

THE NAVIGATORS OF SPACE

To Binet-Valmer,¹
his admirer and friend,
J.-H. Rosny Aîné.

Preface

Everything is ready. The perfectly transparent sublimated argine walls of the *Stellarium* possess a resistance and an elasticity that render them practically indestructible. A pseudo-gravitic field inside the apparatus will ensure a stable equilibrium to both people and objects.

We have a space at our disposal whose total volume is three hundred cubic meters; our supplies of hydralium are sufficient to provide oxygen for three hundred days; our hermetically-sealed argine suits will permit us to move about on Mars under terrestrial pressure, our respiration being ensured by direct or pneumatic transformers. In addition, the Siverol devices will allow us to dispense with respiration for several hours by virtue of their globular action and their anesthetization of the lungs. Finally, our supplies of concentrated food, which we can return to their primitive state at will, are assured for nine months.

The laboratory is equipped for all physical, chemical and biological analyses; we are abundantly provided with destructive apparatus.

In sum, the propulsion, pseudo-gravitic equilibration, normal respiration and artificial combustion are adequate for three seasons. Allowing three months to reach Mars and three months to return, we shall have three full months to explore the planet, in the event—the least favorable—that we do not find any resources of nutriment and respiration there.

I.

8 April. Our vessel is sailing through eternal darkness; the Sun's rays would strike us forcefully through the argine if we had not disposed devices that attenuate, diffuse or suppress the light at our discretion.

Our life is as arid as that of captives; in the dead expanse the stars are merely monotonous points of light; our work is limited to meager matters of conversation and surveillance; all that the apparatus needs to do until the landing is rigorously determined. No obstacle has arisen that demands a change of course. Our interior life is subordinate to machinery. We have books, musical instruments and games. The spirit of adventure sustains us, an immeasurable hope, somewhat deadened by waiting.

The prodigious speed at which we are travelling is equivalent to a supreme immobility. There is a profound silence; our apparatus—generators and transformers—make no noise; their vibrations are of an etheric order. Thus, nothing reveals the bolide launched into the interstellar wilderness.

21 April. Unspeakably uniform days. Tedious conversations. Little appetite for reading or work.

27 April. My chronometer indicates 7:33. We have just eaten: extract of coffee, bread and "reconstituted" sugar. A light supplement of oxygen gave us an appetite and is making us almost cheerful. I'm observing my two companions with a certain sense of renewal; lost in the deserts of space, I feel closer to them than to my brothers.

Antoine Lougre must have been earnest since childhood. His gravity isn't sad; it accommodates flashes of gaiety, the joys of a colt shaking itself. He has long head with rounded corners, like the Scandinavians, but not their hair color; his is the color of tar. His eyes are the color of bilberries; his complexion that of lightly-seasoned meerschaum. He's tall, relaxed in his movements; his speech, as precise as a theorem, corresponds to the mathematical nature of the man.

Jean Gaviol has hair as red as a fox's coat; copper-colored stars constellate his grey-green eyes; his complexion is as white as cream cheese, sown with pale red patches; his sensual and joyful mouth makes his face laugh. He's a solid creature, vaguely artistic, who hates metaphysics and transcendental mathematics, but an

¹ Binet-Valmer was the signature used by Jean Gustave Binet (1875-1940), a prolific novelist and journalist nowadays most famous for his correspondence with Marcel Proust.

experimental magician and a seer of the infinitesimal. This enemy of differential and integral calculus carries out extraordinary feats of mental arithmetic; figures appear to him in phosphorescent streaks.

As for me, Jacques Laverande, a rather idle human being—a unicorn-rider—I conceal a foggy temperament beneath a tropical simulacrum: hair, eyes and beard as black as lignite that seem have been grown in some Mauritania, pale cinnamon skin, the nose of an arrogant pirate...

The elective affinities that have bound us together since college maintain a nonchalant but irreducible amity.

For the 100th time, Antoine mutters: “Who knows whether the Earth might have been alone in having produced life? In which case...”

“In which case, the Sun, the Moon and the stars really were created for its benefit,” Jean laughs. “That’s false. There’s life out there.”

