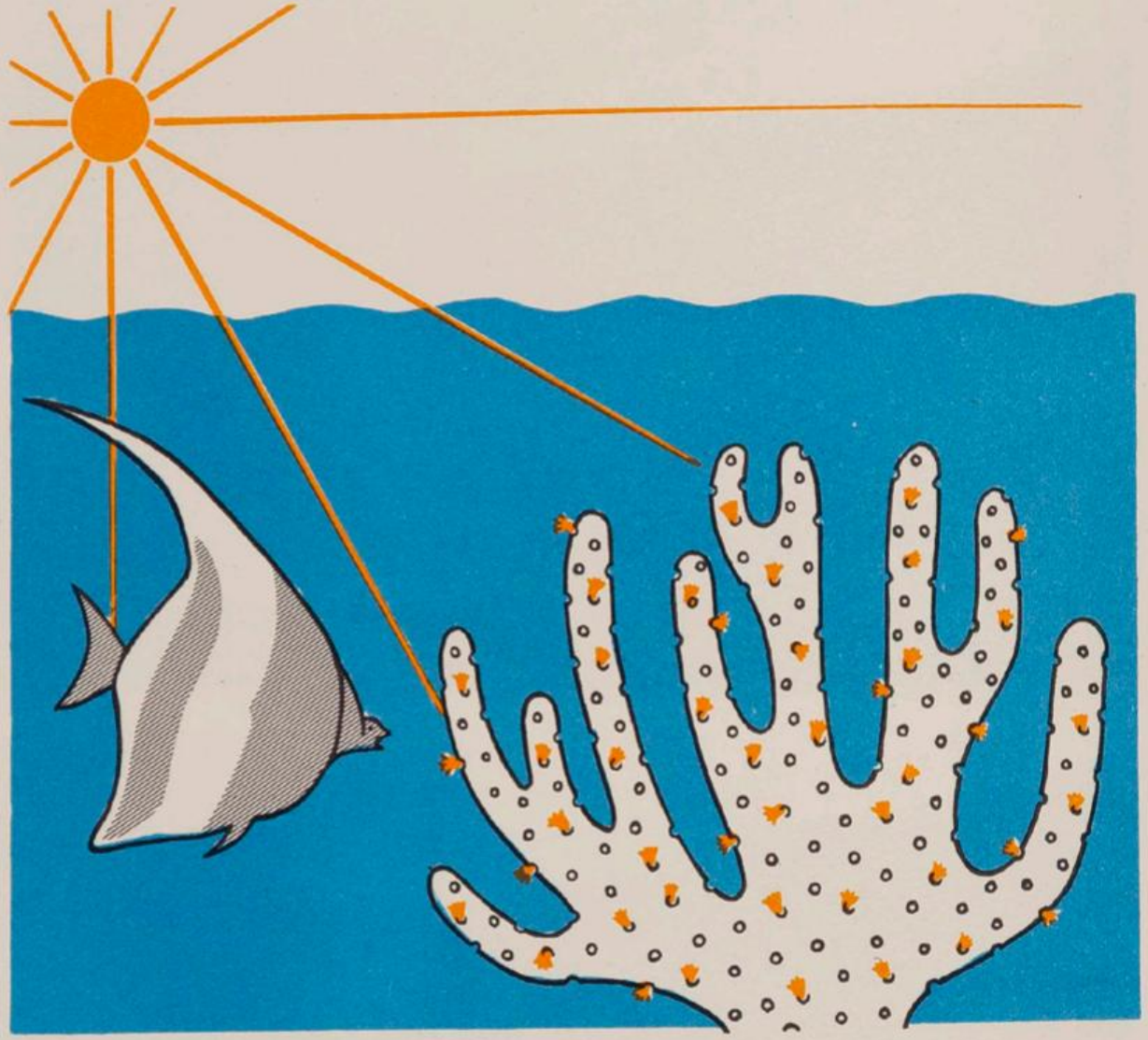


Under the great weight of ice on high mountains, water forms, and sometimes whole rivers of ice slip slowly down. They scrape away the rocks beneath, and push boulders before them. In warmer times the ice melts, leaving lakes and a pile of loose rock.

