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Camille Flammarion's amazing universe p. 44

Confessions of an eagle-eyed observer p. 50

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**BONUS
ONLINE
CONTENT
CODE p. 4**

Through detailed astronomical texts and fanciful accounts, this French adventurer walked the line between science and science fiction. **by Fred Nadis**

With his dark beard, handsome looks, exploits as a balloonist, and daring pronouncements, French astronomer Camille Flammarion (1842–1925) could have sprung from the pages of a Jules Verne novel or a current steampunk adventure. In his writings, Flammarion provided up-to-date astronomical information, but he also speculated about time travel, commented on the biology of extraterrestrial species, and riffed on curious themes, such as Earth's end or the universe as viewed from a comet.

He was both a scientist and mystic. While doing painstaking astronomical research, Flammarion also was announcing that life almost surely existed on Mars and, further, that people reincarnated on other planets. His evenings might be spent at an observatory or hosting séances, with guests sitting in chairs representing signs of the zodiac under a ceiling painted with clouds on blue.

Flammarion was an ideal figurehead for 19th-century science, and reporters flocked daily to his Paris apartment to gather quotes on matters small and large. He didn't disappoint his audience (which included Verne).

Flammarion came to prominence in 1862 when, at age 20, he published the tract *The Plurality of Inhabited Worlds*, hitting a nerve with his argument for the likelihood of life on other planets. He soon followed this with a volume on psychic research,

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Inhabitants of the Other World. In 1864, he added *Worlds Imaginary and Real*, in which he reviewed the history of ideas about extraterrestrial life. Clearly, he was certain it was out there — and in this, he was then (and would be now) in the scientific mainstream.

Life on other worlds

For centuries, leading thinkers reasoned that with planets orbiting innumerable stars, the “purpose” of these other planets, like our own, was to harbor life. Newton, Leibniz, Kant, Voltaire, Franklin, Halley, and the Herschels were among the supporters of pluralism, the belief that many inhabited worlds exist. Seventeenth-century French philosopher Bernard de la Fontenelle advanced this case in his *Conversation on the Plurality of Worlds* (1686). Fontenelle hinted that inhabitants of other planets might be equipped with “20 or 30 senses ... [while] other species, even more perfect, have senses to infinity.”

Relying on advancing scientific knowledge and a vivid imagination, Flammarion added flesh to such speculations. In one of his catalogs of non-earthly beings, Flammarion imagined a world orbiting Delta (δ) Andromedae with an atmosphere heavier than our air but lighter than water. It also had rose-colored, floating citizens with overworked lungs on the verge of collapse who survive by breathing the world's nutritious air.

He also offered, on the planet Orion with its seven suns, plantlike men who move on starfish-shaped feet, and another organism resembling a chandelier, which breaks into pieces and vanishes, only to reassemble later. Flammarion insisted that



Camille Flammarion's



amazing universe

This image, which is the one for which Flammarion is best known, appeared in the first edition (1888) of *L'Atmosphère: météorologie populaire* (*The Atmosphere: Popular Meteorology*). The original artist is not known.

ALL IMAGES: RAYMOND SHUBINSKI

otherworldly organisms might have eyes sensitive to ultraviolet or infrared radiation, an “electric” sense, and spectroscopic abilities. He offered such wonders in a tone that mixed matter-of-fact detail with poetry, and readers loved it.

Born in 1842 in a small French village, Flammarion developed a taste for stargazing early on. He recalled borrowing opera glasses at age 11 and seeing “Mountains in the Moon, as on the Earth! And seas! And countries! Perchance also inhabitants!”

The following year, he studied a comet that “soared above the sunset like an airy feather” and regarded it as “a note of interrogation poised in the infinite.” He entered the seminary and asked teachers about the workings of the solar system, but their answers made him realize he would have to study on his own.

Poverty drove his family to Paris in 1856 and ended his religious education. (He took up spiritualism instead.) He became an apprentice to a metal engraver,

but he continued to study at night. After Flammarion fell ill one evening, a physician visited him and discovered the teenager had written two books, *A Visionary Journey to the Regions of the Moon* and a 500-page manuscript, *Cosmologie Universelle* (later published as *The World Before the Creation of Humankind*).

Impressed, the physician recommended Flammarion to the Paris Observatory where, at age 16, he took a position as a pupil-astronomer. He longed to join the astronomers but instead worked all day at mind-numbing calculations, surrounded by people who treated science not as a grand adventure but “in the same manner as if they had to make a piece of furniture or a pair of shoes.” Several years later, the publication of *The Plurality of Inhabited Worlds* and Flammarion’s inflated credentials therein irked the observatory’s director, Urbain Le Verrier (famous for predicting Neptune’s position, leading to its discovery), who fired him.

Balloon voyages

Flammarion did another stint as a “computer” with the Bureau des Longitudes, and he began to pen articles about astronomy and meteorology and to lecture throughout Europe. His interest in meteorology led him to ballooning. He joined the French Aerostatic Society in 1867 and soon became its president.

