André Mas: *The Germans on Venus*

(1913)

Very little is known about André Mas, whose dates of birth and death are unrecorded; the by-line may well be a pseudonym. *Les Allemands sur Vénus*, here translated as "The Germans on Venus," was initially published as a booklet by the *Revue des Independants* in 1913. The timing was unfortunate; the Kaiser's forces invaded France within a year because his Empire's sense that "its share of this world [was] not large enough"—as Mas' preface puts it—had given rise to actions quite different from those described in the story. After the war, the by-line appeared on two further works of speculative fiction in booklet form, the first formulated as a long poem, "Sous leur double soleil des Dryméennes chantent" [Beneath their double Sun, Drymeans sing] (1921), and the second as a prose romance set in the same locale, "Drymea, monde des vierges" [Drymea, world of virgins] (1923). Both of the prose works were reprinted in 2004 by Apex.

The Apex edition of *Les Allemands sur Vénus*, from which this translation is taken, is photographically reproduced from the original booklet; it includes a reproduction of the cover, which bears two quotations from German writers; one of them, attributed to "Léo Stahl," translates as "The future of Germany is in the stars;" the other, from Heinrich Heine translates as "To the English, the sea; to the French, the land, to the Germans, the kingdom of the Heavens." The Apex edition also reproduces a dedication to "My master and friend, Henry Beuchat of the Canadian Arctic Expedition." (Beuchat was a noted anthropologist based in Paris.)

In addition to these embellishments, the text has two further supplements of interest. The first is a bibliography, divided between previous works of fiction dealing with interplanetary travel and scientific works consulted with respect to the technology of space travel and the design of a hypothetical Venusian ecology; this is particularly interesting for the clear indication it gives of the consciousness that an international genre of "space fiction" was firmly established in 1913, comprising both classic and popular works. The bibliography is followed by a parody of a "bill of lading" applicable to future interplanetary transport, which neatly rounds off the satirical component of the text, emphasizing the manner in which seriousness and comedy were routinely combined in texts of this sort.

Although modern references to *Les Allemands sur Vénus* sometimes dismiss it as a slightly distasteful item of nationalistic propaganda, the narrative is sufficiently ironic to defy that charge, and is historically interesting in two other ways. Firstly, it takes more care in its description of a hypothetical means of space travel than any previous work, with the arguable exception of Jules Verne's two-part account of a lunar voyage; it features one of the earliest fictional "space walks"—undertaken to clear a blockage in the spaceship's waste-disposal system!—and includes some original speculations about the possible effects of weightlessness. Secondly, it takes more care in its attempt to design a hypothetical biosphere for another planetary surface than any previous work, especially in terms of that biosphere's evolutionary dynamics. By modern standards, both these attempts are inevitably primitive and grossly mistaken, but they were remarkable for their time.

Although Mas' propagandistic endeavor had been anticipated in Russia by Nikolai Fyodorov and his protégé Konstatin Tsiolkovsky, Mas cannot have been aware of their work, or he would certainly have acknowledged it. Tsiolkovsky did not manage to complete his science fiction novel *Vne zemli* (tr. as *Beyond the Planet Earth* and *Outside the Earth*) until 1916, although he had begun it in 1896, and it did not appear in book form until 1920; this means that "The Germans on Venus" was the first-published item in a remarkable series of propagandistic works of fiction by rocket enthusiasts, which was to be continued in Germany by Otto Willi Gail's *Der Schuss ins All* (1925; tr. as *The Shot into Infinity*) and in America by Laurence Manning's "The Voyage of the Asteroid" (1932).

Part One: The Push Towards The Stars

I. The Ideas of Doctor Hauchet

Heinrich von Reinhardt resumed the work of his old master, Graf von Zeppelin, and completed it. The monsters that he launched into the submissive air crossed the Atlantic in a single bound, and he was covered at the age of 37 with honors and gold. In the Empire, his name was a fanfare; the shadow of his work extended over Europe. His friends called him, jokingly, "a barbarian of genius." His build was massive, his strength inexhaustible. But he realized what he had dreamed in the flame of inspiration, with the dogged perseverance of his race. Neither he, nor Otto Rosenwald, nor Hauchet understood, to begin with, the significance of the moment that brought them together one fine morning in Heidelberg.