“There’s even some here,” I say, extending my hand.

Antoine laughs vaguely. “Yes, I know—the innumerable Coexistence. But is that still life?”

“I believe in it as in my own life.”

“Is it conscious, though?”

“Conscious and unconscious. All consciousnesses and all unconsciousnesses—and among them, consciousnesses compared with which yours would probably be worth no more than that of a crab.”

“Thanks, on the crab’s behalf!” said Jean. “I admired them in my childhood and I’ve always esteemed them...”

“Fifty lunar expeditions have yielded no result!” Antoine retorted.

“Perhaps they didn’t look hard enough—and perhaps life there isn’t comparable to ours.”

“It *can’t* be incomparable,” Antoine complained, with a trace of humor. “The Moon is made of the same primitive elements as the Earth; its evolution was more rapid, but analogous: a mouse grows, lives and disappears more rapidly than a rhinoceros. There was a time when the Moon had seas, lakes and rivers in which it wrapped up nitrogen and oxygen. Don’t we know that for certain?”

“But that was billions of years ago! In that time, a fossil record like ours would have been completely annihilated.”

“Skeletons, yes...but not all traces.”

“A vain dispute! Anyway, the evolution of Mars must resemble ours more closely.”

“Who’s contesting it?” said Antoine. “That’s why I’m going there.”

“You’re slandering yourself!” Jean retorted. “You’re going there because you’re essentially a sportsman. It pleases you to be, along with us the first man to land there. That’s all right—we congratulate ourselves on being guided by the spirit of adventure, as those poor fellows in their caravels once were!”

More days, even slower and more monotonous, in the black abyss, in the eternal mystery. Space! We know no more about the reality it conceals than the people who believe in the void or those who invent worlds of four, five, six or n dimensions, no more than Zeno,² Descartes, Leibniz or our Arenaut,³ the conqueror of interstellar space.

One morning, Antoine, who is a little long-sighted, murmurs: “Mars has ceased to be a star!”

In the plenary monotony of our life, that almost qualifies as an Event. Now, every morning, we seek avidly to calculate the grandeur of Mars. Soon, the shape of the planet becomes precise. To the naked eye, it is a minuscule moon, a moonlet that would still be little more than a dot beside our satellite, but which is clearly circular all the same. Every three or four days, we get the impression of an increase, and now the diameter of Mars is a fifth of the diameter of Selene. It’s a pretty little red-tinted moon.

“I’m reminded,” says Jean, “of a little lady’s watch, compared to a sturdy chronometer.”

The little lady’s watch becomes a twin sister of the moon, tinted pale scarlet. Growing incessantly, it does not take long to appear much larger than the sun or the moon; with the telescope, we can make out precise features on its surface: chains of mountains, vast plains, shiny expanses that that might be water or ice, white regions, probably covered in snow...

To the innocent eye, it’s a colossal orb, a moon twenty times—then fifty times, then more than a hundred times—more extensive than the selenitic star. As we get closer, the star seems less luminous. Similar at first to a disk of polished copper, it pales and takes on an almost matt aspect; soon, its substance depicts a mixture of metal and terra cotta, in which red is dominant, but in which multicolored patches appear. Mars’s two rapidly-moving moons are vaguely discernible.

² Rosny’s reference is to “*l’Éleate*” (the Eleatic); I have assumed that the reference is to Zeno (the famous paradox-monger), who was often called Zeno of Elea to distinguish him from a namesake, rather than Parmenides or Xenophanes.

³ This term (*Arénaut* in the original) appears to be derived from Ares—the Greek equivalent of Mars—and presumably refers to a scientist who made the voyage that the three adventures are undertaking practicable.

1 June. There is no more star. Mars has become a world, distant still, in which the eye can distinguish the confused shapes of mountains, plains and great valleys—which, transformed by the vertiginous rapidity of our course, is growing incessantly. The formidable moment is close at hand. We're ready; we turned the *Stellarium* around some time ago.