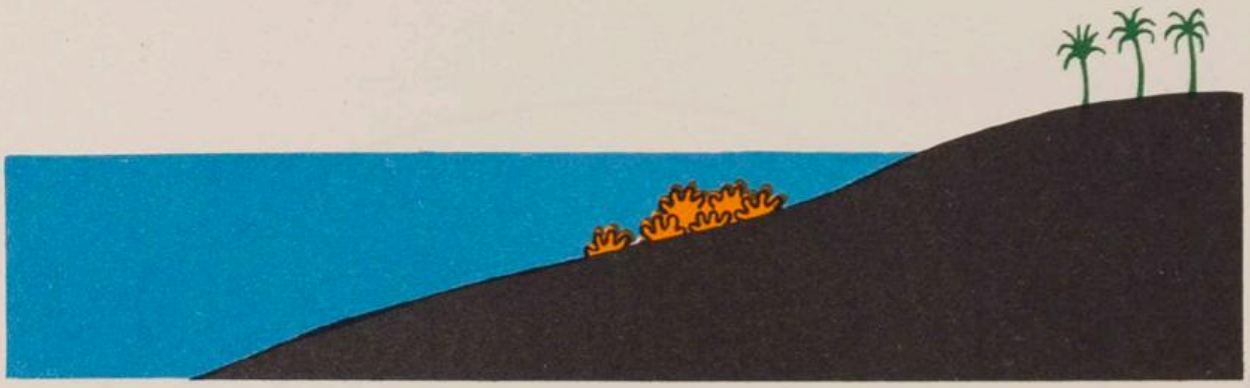


In some cold places, the rivers of ice reach down to the sea. At the cliff's edge huge masses of ice may break off and float away. These great icebergs are often carried far out into the ocean; much more is below the surface than you can see above.

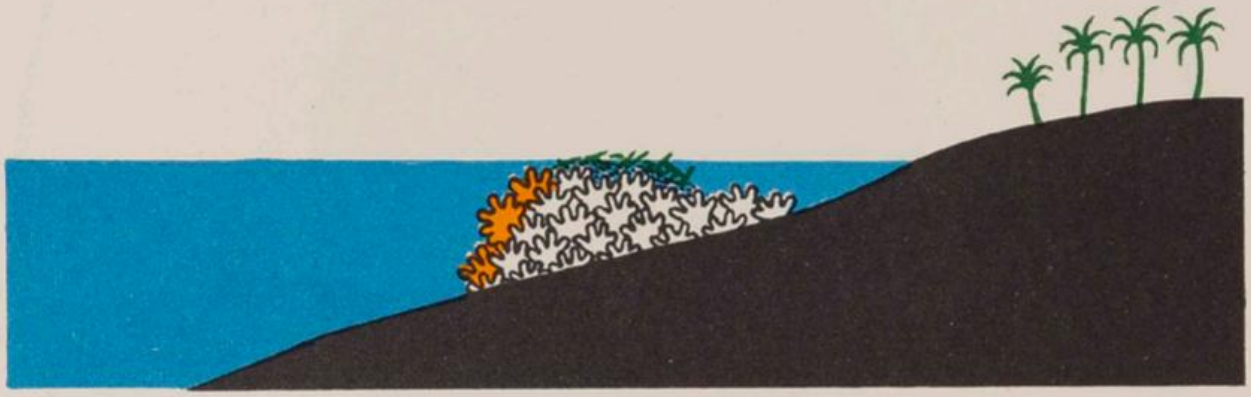
How Living Creatures Build New Land



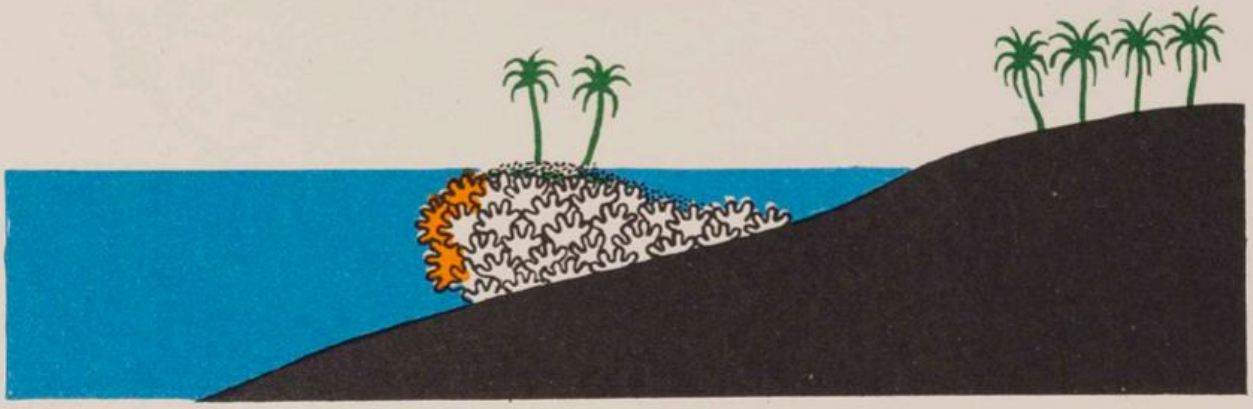
Corals are tiny creatures living in warm, sunlit seas. In great numbers they attach themselves to rocks and grow hard, tree-like structures. When they die, these structures remain, but more settle on them. Slowly, a colourful, rocky forest grows.



