

## CHAPTER XVIII.

### THE WONDERS OF TERRESTRIAL DEPTHS

At eight in the morning a ray of daylight came to wake us up. The thousand shining surfaces of lava on the walls received it on its passage, and scattered it like a shower of sparks.

There was light enough to distinguish surrounding objects.

"Well, Axel, what do you say to it?" cried my uncle, rubbing his hands. "Did you ever spend a quieter night in our little house at Königsberg? No noise of cart wheels, no cries of basket women, no boatmen shouting!"

"No doubt it is very quiet at the bottom of this well, but there is something alarming in the quietness itself."

"Now come!" my uncle cried; "if you are frightened already, what will you be by and by? We have not gone a single inch yet into the bowels of the earth."

"What do you mean?"

"I mean that we have only reached the level of the island, long

vertical tube, which terminates at the mouth of the crater, has its lower end only at the level of the sea."

"Are you sure of that?"

"Quite sure. Consult the barometer."

In fact, the mercury, which had risen in the instrument as fast as we descended, had stopped at twenty-nine inches.

"You see," said the Professor, "we have now only the pressure of our atmosphere, and I shall be glad when the aneroid takes the place of the barometer."

And in truth this instrument would become useless as soon as the weight of the atmosphere should exceed the pressure ascertained at the level of the sea.

"But," I said, "is there not reason to fear that this ever-increasing pressure will become at last very painful to bear?"

"No; we shall descend at a slow rate, and our lungs will become inured to a denser atmosphere. Aeronauts find the want of air as they rise to high elevations, but we shall perhaps have too much: of the two, this is what I should prefer. Don't let us lose a moment. Where is the bundle we sent down before us?"

I then remembered that we had searched for it in vain the evening before. My uncle questioned Hans, who, after having examined attentively with the eye of a huntsman, replied:

"Der huppe!"

"Up there."

And so it was. The bundle had been caught by a projection a hundred feet above us. Immediately the Icelander climbed up like a cat, and in a few minutes the package was in our possession.

"Now," said my uncle, "let us breakfast; but we must lay in a good stock, for we don't know how long we may have to go on."

The biscuit and extract of meat were washed down with a draught of water mingled with a little gin.

Breakfast over, my uncle drew from his pocket a small notebook, intended for scientific observations. He consulted his instruments, and recorded:

"Monday, July 1.

"Chronometer, 8.17 a.m.; barometer, 297 in.; thermometer, 6° (43°

F.). Direction, E.S.E."

This last observation applied to the dark gallery, and was indicated by the compass.

"Now, Axel," cried the Professor with enthusiasm, "now we are really going into the interior of the earth. At this precise moment the journey commences."

So saying, my uncle took in one hand Ruhmkorff's apparatus, which was hanging from his neck; and with the other he formed an electric communication with the coil in the lantern, and a sufficiently bright light dispersed the darkness of the passage.

Hans carried the other apparatus, which was also put into action. This ingenious application of electricity would enable us to go on for a long time by creating an artificial light even in the midst of the most inflammable gases.

"Now, march!" cried my uncle.

Each shouldered his package. Hans drove before him the load of cords and clothes; and, myself walking last, we entered the gallery.

At the moment of becoming engulfed in this dark gallery, I raised my head, and saw for the last time through the length of that vast tube

the sky of Iceland, which I was never to behold again.

The lava, in the last eruption of 1229, had forced a passage through this tunnel. It still lined the walls with a thick and glistening coat. The electric light was here intensified a hundredfold by reflection.

The only difficulty in proceeding lay in not sliding too fast down an incline of about forty-five degrees; happily certain asperities and a few blisterings here and there formed steps, and we descended, letting our baggage slip before us from the end of a long rope.

But that which formed steps under our feet became stalactites overhead. The lava, which was porous in many places, had formed a surface covered with small rounded blisters; crystals of opaque quartz, set with limpid tears of glass, and hanging like clustered chandeliers from the vaulted roof, seemed as it were to kindle and form a sudden illumination as we passed on our way. It seemed as if the genii of the depths were lighting up their palace to receive their terrestrial guests.

"It is magnificent!" I cried spontaneously. "My uncle, what a sight! Don't you admire those blending hues of lava, passing from reddish brown to bright yellow by imperceptible shades? And these crystals are just like globes of light."

"Ali, you think so, do you, Axel, my boy? Well, you will see greater splendours than these, I hope. Now let us march: march!"

He had better have said slide, for we did nothing but drop down the steep inclines. It was the *facies descensus Averni* of Virgil. The compass, which I consulted frequently, gave our direction as south-east with inflexible steadiness. This lava stream deviated neither to the right nor to the left.

Yet there was no sensible increase of temperature. This justified Davy's theory, and more than once I consulted the thermometer with surprise. Two hours after our departure it only marked 10° (50° Fahr.), an increase of only 4°. This gave reason for believing that our descent was more horizontal than vertical. As for the exact depth reached, it was very easy to ascertain that; the Professor measured accurately the angles of deviation and inclination on the road, but he kept the results to himself.

About eight in the evening he signalled to stop. Hans sat down at once. The lamps were hung upon a projection in the lava; we were in a sort of cavern where there was plenty of air. Certain puffs of air reached us. What atmospheric disturbance was the cause of them? I could not answer that question at the moment. Hunger and fatigue made me incapable of reasoning. A descent of seven hours consecutively is not made without considerable expenditure of strength. I was exhausted. The order to 'halt' therefore gave me pleasure. Hans laid

our provisions upon a block of lava, and we ate with a good appetite. But one thing troubled me, our supply of water was half consumed. My uncle reckoned upon a fresh supply from subterranean sources, but hitherto we had met with none. I could not help drawing his attention to this circumstance.

"Are you surprised at this want of springs?" he said.

"More than that, I am anxious about it; we have only water enough for five days."

"Don't be uneasy, Axel, we shall find more than we want."

"When?"

"When we have left this bed of lava behind us. How could springs break through such walls as these?"

"But perhaps this passage runs to a very great depth. It seems to me that we have made no great progress vertically."

"Why do you suppose that?"

"Because if we had gone deep into the crust of earth, we should have encountered greater heat."

"According to your system," said my uncle. "But what does the thermometer say?"

"Hardly fifteen degrees (59° Fahr), nine degrees only since our departure."

"Well, what is your conclusion?"

"This is my conclusion. According to exact observations, the increase of temperature in the interior of the globe advances at the rate of one degree (1 4/5° Fahr.) for every hundred feet. But certain local conditions may modify this rate. Thus at Yakoutsch in Siberia the increase of a degree is ascertained to be reached every 36 feet. This difference depends upon the heat-conducting power of the rocks. Moreover, in the neighbourhood of an extinct volcano, through gneiss, it has been observed that the increase of a degree is only attained at every 125 feet. Let us therefore assume this last hypothesis as the most suitable to our situation, and calculate."

"Well, do calculate, my boy."

"Nothing is easier," said I, putting down figures in my note book.

"Nine times a hundred and twenty-five feet gives a depth of eleven hundred and twenty-five feet."

"Very accurate indeed."



"Well?"

"By my observation we are at 10,000 feet below the level of the sea."

"Is that possible?"

"Yes, or figures are of no use."

The Professor's calculations were quite correct. We had already attained a depth of six thousand feet beyond that hitherto reached by the foot of man, such as the mines of Kitz Bahl in Tyrol, and those of Wuttembourg in Bohemia.

The temperature, which ought to have been  $81^{\circ}$  ( $178^{\circ}$  Fahr.) was scarcely  $15^{\circ}$  ( $59^{\circ}$  Fahr.). Here was cause for reflection.