Jean is monitoring the decreasing power of the engine, we're controlling our fall with the aid of an anti-gravity field, and our space-time clocks are keeping track of durations and distances with minute exactitude. It's a matter of reaching Mars at zero velocity. Unless there's a breakdown, which is a remote possibility, the most we have to fear is a slight jolt when we're a short distance from the ground—but it's soon clear that there won't be any; the regulation is perfect, our speed is insignificant, and when we're very close to the ground, it becomes imperceptible.

We land softly; our apparatus ceasing to oppose any resistance to Martian gravity.

II.

Close to the equator, there is a spacious valley between high hills, almost mountains. We're not hoping to find water; our telescopes haven't revealed any rivers or lakes—not even a pool or a stream; a few shiny patches at most, toward the poles. It's certain, though, that a sharp cold—a freezing cold—must reign there, we preferred to land here, leaving easy verification until later. After all, it wouldn't take our machine more than an hour to make a circuit of the planet.

"I feel too light!" Jean complained, after a silence.

"Me too!" said Antoine.

"And me," I added. "I think I could jump over a ten-meter wall."

"Like lions and tigers—but the sensation isn't pleasant. We'll adapt in time; let's increase our gravitational field slightly.

Through our transparent walls we examine the locale with the naked eye and with telescopes. The arid ground, as hard as rock and a dirty red in color, seems sinister.

"We've seen," Antoine says, "that this valley is set between medium-sized and high mountains, and that it's disposed to receive water through a network of ravines. Moreover, the temperature here ought to be much more favourable to the existence of liquid than at higher altitudes."

"Ought to be, yes—but do we really expect to find liquid water? Vapor at the most! At any rate, if we don't find vegetation in this zone and other favourably-located regions, we can conclude that Mars is more sterile than our deserts!"

"Thus reasoned the legendary warrior who perished at the siege of Milan!"⁴

"Eh? It's the fundamental principle of scientific reasoning!" Antoine replied. "But look there!"

We followed the direction of his arm and perceived some singular structures. In terms of their color they were scarcely any different from the ground, which was red—or rather, reddish; it was their shape that rendered them discernible. After a few moments, we counted four kinds.

The first comprised zigzag strips; at each angle, there was a kind of node. The whole was flat on the ground; the breadth of the strips was twice or three times as great as their thickness, the latter seeming not to exceed two or three centimetres.

The figures of the second sort formed spirals, but spirals with irregularly undulating lines, with a thick node at the center. They too lay flat on the ground, and were no thicker than the lightning-shaped figures.

The third sort seemed to be a more complex variety of the first; from one rather large node sprang a series of zigzag lines, but there were no secondary nodes.

"One might describe them as exceeding flat octopodes with lightning-shaped tentacles!" Jean remarked.

"And without eyes!" I added.

"But what does this mean?" Antoine muttered. "Is it a bizarre mineral? Is it vegetation? Is it a sort of sedentary animal life—after all, we don't observe any movement?"

"None!" Jean confirmed, the objective lenses of his binoculars fixed on the strange figures. "Let's get closer!"

We moved closer, and were able to assure ourselves that the surface of the structures was partly covered by a mixture of semi-transparent bubbles and a sort of polychromatic mildew, from which the carmine tint derived.

"All the same, it's still vegetation that they resemble most," Antoine concluded.

This conclusion was soon confirmed by the appearance of other lightning-shaped forms, in radial tentacles and spiraloids, some of which attained considerable lengths: five, ten or 20 meters.

⁴ This reference is presumably to the 14th century Charlemagnian romance "The Siege of Milan," but I cannot trace the specific quotation.

“Let’s make a short expedition in the chimerical search for water,” Jean proposed.

We set the ship in motion, very slowly—scarcely 15 kilometers an hour—making frequent stops, but without discovering water. A more rapid excursion uphill was no more productive. There was nothing but stone, the desolation of lunar landscapes interrupted by increasingly rare pseudo-vegetation.

On landing again, we made an interesting discovery. In a location where the pseudo-vegetation was abundant, Jean pointed out moving bodies. These bodies were also flat, orange in color, with blue or violet patches; we soon discerned that they had ribbon-like prolongations—feet or pseudopods—on which they seemed to slide rather than walk.