For Flammarion, ballooning had an effect that was like that of astronomy. He noted, “To the contentment of finding oneself floating high above the miseries of mankind, is added the feeling of a strange and absolute calmness, such as is never experienced upon the Earth.”

He made numerous balloon ascensions and wrote two books, *Voyages in a Balloon* (1871), and *L’Atmosphère* (1888), which combined rapturous descriptions with scientific observation — including various mentions of butterflies accompanying the balloon basket to heights over 3,000 feet, scenes of villagers greeting him and the



In *Uranie* (translated as *Urania*), the title character, who is the muse of astronomy, takes the author on a journey through the cosmos.





pilot as if visitors from other realms, and a time when gendarmes on horseback raced below the craft, demanding passports. During the Franco-Prussian War (1870–71), when Paris was under siege, balloons were regularly launched to send messages, and Flammarion and other astronomers manned an observatory to spy with telescopes on Prussian artillery.

In 1873, Flammarion's interest in double stars once again persuaded Le Verrier to give him access to the Paris Observatory and its 15-inch telescope. Flammarion organized previous data along with fresh observations of the 11,000 groupings of multiple stars then known, and five years later he published his most important scientific work, *Catalog of Double and Multiple Stars*, followed by a lavish book, *Popular Astronomy*, that sold more than 100,000 copies.

In this guide for amateurs, Flammarion, who was never shy about speculating, included his belief that there likely was life not only on Mars, but also the Moon. In the following decade, he founded the French Society of Astronomy and *The Monthly Review of Astronomy*, assuring his place among the savants of Paris. When delegations of astronomers traveled from France to Spain, newspapermen referred to them as “Los Flammarions.”

Mystic and scientific

The man moved in stylish circles. His friends included Gustave Eiffel, Camille Saint-Saëns, and Dom Pedro II, the emperor of Brazil. Flammarion's honeymoon — in late August 1874 with his bride, Sylvie Petiaux, a grandniece of Victor Hugo — was a 24-hour balloon trip from the gasworks at La Villette in Paris to the town of Spa. He asked, “What is more natural than for an astronomer and his wife to fly away like birds?” (His brother, Ernest, and pilot Jules Godard also were aboard.) A newspaper reported, “Mme. Flammarion's delight was inexpressible when sunset gave place to moonlight and they sailed by the moon's soft light through the star studded firmament.”

In his imaginative books, Flammarion avoided standard novelistic narrative for the more didactic forms of the dialogue and dream journey. (Lacking spaceships, his heroes engaged in astral projection to



Camille Flammarion was a man of many talents — astronomer, balloonist, and author of both science and science fiction books.

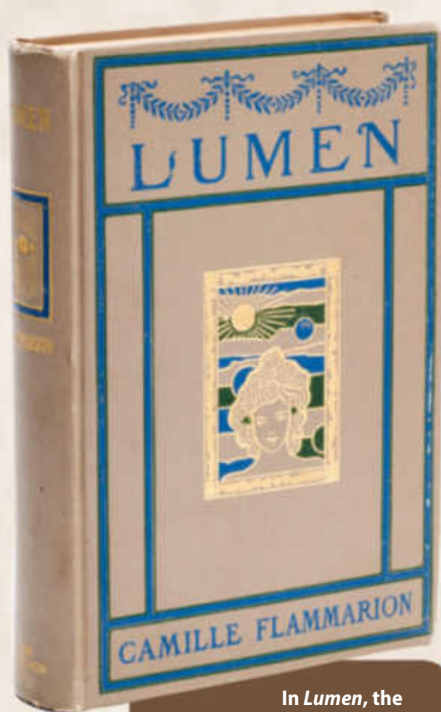
visit other planets.) He indulged his taste for mysticism while also displaying a scientific turn of mind. As a young man, he embraced the spiritualist ideas of philosopher Jean Reynaud, who insisted that humans are reincarnated on new planets in life after life, slowly gaining greater enlightenment.

Flammarion's best science fiction effort is *Lumen* (1872). In it, a cosmic spirit guides the narrator through the universe. In addition to describing the inhabitants of other planets, the book also proposes “thought experiments” like those of Albert Einstein, suggesting, for example, that time and space