Rosenwald was still at the age of joyful devotion, and to him von Reinhardt took on a godlike stature. Rich and independent, however, he welcomed a man equally used to risking his life, hard work and making merry—and von Reinhardt liked him, recognizing him as a man of sound constitution, which rang true.

Hauchet, with his keen eyes beneath his bald forehead and his tall, sturdy body, was also not unknown to Reinhardt. Their lives intersected at the Congress of Aviation and meetings of similar Associations, enough for them to look forward to seeing one another again. As for Rosenwald, Hauchet had known him and won him over two years before, at the International Conference of the Franco-German League.[1]

They talked about the latest aerial successes, and Otto, the youngest of the three, joked: "What is there to do now? Go to the Moon? Listen to the Doctor—he'll explain the method to you."

"Really?" said von Reinhardt. "I'm at your disposal, Doctor." He never neglected any idea, crazy as it might seem, but was vigilant and always on the lookout. *There's an ounce of truth in every ton of error* was a proverb created for his use.

Hauchet paused for thought, then, in a calm voice that gradually became more animated, said: "It's a common idea nowadays, and almost everyone says, 'After aviation will come something else; man was not made to crawl upon the Earth forever; his destiny must be higher.' Every dream that man has conceived must ultimately be realized, when it arrives in its scientific phase. Let's review the facts.

"The terrible dream of rising into the sky, overcoming the Earth's gravitational attraction and crossing the gulf of space to penetrate the virgin atmospheres of other worlds comes down to a question of speed. Flammarion and Moreux[2] have demonstrated that it only requires a moving object to be launched from our Earth with a relatively limited speed—11,309 meters in the first second—to attain a practically infinite end. For if that speed diminishes, the attraction of the Earth diminishes with the square of the distance. At ten terrestrial radii—63,660 kilometers—the attraction will have fallen to 1/100th; a kilogram would weight ten grams. At 100 radii, that weight falls to 1/10,000th. And at a relatively small distance of two radii, weight relative to our world is already a fourth of that which oppresses us thereon. These figures are proved by all our science, without wearying the reader with mathematical explanations.

"The problem thus comes down to imparting to a mass of a several tons—travelers, provisions, etc.—a velocity of 14 or 15 kilometers per second, because it's necessary to take into account the frightful resistance of the air at such speeds and it's necessary that the speed is more than 11 kilometers per second at the moment of emergence from our atmosphere.

"One thinks of Jules Verne's cannon, but present explosives are insufficient, and besides, the frightful recoil would annihilate its passengers on departure despite all shock-absorbers, brakes and so on. It's necessary to depart with a gradually accelerated speed. Industrial mechanics permits that. We shall, therefore, utilize centrifugal force; its application to the launch of projectiles has already been studied several times since 1880.

"Let us imagine a wheel of large diameter, and a profile such that its thickness increases from the circumference to the center, the heaviest mass being around the axle—exactly the contrary of industrial flywheels. This wheel is made of the finest steel, with perfectly smooth faces. The axle is flexible, turning in liquid oil—under pressure, if necessary. We start the wheel turning by means of an alternating motor, in the fashion of a turbine. The latter can achieve a speed of several 100 rotations per second.

"At the periphery of the wheel, a hollow is fabricated containing a vehicle retained, either by some sort of clamp or by metallic blocks forming a locking-mechanism at the two extremities—an apparatus, at any rate, enabling the vehicle to be detached in a given orientation within a fraction of a second. We can do that by means of a catch within the lock, for example, or some other mechanism.

---

[1] Mas inserts a footnote giving the address of this organization as "4 Rue Greffule, Paris."

[2] Camille Flammarion and the Abbé Théophile Moreux were France's leading popularizers of astronomical science.

"One can hardly imagine the enormous initial velocities that can be imparted by a wheel of an almost current diameter: ten meters. Its circumference will be 31,40 meters, and it is not unreasonable to suppose 200 rotations per second with a Laval turbine equipped with an alternating motor. Now, we already have a velocity of 6.280 meters per second, by which means our projectile could easily travel several thousand kilometers.