What took the place of a body had contours so irregular that the creatures seemed formless at first glance. In fact they possessed a mossy surface with a multitude of pores, wrinkles, cavities and projections. As we moved a little deeper into the valley, it did not take us long to perceive others slightly different in form and various in hue, all remarkable by their confused flat structure and their mossy, sometimes spongy, surfaces. We could now count at least a dozen kinds. Two of these entities attained a length of a hundred feet. It was impossible to say whether they had organs or a head, but they all displayed the ribbon-like prolongations that served as feet.

“The ribbon-feet are very imperfectly differentiated,” said Jean. “The head must be the part that precedes the rest when they move.”

“The preceding part bears some resemblance to a grape or some other soft or spongy fruit. If that’s the head, it’s composed of distinct but conjoined compartments. I see nothing that evokes the idea of sense-organs—nothing distantly resembling eyes, ears, nostrils...nor is there a mouth—unless there’s one among the cavities in the moss or the sponge. Those that pause in the vicinity of the pseudo-plants don’t look as if they’re consuming them...”

“Still no water!”

“Perhaps it’s subterranean...unless these life-forms don’t make any use of it.”

“It’s time that we took account of the composition, the pressure and the hygrometric state of the atmosphere.”

Taking responsibility for this operation, I went to the narrow chamber designed for communication with the exterior world. Entrance to it was through a hatch—which, once closed, was rigorously isolated from communication with the atmosphere of other chambers. Then, at will, one put the measuring devices in contact with the environment. That operation being sufficient, for the moment, I flicked a switch and soon observed that the pressure was almost nine centimeters, the temperature five and a half degrees above zero; the humidity proved to be very low, but the hygrometer did clearly indicate the presence of water vapor.

When I communicated these results to my companions, Antoine exclaimed: “You really said five and a half degrees *above* zero?”

“278.5 degrees Absolute.”

“That’s impossible. I didn’t expect any more than *minus* five degrees. The pressure astonishes me too. As for the water vapor—that’s in conformity with expectations.”

“In conformity or not, possible or not, everything is as I’ve told you.”

Then there’s a mystery—two mysteries...”

“Ten mysteries!” Jean mocked. “And these mysteries probably result from the Martian atmosphere being fractionally more liable than ours to impede the loss of heat. So let’s analyze the atmosphere...”

Half an hour later, the summary analysis was concluded. The proportion of oxygen was surprising—almost two-sevenths of the fluid drawn off; a third of it was nitrogen, there was a small quantity of a unknown gas, one ten-thousandth of carbon dioxide, and various substances in extremely minimal quantities, sometimes mere traces.

“We’re almost at home, all the same!” said Antoine, serenely.

“And on the track of the mystery—I’ll wager that it’s the unknown gas that limits Martian radiation.”

“We’ll see. In the meantime, there’s enough oxygen for us to be able to move around in the open air, with the aid of our condensers, and to renew the *Stellarium*’s supplies indefinitely.”

“Shall we make an initial sortie?”

“It’s rather late in the day,” Antoine objected. “Obviously, it’s easy enough for us to travel to a luminous zone, but I’m curious to see the Martian night.”

In the rarefied air, the dusk was necessarily even briefer than in the tropical regions of Earth. The solar furnace sank into the depths of the Occident; it remained suspended between two mountains momentarily, and had no sooner disappeared than the stars were shining in an incomparable clear sky. The spectacle was broadly similar to what we had seen during the days of our voyage, but on that distant world it prompted a small crisis of poetry in Jean: a flood of epithets and, I believe, the recitation of a few verses.

We were about to put on the light when we were struck by an extraordinary phenomenon. Whichever way we turned, we perceived networks of phosphorescence—a phosphorescence so faint that it did not hide the stars, and marvelously colored.

These networks formed luminous columns—horizontal, vertical and oblique—which often intersected and whose colors did not extend beyond yellow on the spectral scale, while mounting all the way to the extreme violet. Luminous formations circulated within them, various in color, composed of oddly-intertwined filaments. These formations, slightly brighter than the columns, were no more of a hindrance to the perception of the stars, even the fainter ones.