Coral reefs form along the coast where the water is shallow.

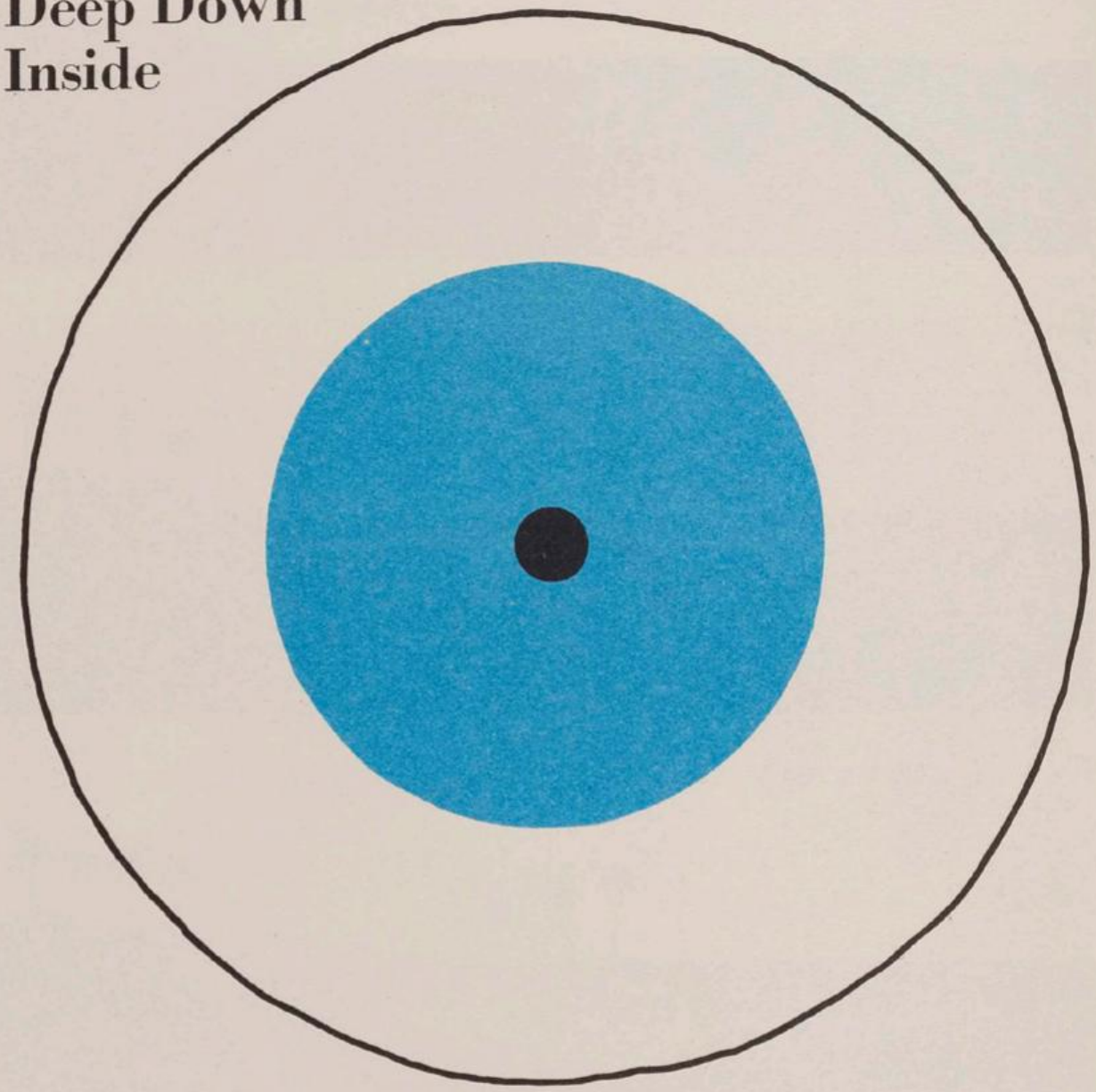


Caught on the reefs, earth and sticks pile up above the surface.



On this new land, plants grow. Below, more corals form.

Deep Down Inside



The crust on the surface of the earth is only 20 miles thick, and we know little of what lies beneath it. But about 4000 miles down, in the middle, it may be solid.

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