"An apparatus of this type, which I shall call an 'explorer,' installed on the equator and aimed towards the sky, given appropriate measuring-devices, would already permit hyperatmospheric probes of practical interest—for we are utterly ignorant of what happens only 60 kilometers above our heads. These projectile probes would be capable of going up hundreds of kilometers. Falling back into the sea, they could be gathered up following a fall that some mechanical device—a parachute with rocket-flares, for example—could slow down and signal.

"After experiments of this sort, we would enter into the phase of interplanetary voyages, which would evidently demand a titanic launch-engine that could only be constructed by a Nation—and there is an extraordinary analogy there with the beginnings of aviation. The Wright brothers' apparatus had to be *launched* by means of a special apparatus, then to be sustained in the air by its own means.

"Now, we have at our disposal *presently*—Esnault-Pelterie[3] has demonstrated it, among others—a motor adequate for an apparatus isolated in space and separated to some degree from the heavy gravitation of the Earth to displace itself at will. This is the reaction-motor. The principle dates from the time of Hieron of Syracuse,[4] and all our engineers know it. In brief, any apparatus that can project in space or in the atmosphere a high-speed jet of gas, will recoil therefrom.

Now, we make use of powerful explosives such as panclastite, transportable in the form of two separate liquids that are only mixed at the moment of their explosion. Panclastite burns with an enormous production of temperature. Its fall, in the presence of the absolute cold of space (-273^{o}) would therefore be considerable, and the energy produced maximized.[5]

"We therefore have a vehicle in space provided with a reaction-motor—or rather two, one at each end. These motors would, in effect, be cannon-barrels of the finest metal, long enough to use all the energy produced. The panclastite will be detonated therein in measured doses by means of a conceivable apparatus. The gas is precipitated outside and the vehicle recoils. Its weight, in space, is equivalent to a few kilograms at most. The mass of the expelled gases similarly diminishes with gravitation, but their speed remains the same—the chemical energy of explosive mixtures does not change in the void.[6] We are, therefore—at the cost of a few risks, admittedly—masters of our movements in open space, the motors being displaced along with the vehicle.

"But a reaction motor, however powerful it might be, can only raise a vehicle that is initially at rest from the ground at the cost of a vast expenditure of explosive that none would remain for the rest of the voyage—for beyond the Moon, interplanetary distances are measured in millions of kilometers. That is why we must bring centrifugal force into lay for the launch.

"We envisage a wheel of very large diameter, in the form already indicated, decreasing from the center to the perimeter. An 80-meter diameter, corresponding to a circumference of 251 meters, would give, at only 30 turns per second, an initial speed of 7530 meters per second. Now, there is no need for us to hurry. One could easily take 12, 24 or 48 hours to bring the wheel up to its maximum speed, and present-day motors would be largely adequate to the task.

"Half of the wheel will be buried in a ditch; the axle will be directly activated by an alternating motor and a steam turbine. It will be flexible, to avoid any displacement. The projectile in its hollow will be launched instantaneously at a given moment by an electrical apparatus; it will depart towards the Zenith.

"The vehicle will affect the classical form of a dirigible attacking the air thick end first. It will have two steel hulls with a void between them, in order that its internal heat will not escape into the void of space, and double windows, engineered so that they can be opened from the inside or outside—if the projectile falls back, the voyagers will be unconscious. Liquid air and caustic soda—with a device for passing gas through it—will be provided for respiration. Canned food, water, coffee, etc., will not represent an enormous weight, allowing for three voyagers—the minimum, from the scientific and human viewpoints. The observation apparatus will be located at the front of the projectile; provisions of all sorts will be placed at the rear, to lower the center of

---

[3] Robert Esnault-Pelterie (1881-1957) was well-known in 1913 as a pioneer of aviation, but his endeavors as a propagandist for space travel by means of rockets were then at a very early stage; his book on the subject, *L'Astronautique*, was not published until 1930, following a lecture series launched in 1927.

[4] Hieron II of Syracuse was the patron of the ingenious Archimedes, to whom discovery of the principle in question, in the 5th century B.C., is generally attributed

[5] Mas' assumption that the temperate of interplanetary space is absolute zero is mistaken, but the rate at which the temperature of the exploding gas falls is, in any case, quite irrelevant to the impulse imparted to the rocket. Panclastite was a liquid explosive made by mixing dinitrogen tetroxide with a fuel such as carbon disulfide at the appropriate moment; it was swiftly superseded during the Great War.