“Almost the same intensity as the Milky Way,” Antoine remarked.

Even so, the Milky Way was less perceptible through the columns than in the numerous interstices of the networks.

After a time, we became convinced that the formations were moving, with a great freedom, accelerating, showing down, stopping or reversing direction. They seemed to be spiraling through the columns and capable of attaining great speeds; some were traveling at twelve kilometers a minute. The violet formations were the most rapid.

“Is *that* alive?” Jean muttered.

“We may doubt it,” Antoine replied, “but it’s probable.”

On rare occasions the formations quit the columns and set off into the black expanse, where their progress slowed down or their movement became more capricious.

“Yes, it’s strongly suggestive of life,” said Jean. “However, I daren’t believe...”

“No need for belief. Let’s limit ourselves to trying to distinguish the real from the possible. This *might* be life—if so, what an enigma!”

“Ethereic life? Nebular life?”

“A function of the planet, in any case, since we’ve seen nothing comparable in interplanetary space—and doubtless participating as much in the Ether as the Nebula.”

We then observed the phenomenon with binoculars, and although the phosphorescence of the columns seemed almost invariable, that of the moving formations varied so harmoniously that it was reminiscent of a luminous symphony.

Soon a new particularity struck us. Several columns having collided with the *Stellarium*, the phosphorescence ceased at the wall it encountered, to reappear at the surface of the opposite wall; moreover, the segments were connected by thinner columns that went around our vessel. As the columns were usually straight, or so slightly curved that the curvature was hardly perceptible, we had to conclude that the junction had been formed in consequence of our arrival. To convince ourselves of it, we displaced the *Stellarium* and broke several columns. Those we left behind reformed very rapidly; those that remained in contact with our vessel took some time to establish the junction.

As for the living (?) formations, everywhere a rupture was produced, they were projected into the black expanse. A few lingered there; others rejoined a column or the segments of interrupted columns.

“Phantasmagorical!” Antoine muttered. “If they’re not living organisms, no more are they entities analogous to our meteorological phenomena...much less to solid minerals or liquids!”

“I opt deliberately for life!” Jean declared. “The inhabitants of Mars, with which we were hoping to exchange elementary verities, exit on planes that will probably not permit any intellectual communication.”

“Really?” I put in. “Firstly, there might be other forms; then again, what do we know about the possibilities of these? Why shouldn’t there be at least abstract analogies between them and us? Already, if they’re alive...”

Antoine cut me off. “We’ll think about that later. I’d like, if possible, to establish observational details...”

“The one doesn’t get in the way of the other!” I said. “I’m continuing to watch—and while watching, I’m asking myself whether Mars might not be more complex than Earth—in an evolutionary sense—and whether there might be a third plane of life somewhere.”

“I approve! But we’ve already got the outline of a classification—oh, the most rudimentary possible. You’ve noticed that the formations include paler sections, which form something like vacuoles in the mass. Now, I observe that the more rapid and precise the movements seem, and the better-executed the changes of direction, the more numerous the vacuoles are. Compare those that have five or six vacuoles with those that only have one or two; the contrast is striking.

That was correct. The “formations” with multiple vacuoles attained speeds of three to seven kilometers an hour; the formations with single or double vacuoles scarcely attained a tenth of those speeds.

In every direction, certain formations were pausing; we observed that during the pause, exceedingly thin lines linked formations that possessed the same number of vacuoles together. The intensity of these lines was unstable; we saw it increase and decrease without being able to discern any rhythm. As soon as the formations started moving again, the lines were invariably broken.

“Do you know what?” Antoine exclaimed. “The variations of the lines express spontaneous changes...they probably constitute a language that uses infinitesimal vibrations in a manner analogous to our sound-waves!”

“So,” said Jan, “you no longer doubt that these formations are alive—dissimilar as they are to anything that has been conceived by the most imaginative of our scientists and artists!”

We continued to study the strange spectacle for some time, without discovering anything that added significantly to what we had already observed; then we switched on the light, which rendered the formations invisible, and we had our evening meal.

If everything goes as it did today, we will only see the manifestations these existences during the night...