

CHAPTER 22

SUNDAY BELOW GROUND

I Awoke on Sunday morning without any sense of hurry and bustle attendant on an immediate departure. Though the day to be devoted to repose and reflection was spent under such strange circumstances, and in so wonderful a place, the idea was a pleasant one. Besides, we all began to get used to this kind of existence. I had almost ceased to think of the sun, of the moon, of the stars, of the trees, houses, and towns; in fact, about any terrestrial necessities. In our peculiar position we were far above such reflections.

The grotto was a vast and magnificent hall. Along its granitic soil the stream flowed placidly and pleasantly. So great a distance was it now from its fiery source that its water was scarcely lukewarm, and could be drunk without delay or difficulty.

After a frugal breakfast, the Professor made up his mind to devote some hours to putting his notes and calculations in order.

"In the first place," he said, "I have a good many to verify and prove, in order that we may know our exact position. I wish to be able on our return to the upper regions to make a map of our journey, a kind of vertical section of the globe, which will be, as it were, the profile of

the expedition."

"That would indeed be a curious work, Uncle; but can you make your observations with anything like certainty and precision?"

"I can. I have never on any occasion failed to note with great care the angles and slopes. I am certain as to having made no mistake. Take the compass and examine how she points."

I looked at the instrument with care.

"East one quarter southeast."

"Very good," resumed the Professor, noting the observation, and going through some rapid calculations. "I make out that we have journeyed two hundred and fifty miles from the point of our departure."

"Then the mighty waves of the Atlantic are rolling over our heads?"

"Certainly."

"And at this very moment it is possible that fierce tempests are raging above, and that men and ships are battling against the angry blasts just over our heads?"

"It is quite within the range of possibility," rejoined my uncle,

smiling.

"And that whales are playing in shoals, thrashing the bottom of the sea, the roof of our adamantine prison?"

"Be quite at rest on that point; there is no danger of their breaking through. But to return to our calculations. We are to the southeast, two hundred and fifty miles from the base of Sneffels, and, according to my preceding notes, I think we have gone sixteen leagues in a downward direction."

"Sixteen leagues--fifty miles!" I cried.

"I am sure of it."

"But that is the extreme limit allowed by science for the thickness of the earth's crust," I replied, referring to my geological studies.

"I do not contravene that assertion," was his quiet answer.

"And at this stage of our journey, according to all known laws on the increase of heat, there should be here a temperature of *fifteen hundred degrees of Reaumur*."

"There should be--you say, my boy."

"In which case this granite would not exist, but be in a state of fusion."

"But you perceive, my boy, that it is not so, and that facts, as usual, are very stubborn things, overruling all theories."

"I am forced to yield to the evidence of my senses, but I am nevertheless very much surprised."

"What heat does the thermometer really indicate?" continued the philosopher.

"Twenty-seven six-tenths."

"So that science is wrong by fourteen hundred and seventy-four degrees and four-tenths. According to which, it is demonstrated that the proportional increase in temperature is an exploded error. Humphry Davy here shines forth in all his glory. He is right, and I have acted wisely to believe him. Have you any answer to make to this statement?"

Had I chosen to have spoken, I might have said a great deal. I in no way admitted the theory of Humphry Davy--I still held out for the theory of proportional increase of heat, though I did not feel it.

I was far more willing to allow that this chimney of an extinct volcano was covered by lava of a kind refractory to heat--in fact a bad

conductor--which did not allow the great increase of temperature to percolate through its sides. The hot water jet supported my view of the matter.

But without entering on a long and useless discussion, or seeking for new arguments to controvert my uncle, I contented myself with taking up facts as they were.

"Well, sir, I take for granted that all your calculations are correct, but allow me to draw from them a rigorous and definite conclusion."

"Go on, my boy--have your say," cried my uncle goodhumoredly.

"At the place where we now are, under the latitude of Iceland, the terrestrial depth is about fifteen hundred and eighty-three leagues."

"Fifteen hundred eighty-three and a quarter."

"Well, suppose we say sixteen hundred in round numbers. Now, out of a voyage of sixteen hundred leagues we have completed sixteen."