[6] Mas confuses mass and weight here, again mangling his argument unnecessarily, but it remains fundamentally sound, as the deployment of rockets in modern spacecraft demonstrates.

gravity. A laboratory will be in communication with the void for all imaginable experiments, and we shall design a direct-to-space system for the evacuation of wastes. The projectile will also be fitted with wireless telegraph.

"The air resistance on departure is one of the greatest difficulties. We shall depend, in that respect, on coating the projectile with a layer of fusible metal, which heat will change into liquid or gas, protecting the steel. Besides, at 8 kilometers per second, the trajectory through a slightly resistant atmosphere will last 10 or 12 seconds at the most, and the next 20 kilometers of the atmosphere is rarefied.

"It is, moreover, not necessary to imagine that we, as masters of the wheel, shall send the projectile and its passengers with the speed at which they will go through space to another world. Although there is a limiting velocity—11,309 meters per second—that will launch a projectile into the deserts of space permanently, a lesser and more practical speed of at least 8 kilometers per second will permit it to describe an enormous ellipse whose focal point will be the terrestrial orbit.

"Departing thus, our projectile will become an independent celestial body, capable of describing a closed arc that will allow it to come close enough to the target planet—probably Mars—for telescopic examination to be fruitful, and even to deliver material messages by sending miniature projectiles to the planet via the direct-to-space apparatus.

"Then, having satisfied their curiosity, our projectile would complete the arc that it is describing and return to Earth with increasing velocity. It is necessary not to forget that the reaction-motor constitutes a chance of indisputable security, for space is large and the Earth is small. In space, however, where bodies weigh very little, the least effort of the motor can transport the projectile thousands of leagues, for there is neither air nor weight there—nothing but void.

"To sum up, if we depart with a velocity of less than 8 kilometers per second, we shall describe a relatively short ellipse. At 8 kps, we shall orbit the Earth. Above 8 kps, the described ellipse will gradually increase. At 10 kps, we shall reach the Moon. At 11,309 kps, our goal is, in fact, infinity.

"This is neither fantasy nor fable. It is evident that many people will consider this titanic journey, and this projectile traversing space with its reaction motor, carrying several men, with a stern eye. It is also evident that the great adventure of which we speak involves unknown risks. We do not know how men might be affected by weightlessness. Perhaps there are gases unknown to our science in space, invisible to our eyes but capable of killing us. Perhaps enormous bolides will crash into us, consigning us to incandescent death. Perhaps… The Universe is infinite and Man is very tiny.

"We are attempting here, however, the first scientific solution of the problem of interplanetary communication. In all that we have read on the subject, with the exception of Jules Verne's cannon, Wells' Cavorite—a substance impenetrable to gravitation—would be the most practical method, but we know of no such substance as yet.

"Even outside the viewpoint of science, the occupation by humans of another world would be the greatest feat in our history. No one can foresee what unknown wealth it would bring us. Perhaps the planet Venus is nothing but an immense mass of radium! And the red planet, Mars, might be able to inform us of an epoch-making science.

"A poet has said: *The time has come to conquer the planets and mount an assault on the stars*."

The doctor fell silent, still vibrant with excitement. Rosenwald's eyes shone with a flame similar to his, although these theories were entirely new to him, and he murmured: "What an idea! What a grandiose idea!"

"Yes," von Reinhardt added, pensively. "It's an idea worthy of the grandeur of Germany and its mission in the world." His large body drew itself upright forcefully.

They looked at one another in silence, but the winged words had taken flight. Their thoughts were in accord now, beyond words.

Rosenwald almost shouted: "Hauchet, you have faith! I shall put my life in the balance with you. And you, my friend, who know the Earth, the deep sea, the frozen sky up there among the stars…you're sated with the world. It has fulfilled your dreams. Forge a higher dream, for yourself and for our Fatherland…"

As he fell silent, a band struck up *Deutschland, Deutschland über alles*. A vivid blush rose up in Heinrich von Reinhardt's face—and all three of them left for Paris by the first train, bound for Hauchet's house.

