

CHAPTER XVIII.

GRAVE QUESTIONS.

In the meantime the projectile had passed the neighbourhood of Tycho. Barbicane and his two friends then observed, with the most scrupulous attention, those brilliant radii which the celebrated mountain disperses so curiously on every horizon.

What was this radiating aureole? What geological phenomenon had caused those ardent beams? This question justly occupied Barbicane. Under his eyes, in every direction, ran luminous furrows, with raised banks and concave middle, some ten miles, others more than twenty miles wide. These shining trails ran in certain places at least 300 leagues from Tycho, and seemed to cover, especially towards the east, north-east, and north, half the southern hemisphere. One of these furrows stretched as far as the amphitheatre of Neander, situated on the 40th meridian. Another went rounding off through the Sea of Nectar and broke against the chain of the Pyrenees after a run of 400 leagues; others towards the west covered with a luminous network the Sea of Clouds and the Sea of Humours.

What was the origin of these shining rays running equally over plains and reliefs, however high? They all started from a common centre, the crater of Tycho. They emanated from it.

Herschel attributed their brilliant aspect to ancient streams of lava congealed by the cold, an opinion which has not been generally received. Other astronomers have seen in these inexplicable rays a kind of moraines, ranges of erratic blocks thrown out at the epoch of the formation of Tycho.

"And why should it not be so?" asked Nicholl of Barbicane, who rejected these different opinions at the same time that he related them.

"Because the regularity of these luminous lines, and the violence necessary to send them to such a distance, are inexplicable.

"Par bleu!" replied Michel Ardan. "I can easily explain to myself the origin of these rays."

"Indeed," said Barbicane.

"Yes," resumed Michel. "Why should they not be the cracks caused by the shock of a bullet or a stone upon a pane of glass?"

"Good," replied Barbicane, smiling; "and what hand would be powerful enough to hurl the stone that would produce such a shock?"

"A hand is not necessary," answered Michel, who would not give in; "and as to the stone, let us say it is a comet."

"Ah! comets?" exclaimed Barbicane; "those much-abused comets! My worthy Michel, your explanation is not bad, but your comet is not wanted. The shock might have come from the interior of the planet. A violent contraction of the lunar crust whilst cooling was enough to make that gigantic crack."

"Contraction let it be--something like a lunar colic," answered Michel Ardan.

"Besides," added Barbicane, "that is also the opinion of an English savant, Nasmyth, and it seems to me to explain the radiation of these mountains sufficiently."

"That Nasmyth was no fool!" answered Michel.

The travellers, who could never weary of such a spectacle, long admired the splendours of Tycho. Their projectile, bathed in that double irradiation of the sun and moon, must have appeared like a globe of fire. They had, therefore, suddenly passed from considerable cold to intense heat. Nature was thus preparing them to become Selenites.

To become Selenites! That idea again brought up the question of the habitability of the moon. After what they had seen, could the travellers solve it? Could they conclude for or against? Michel Ardan asked his two friends to give utterance to their opinion, and asked them outright if

they thought that humanity and animality were represented in the lunar world.

"I think we cannot answer," said Barbicane, "but in my opinion the question ought not to be stated in that form. I ask to be allowed to state it differently."

"State it as you like," answered Michel.

"This is it," resumed Barbicane. "The problem is double, and requires a double solution. Is the moon habitable? Has it been inhabited?"

"Right," said Nicholl. "Let us first see if the moon is habitable."

"To tell the truth, I know nothing about it," replied Michel.

"And I answer in the negative," said Barbicane. "In her actual state, with her certainly very slight atmosphere, her seas mostly dried up, her insufficient water, her restricted vegetation, her abrupt alternations of heat and cold, her nights and days 354 hours long, the moon does not appear habitable to me, nor propitious to the development of the animal kingdom, nor sufficient for the needs of existence such as we understand it."

"Agreed," answered Nicholl; "but is not the moon habitable for beings differently organised to us?"

"That question is more difficult to answer," replied Barbicane. "I will try to do it, however, but I ask Nicholl if movement seems to him the necessary result of existence, under no matter what organisation?"

"Without the slightest doubt," answered Nicholl.

"Well, then, my worthy companion, my answer will be that we have seen the lunar continent at a distance of 500 yards, and that nothing appeared to be moving on the surface of the moon. The presence of no matter what form of humanity would be betrayed by appropriations, different constructions, or even ruins. What did we see? Everywhere the geological work of Nature, never the work of man. If, therefore, representatives of the animal kingdom exist upon the moon, they have taken refuge in those bottomless cavities which the eye cannot reach. And I cannot admit that either, for they would have left traces of their passage upon the plains which the atmosphere, however slight, covers. Now these traces are nowhere visible. Therefore the only hypothesis that remains is one of living beings without movement or life."

"You might just as well say living creatures who are not alive."

"Precisely," answered Barbicane, "which for us has no meaning."

"Then now we may formulate our opinion," said Michel.

"Yes," answered Nicholl.

"Very well," resumed Michel Ardan; "the Scientific Commission, meeting in the projectile of the Gun Club, after having supported its arguments upon fresh facts lately observed, decides unanimously upon the question of the habitability of the moon--'No, the moon is not inhabited.'"

This decision was taken down by Barbicane in his notebook, where he had already written the procès-verbal of the sitting of December 6th.

"Now," said Nicholl, "let us attack the second question, depending on the first. I therefore ask the honourable Commission if the moon is not habitable, has it been inhabited?"

"Answer, Citizen Barbicane," said Michel Ardan.