"As you say, what then?"

"At the expense of a diagonal journey of no less than eighty-five leagues."

"Exactly."

"We have been twenty days about it."

"Exactly twenty days."

"Now sixteen is the hundredth part of our contemplated expedition. If we go on in this way we shall be two thousand days, that is about five years and a half, going down."

The Professor folded his arms, listened, but did not speak.

"Without counting that if a vertical descent of sixteen leagues costs us a horizontal of eighty-five, we shall have to go about eight thousand leagues to the southeast, and we must therefore come out somewhere in the circumference long before we can hope to reach the centre."

"Bother your calculations," cried my uncle in one of his old rages. "On what basis do they rest? How do you know that this passage does not take us direct to the end we require? Moreover, I have in my favor, fortunately, a precedent. What I have undertaken to do, another has done, and he having succeeded, why should I not be equally successful?"

"I hope, indeed, you will, but still, I suppose I may be allowed to--"

"You are allowed to hold your tongue," cried Professor Hardwig, "when

you talk so unreasonably as this."

I saw at once that the old doctorial Professor was still alive in my uncle--and fearful to rouse his angry passions, I dropped the unpleasant subject.

"Now, then," he explained, "consult the manometer. What does that indicate?"

"A considerable amount of pressure."

"Very good. You see, then, that by descending slowly, and by gradually accustoming ourselves to the density of this lower atmosphere, we shall not suffer."

"Well, I suppose not, except it may be a certain amount of pain in the ears," was my rather grim reply.

"That, my dear boy, is nothing, and you will easily get rid of that source of discomfort by bringing the exterior air in communication with the air contained in your lungs."

"Perfectly," said I, for I had quite made up my mind in no wise to contradict my uncle. "I should fancy almost that I should experience a certain amount of satisfaction in making a plunge into this dense atmosphere. Have you taken note of how wonderfully sound is propagated?"

"Of course I have. There can be no doubt that a journey into the interior of the earth would be an excellent cure for deafness."

"But then, Uncle," I ventured mildly to observe, "this density will continue to increase."

"Yes--according to a law which, however, is scarcely defined. It is true that the intensity of weight will diminish just in proportion to the depth to which we go. You know very well that it is on the surface of the earth that its action is most powerfully felt, while on the contrary, in the very centre of the earth bodies cease to have any weight at all."

"I know that is the case, but as we progress will not the atmosphere finally assume the density of water?"

"I know it; when placed under the pressure of seven hundred and ten atmospheres," cried my uncle with imperturbable gravity.

"And when we are still lower down?" I asked with natural anxiety.

"Well, lower down, the density will become even greater."

"Then how shall we be able to make our way through this atmospheric fog?"

"Well, my worthy nephew, we must ballast ourselves by filling our pockets with stones," said Professor Hardwigg.

"Faith, Uncle, you have an answer for everything," was my only reply.

I began to feel that it was unwise of me to go any farther into the wide field of hypotheses for I should certainly have revived some difficulty, or rather impossibility, that would have enraged the Professor.

It was evident, nevertheless, that the air under a pressure which might be multiplied by thousands of atmospheres, would end by becoming perfectly solid, and that then admitting our bodies resisted the pressure, we should have to stop, in spite of all the reasonings in the world. Facts overcome all arguments.

But I thought it best not to urge this argument. My uncle would simply have quoted the example of Saknussem. Supposing the learned Iclander's journey ever really to have taken place--there was one simple answer to be made:

In the sixteenth century neither the barometer nor the manometer had been invented--how, then, could Saknussem have been able to discover when he did reach the centre of the earth?

This unanswerable and learned objection I, however, kept to myself and,

bracing up my courage, awaited the course of events--little aware of how adventurous yet were to be the incidents of our remarkable journey.

The rest of this day of leisure and repose was spent in calculation and conversation. I made it a point to agree with the Professor in everything; but I envied the perfect indifference of Hans, who, without taking any such trouble about the cause and effect, went blindly onwards wherever destiny chose to lead him.