II. Germany's Future is in the Stars

When they came back, von Reinhardt was full of exultant energy, and Rosenwald's intoxication equaled that of joyful wine. As soon as he returned to his workshops in Mannheim, von Reinhardt summoned two dozen specialist experts by telegraph, put the question to them, and set things in motion. His incontestable authority was, it must be admitted, an important counterweight to their initial incredulity. Then they thought about it and, sheltered from indiscretions, on tranquil evenings beneath placid stars, around savory platters in the familiar light of soft lamps, those men made plans to conquer another world—or all of them—by choice. It required no more for human history to be cut in two, before and after.

Already, though, they were specializing. "They're preparing a manual," said Ronenwald, one evening.

Hauchet lit a cigar, smiled and replied: "I'll tell you a story about a Dane, a German and a Manual.[7] It's so good that it's true. I knew the three characters, for the Dane was on the Sund border with the German. The weather was good and the sea, seen from the cliff, was calm.

" 'I'd love to take a trip on the Sund,' said the Dane, 'but I don't know how to operate a sailing-boat.'

" 'Me neither,' said the German, 'but don't worry. I have my navigation manual in my pocket.'

"On the strength of that book, they embarked, and, as long as they were in the shelter of the cliffs, everything went perfectly well. When their boat went out into the open sea, though, it began to dance around. The Dane became uneasy.

" 'I'll see what the manual says,' his companion offered—and without further ado, he tied up the sail, took out the book and began to riffle through it—but the wind turned abruptly in the tied-up sail and, a moment later, the manual, the Dane, the German and the boat were at the bottom of the Sund. They'd be there still but for the opportune arrival of fishermen who, having no manual…"

"And the moral is…?" asked Rosenwald, laughing.

"There isn't one—that's the best thing about it," Hauchet concluded.

And they held other joyful conversations that evening, for the preparatory work was finished. Now the talk, for weeks or months, would be of hammers and lifting-tackle.

The next day, von Reinhardt had a communiqué sent to the German press, and the loquacious newspapers transmitted the rumor to everyone who could read.

The French newspapers approved of the audacity of the idea, partly because of Hauchet, and, for the most part, did not think the endeavor beyond the industrial strength of Germany. *Le Matin* fretted in vain about an "ambition no longer pan-Germanist but, so to speak, pan-uranist."[8]

Spain protested timidly. Was it not encroaching upon the rights of God to go to these worlds, doubtless placed so far away by design? The Italians composed many sonnets. The intellectual fraction of Russia took a great interest in the question, as did the United States, which only regretted that there was no America in the story. In Austria, opinions were divided, mainly because no one was listening, as usual. The smaller states bordering Germany were very pleased that she was thinking about the stars rather than them. All England, however, burst out in a gale of laughter, which resounded everywhere the leopard and the unicorn reigned.[9] Let Heinrich have his way! It would not lead to worldly hegemony—that was the main thing. *Punch* mocked—but Germany took no notice. No one was in doubt, no one asked the opinion of a neighbor; a unanimous pride dilated the heart of Deutschdom.

"We have found our way," proclaimed all the newspapers, "the way dimly foreseen for so many centuries! Not the vanished dream of eastward or westward, northwards or southward expansion! No, expansion into the skies, expansion towards the stars, where no one shall bar our route! The founders of our national unity are dead, alas, else they would have brought us this idea, with God's aid! We Germans have always succeeded in doing what we desired to do. In this too we shall succeed!"

At that time, the formidable confusion of interests, even more than the rising tide of socialism and the actions of trades unions, Sovietized pacifists and Freemasonry, had forced a Franco-German *entente*. The Empire would not lose by it, said its financiers, and at least Heinrich and Jacques Bonhomme would keep some of their cash, instead of seeing it spent on cannons and other trinkets.

Voltaire, prince of mockers, wrote: "The art of government consists of taking as much money as possible from the many in order to give it to the few." The definition rang true once, but once is not always. This explains

---

[7] There is an untranslatable play on words here. The French *manuel* becomes "manual" in English, so the name Manuel—which doubles as a slang term for "Spaniard"—is only phonetically and not orthographically ambiguous.