"My friends," answered Barbicane, "I did not undertake this journey to form an opinion upon the ancient habitability of our satellite. I may add that my personal observations only confirm me in this opinion. I believe, I even affirm, that the moon has been inhabited by a human race organised like ours, that it has produced animals anatomically formed like terrestrial animals; but I add that these races, human or animal, have had their day, and are for ever extinct."

"Then," asked Michel, "the moon is an older world than the earth?"

"No," answered Barbicane with conviction, "but a world that has grown old more quickly, whose formation and deformation have been more rapid. Relatively the organising forces of matter have been much more violent in the interior of the moon than in the interior of the celestial globe. The actual state of this disc, broken up, tormented, and swollen, proves this abundantly. In their origin the moon and the earth were only gases. These gases became liquids under different influences, and the solid mass was formed afterwards. But it is certain that our globe was gas or liquid still when the moon, already solidified by cooling, became habitable."

"I believe that," said Nicholl.

"Then," resumed Barbicane, "it was surrounded by atmosphere. The water held in by the gassy element could not evaporate. Under the influence of air, water, light, and heat, solar and central, vegetation took possession of these continents prepared for its reception, and certainly life manifested itself about that epoch, for Nature does not spend itself in inutilities, and a world so marvellously habitable must have been inhabited."

"Still," answered Nicholl, "many phenomena inherent to the movements of our satellite must have prevented the expansion of the vegetable and animal kingdoms. The days and nights 354 hours long, for example."

"At the terrestrial poles," said Michel, "they last six months."

"That is not a valuable argument, as the poles are not inhabited."

"In the actual state of the moon," resumed Barbicane, "the long nights and days create differences of temperature insupportable to the constitution, but it was not so at that epoch of historical times. The atmosphere enveloped the disc with a fluid mantle. Vapour deposited itself in the form of clouds. This natural screen tempered the ardour of the solar rays, and retained the nocturnal radiation. Both light and heat could diffuse themselves in the air. Hence there was equilibrium between the influences which no longer exists now that the atmosphere has almost entirely disappeared. Besides, I shall astonish you--"

"Astonish us?" said Michel Ardan.

"But I believe that at the epoch when the moon was inhabited the nights and days did not last 354 hours!"

"Why so?" asked Nicholl quickly.

"Because it is very probable that then the moon's movement of rotation on her axis was not equal to her movement of revolution, an equality which puts every point of the lunar disc under the action of the solar rays for fifteen days."

"Agreed," answered Nicholl; "but why should not these movements have

been equal, since they are so actually?"

"Because that equality has only been determined by terrestrial attraction. Now, how do we know that this attraction was powerful enough to influence the movements of the moon at the epoch the earth was still fluid?"

"True," replied Nicholl; "and who can say that the moon has always been the earth's satellite?"

"And who can say," exclaimed Michel Ardan, "that the moon did not exist before the earth?"

Imagination began to wander in the indefinite field of hypotheses.

Barbicane wished to hold them in.

"Those," said he, "are speculations too high, problems really insoluble. Do not let us enter into them. Let us only admit the insufficiency of primordial attraction, and then by the inequality of rotation and revolution days and nights could succeed each other upon the moon as they do upon the earth. Besides, even under those conditions life was possible."

"Then," asked Michel Ardan, "humanity has quite disappeared from the moon?"

"Yes," answered Barbicane, "after having, doubtless, existed for thousands of centuries. Then gradually the atmosphere becoming rarefied, the disc will again be uninhabitable like the terrestrial globe will one day become by cooling."

"By cooling?"

"Certainly," answered Barbicane. "As the interior fires became extinguished the incandescent matter was concentrated and the lunar disc became cool. By degrees the consequences of this phenomenon came about--the disappearance of organic beings and the disappearance of vegetation. Soon the atmosphere became rarefied, and was probably drawn away by terrestrial attraction; the breathable air disappeared, and so did water by evaporation. At that epoch the moon became uninhabitable, and was no longer inhabited. It was a dead world like it is to-day."

"And you say that the like fate is reserved for the earth?"

"Very probably."

"But when?"

"When the cooling of its crust will have made it uninhabitable."

"Has the time it will take our unfortunate globe to melt been calculated?"

"Certainly."

"And you know the reason?"

"Perfectly."

"Then tell us, sulky savant--you make me boil with impatience."

"Well, my worthy Michel," answered Barbicane tranquilly, "it is well known what diminution of temperature the earth suffers in the lapse of a century. Now, according to certain calculations, that average temperature will be brought down to zero after a period of 400,000 years!"

"Four hundred thousand years!" exclaimed Michel. "Ah! I breathe again! I was really frightened. I imagined from listening to you that we had only fifty thousand years to live!"

Barbicane and Nicholl could not help laughing at their companion's uneasiness. Then Nicholl, who wanted to have done with it, reminded them of the second question to be settled.

"Has the moon been inhabited?" he asked.

The answer was unanimously in the affirmative.

During this discussion, fruitful in somewhat hazardous theories, although it resumed the general ideas of science on the subject, the projectile had run rapidly towards the lunar equator, at the same time that it went farther away from the lunar disc. It had passed the circle of Willem, and the 40th parallel, at a distance of 400 miles. Then leaving Pitatus to the right, on the 30th degree, it went along the south of the Sea of Clouds, of which it had already approached the north. Different amphitheatres appeared confusedly under the white light of the full moon--Bouillaud, Purbach, almost square with a central crater, then Arzachel, whose interior mountain shone with indefinable brilliancy.

At last, as the projectile went farther and farther away, the details faded from the travellers' eyes, the mountains were confounded in the distance, and all that remained of the marvellous, fantastical, and wonderful satellite of the earth was the imperishable remembrance.