[8] So-called because Urania is the muse of astronomy—a reference easily construed by literate Frenchmen of the era, familiar with Camille Flammarion's best-selling scientific romance *Uranie*.

[9] The substitution of a leopard for the British heraldic lion is presumably deliberate. In the following sentence and elsewhere I have used "Heinrich" as a generic German name rather than the "Michel" that Mas employs.

how a liberal vote of the Reichstag and a national subscription by an enriched populace warmed to white heat by enthusiasm—in addition to the Emperor's personal gift—brought the millions of marks that were necessary, and more. It was a one-time expense. The apparatus and engines constructed would last 200 years and more, and the kilometric tonnage of the interplanetary journey would descend to a price inferior to that of cargo boats, according to the calculations of Professor Reuler.

It was then that an unknown poet, in a single hour, incarnated the soul of a race and produced a famous hymn, the most formidable affirmation of a man and a people that the world had ever known:

The future of Germany is in the stars.
O Germany extend thy hand
And dress yourself in a crown of Suns!
Tenebrous worlds roll in endless space
Waiting for you to impose on them
The good and just law of loyal man and God Himself.
Germany, reign over the Ether
And conquer the very stars
And break out on this petty Earth
Which is no more than a footstool
Of your thought and your will,
In a colossal and joyful burst of laughter,
For man must surpass himself.
A sage has said:
Aspire to renew the work,
That God has set himself
For His love is with us.

Thousands and thousands of men had these verses of Ludwig Mayer's on their lips.[10]

[10] The verses attributed to this "unknown poet" are presumably the author's, giving rise to the suspicion that Ludwig Mayer might have been the real name of the person who adopted "André Mas" as a pseudonym.

III. The City of Stars

Far away, near the equator, beneath the torrid Sun and deluges of rain, the Wheel grew, day by day and hour by hour. The effort and the will of a people were forged in its titanic structure of steel, looming up into the clear sky where the stars scintillated. Neither gold nor sweat, nor even good human blood—the finest cement for anything higher than ourselves—was lacking in its birth.

Now it was raised above the town and men, beneath its framework, raised their heads, full of pride in the work that was finally complete. Out to sea, steamers with breathless engines were proceeding slowly towards the violet horizon, with the mountains of Cameroon in the distance.

First, there was the arrival of a swarm of workmen and their supervisors, whose invincible discipline changed the appearance of the region for miles around within a month. The tall ships, sounding their sirens, unloaded enormous quantities of steel, manufactured under other skies by other men. Great electric spotlights then lit up like nocturnal hawk-moths, the arms of cranes were extended and the screech of machinery became never-ending. Then a flock of fast-moving wagons began their whining course beneath their loads, and the dream became slid, rivet by rivet, piece by piece, in such sturdy metal that the storm-winds blew at it in vain. One morning, the huge scaffolding, the thousand arms of chains, the far-reaching electric cables, the stiff shafts of elevators and the whirling pulleys all felt the fatigue and tiredness of the workers bearing them, for the Wheel, the Port of the Zenith, the Emporium of Interplanetary Exchange, reflected the glory of the rising Sun—and when evening came, it threatened the sky and its multitude of stars.

The town had grown up around it: a new town, clean and tidy, in which the effort of a century was concentrated. That too sprang from the ground, with its houses cast from molds, its rapid tramways, its verdant parks and its running streams—for years, science had subjugated the obscure force of great rivers, and the docile energy of cataracts ran through slender steel wires across the dark continent. The white man's burden is as heavy as the planet, but he accepts it, bears it and molds it, now that he is no longer divided against himself, brother against brother, mouth against mouth, hand against hand. The great illusion of peoples has been swept away by the force of gold, and their hatreds have become weaker as their interests have become confused, to the extent that any blow struck at the heart of one stabs all the others.

The people of the town gravitated around the three men who launched this dream into the world. They tasted the powerful joy of the hard work that leaves its mark more profoundly with every passing day. Now they had earned their reward, they gathered beneath the impassive stars in the sky, peacefully awaiting the passages of the planets through the shoreless seas of the void, fixed since time immemorial.

Of the experiments they have undertaken, of the days of passion when, for the first time, the steel spindle that emerged solely from the hands of men, will penetrate the inaccessible ether, there is no need to tell the story, for it belongs to the history of science. No more shall I describe the East African airfield that Heinrich von Reinhardt built, on which the German airfleet, an immense eagle, sank down at every point; or even Doctor Hauchet's "by-product," the astonishing Aeracs: aeroplanes with massive hulls propelled at 300 kilometers an hour by the furious expulsion of their reaction-gases, capable with their variable wings of flying higher than condors soar above the Andes. I shall say no more, for this history is only concerned with the conquest of another world.

It was a great day when the Congress of Charlottenburg opened, for it was a simple matter of choosing a world for humankind's first step. The monstrous range of the Wheel embraced an almost-unlimited expanse of space, but it was necessary not only to reign over the dark black desert where even the stars are dust. Our bodies are made of flesh, although we wish to be gods. We can, however, only believe with difficulty in other humankinds higher than ourselves, across that extent, and—if they are there—the magnificent opportunities of a new science and perhaps other intelligences than intelligence.

Three worlds were under discussion: the Moon, Mars and Venus. Earth's satellite was set aside straight away, good for fantastic voyages, but certainly insufficient for a nation like Germany, narrowly confined on its own world. Water, air and aliments, if they were not entirely lacking there, would only be sufficient for the most sober of nations. Vegetation there seemed limited, the conditions of life hardly tenable.

Nevertheless, Professor Heimar defended the Moon on five counts:

Firstly, the astronomical: no air or troublesome vapor; a night of 354 hours, during which one might study the sky with the maximum magnification, employing a spectroscope without atmospheric intrusion—in brief, the ideal observatory.

Secondly, the meteorological: from there, with our large telescopes, we can follow the descent of icebergs and the movement of clouds, reporting them by wireless telegraph.

Thirdly, that of military exploration: every 24 hours the Earth turns before a telescope installed on the Moon; one can see and signal the progress of an ironclad battleship or a large body of troops—and from an armchair, one could set up a global map at one's ease.

Fourthly, the industrial: daughter of the Earth, the Moon contains the same minerals, hence ores, soda, potash, pumice-stone, lava etc.—and a Lunar cubic meter is six times lighter to shift. After all, there is the surface area of two Americas up there: more than a hectare for every inhabitant of Earth.

Fifthly, the colonial. There is no air, but it can be manufactured! Then, again, to return to our planet from up there only requires an initial velocity of 2600 meters per second. Timorous people hesitant to entrust themselves to the Wheel of the City of Stars will go up there; the limiting velocity is 3000 mps instead of 12,000! It will be the Hamburg of Space, the way-station of the stars, the *Sterndeutscher Lloyd*.

The jurist Zuben, for his part, put forward the idea of an industrial and penal colony of the Prussian state. The difficulty of escape militated in its favor—and he proposed that the Moon should initially be used to lodge the victims of article 175 of the German penal code. This suggestion was received with the seriousness that it merited, and white Phoebe was held in reserve, solely in order to demand compensation if anyone else wanted to go there.[11]

Mars, the enigma of our solar system, better known than Venus, had serious partisans, but it too seemed too small, with a diminished atmosphere and narrow seas. The interested public was nevertheless deluged with statistics and documents relating to the red planet, and mouths from Bavaria or Brandenburg gravely discussed the pros and cons over beer-glasses and succulent meal—but the *Simplicissimus* rallied all the votes, saying, quite accurately: "Since we can, for once, choose at our ease from the Heavens, without anyone snatching from our mouths what we thought we had, as has happened before, let us take the fattest." These wise comments were illustrated by a cheerful cartoon, *The Modern Judgment of Paris*, and although presented in a slightly mocking manner, it was well-received.

Jupiter was colossal, but distant; it seemed to offer nothing for an extended sojourn, but water boiling under gases at 300 atmospheres of pressure, and only an Empire of Tritons or Sirens could be founded there until further notice.

There remained Venus, the morning star, the star of love, our sister world. These appellations, and others just as sweet, distributed in the newspapers and magazines, won the hearts of all sentimental Germans to her cause. It is something, in any land, to have women behind you; Venus, goddess and planet alike, knew that.

At the Congress, Hauchet pleaded her cause, soberly, clearly and justly. "Venus is similar to the Earth, with snowy Himalayas, overflowing Amazons, titanic plateaus, storm-tossed oceans, beneath a hotter Sun. Life must be abundant there, swarming. Oppositions occur every 19 months, as opposed to 26 for Mars. Although the calculation of the trajectory is more delicate because of the increasing attraction of the Sun, there is no danger from any wandering planet like Eros. And, in the case of conquest, note this: if current theories regarding the life and death of elements are true, there is more radium and other similar substances on Venus than on Earth—and perhaps other, unknown, elements."

The chemists and physicists felt their hearts flutter at these words. Of 500 votes, 458 guaranteed Venus an interplanetary flight at the earliest possible opportunity. As usual, the Congress was concluded by a banquet, for a satisfied stomach communicates to be brain a love for what is to come, and forgetfulness of even courteous disputes.

[11] Article 175 of the German penal code was a proscription of homosexuality. Phoebe is one of the less popular synonyms for the Moon, although the goddess in question had received a boost to her popularity when she was represented in Georges Méliès' most famous silent movie, known in English as *A Trip to the Moon.*

IV. The Departure

The final months separating von Reinhardt and his companions from the flight to Venus were magnificently calm. It was a matter of arriving at the great adventure with clean minds and unperturbed muscles—and, according to Hauchet's advice, they ought not to regret anything left behind on Earth. He talked about that easily, the Doctor. Having filled their eyes filled with the multiple beauties of this world, measured its extent and found it insufficient, they would be able to attempt such a risk, a leap into the unknown.

The Devil took a hand, however, and stirred up two blue eyes and blonde hair for the desolation of Rosenwald—"for love is a malicious archer, who strikes at an even greater range than the Wheel itself," as a French reporter dispatched by *Le Journal* wrote, somewhat satirically. Otto swore to leave even so, however. Frauleïn Hilda Liebfen agreed, despite everything. After their engagement, time passed for them six times faster than it should have.

The great day arrived, in glorious sunlight.

That morning, the Wheel was set in motion, with an acceleration no greater than a meter per second. The mist disappeared, and an anxious crowd—thousand of eyes, vast, dense, profound, come from all over the world—covered the camp, the surrounding fields and the roofs of the town. The ironclads of the Atlantic squadron lined upon out to sea, surrounded by other warships, fully manned. Yet, more men were heaped up in a prodigious crescent of sailing ships, steamships and huge barges. The breath of that crowd created a vapor in the warm air; its murmur was like the sound of the sea.

The flags of 20 nations flapped in the wind, and chimneys rising up into the sky discharged steam. The monumental Wheel inclined slowly, and one foot of shining steel took the place of another. The most distant ranks of the crowd saw nothing at first. Then, after two hours, the noise of the alternating motor extended into the distance, immediately expelling turbulent clouds of steam.

Suddenly, the racket of the pistons ceased, for the Wheel now seemed like a shield against the fiery sky. A murmur of anxiety ran through the crowd, and in the silence the whistling of the Wheel was audible. A crown of steam surrounded it, a tremulous white aureole, scattered with sparks.

Brunschweig, the chief engineer, thought for a second that the life of the travelers was a feeble little thing amid that chaos of flame and noise. He leaned over the telephone that linked him to the projectile, but reassuring words replied to his call. And the hours went by. The clear day proclaimed the joy of life. The spectators thought of the men who, within the shell of steel, sensed that their projectile was ready to take fight. One sole man on the ground, the engineer at the mechanism triggering their departure, was the master of their destiny.

Then, lamps lit up in the dusk, and the air filled with the buzz of the crowd and the machine, for the turbine was working almost at top speed. A few more minutes passed by. Astronomers and engineers huddled around items of apparatus. Everyone's hearts beat a little faster.

In the distance, the squadron's cannons thundered a last salute. Everyone took off their hats. The town's orchestras had been playing heroic marches all day, but now there was silence. Brunschweig raised his eyes towards the starry shy, put his finger on the control-button, and pressed it. A bell rang. A detachment mechanism was activated. Twenty seconds more—and suddenly a streak of light streaked the sky, at a stroke, in the direction of the dark zenith.

They were on their way.