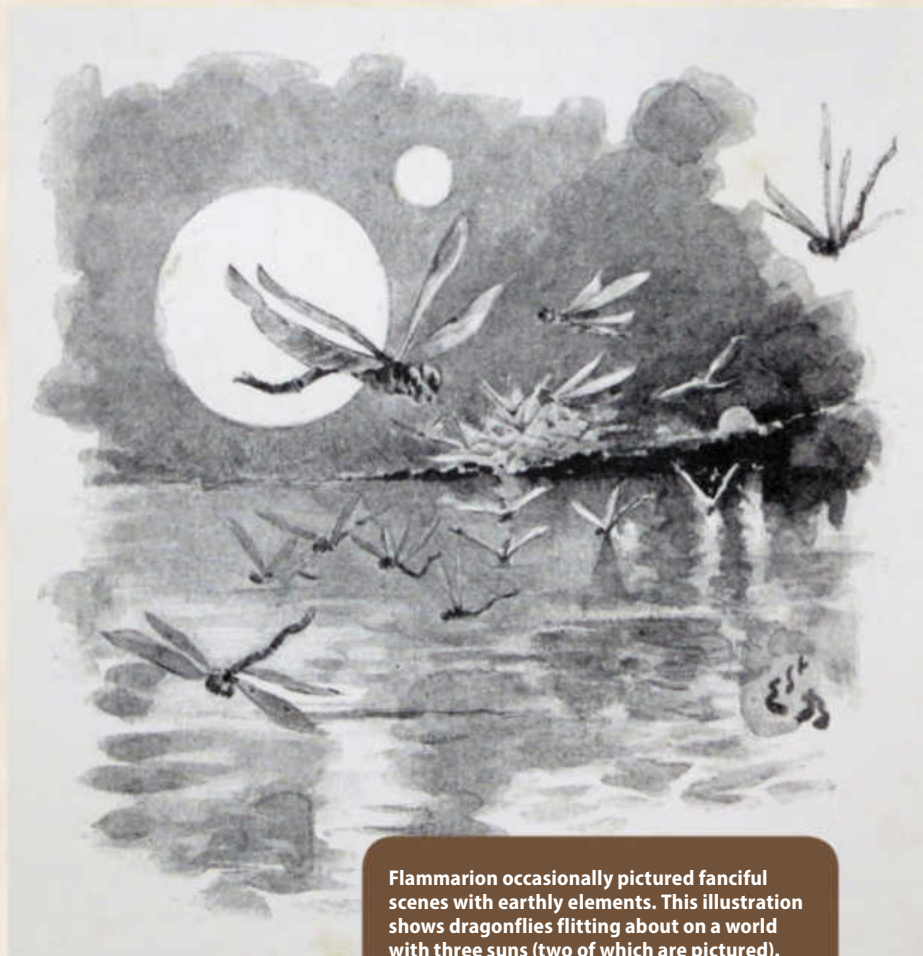
do not exist independently, or that if one could travel faster than light, and so outrace it, one could see events from history.

In *Uranie* (1889), the narrator also engages in astral travel throughout the universe with the muse of astronomy. They visit Mars, where he meets his friend Spero, who had died in a ballooning accident.

Flammarion's learning, pursuit of the sublime, and asides on humanity's cosmic insignificance (“We are but atoms”)



In *Lumen*, the author creates a character named Lumen who teaches another fictional character, named Quaerens, about the universe. *Lumen* also was one of the first books to deal with travel near and beyond the speed of light, a quarter-century before Einstein discussed it in his theory of relativity.



Flammarion occasionally pictured fanciful scenes with earthly elements. This illustration shows dragonflies flitting about on a world with three suns (two of which are pictured).

attracted admirers. In 1882, a French countess, hopelessly in love with him but dying of consumption, instructed her doctor to remove skin from her shoulders and back and send it to him after her death to bind a copy of one of his latest volumes. The physician and Flammarion complied. That same year, a wealthy amateur astronomer gave Flammarion a huge estate in Juvisy, north of Paris, and Flammarion converted the chateau into an observatory inaugurated in 1887, with Dom Pedro II and other luminaries attending.

At Juvisy, Flammarion focused on Mars and set out to determine if it harbored life. His 1892 book, *La Planète Mars et ses conditions d'habitabilité* (*Mars and Its Habitability*), heightened interest in life on the Red Planet and controversy over its canals. That controversy originated in Milan, Italy, in 1877, when astronomer Giovanni Schiaparelli observed the planet is crisscrossed with deep grooves of geometric

patterns. He noted the channels, mapped them, and left them for others to explain.

Flammarion noted that the canals might well be natural furrows, yet “the hypothesis of an intelligent origin for the canal system appeals to our spirit.” He generally preferred poetic solutions to mundane, leading him to reject the idea that Mars’ red and yellow plains were simply sterile and sandy, and propose instead that martian vegetation was reddish yellow.

After reading Flammarion’s book, Percival Lowell, a Harvard graduate wandering about Japan at the time, decided to prove there was life on Mars. Wealthy, ambitious, and a capable mathematician, he established Lowell Observatory in Flagstaff, Arizona, in 1894.

The following year he published *Mars*, the first of his three books about the Red Planet. Lowell delivered gripping public lectures that described the heroic engineering works of a doomed civilization on the

desiccated, dying planet, and he insisted that any position but his was folly, which made his establishment rivals furious.

With his instinct toward pluralism, Flammarion supported Schiaparelli and Lowell. In 1894, Flammarion submitted a paper he claimed was written by a citizen of Mars, found inside a meteorite that fortuitously crashed through the roof of the French astronomical society.

Written from the point of view of a martian scientist, the paper was titled, “Can Organic Life Exist in the Solar System Anywhere but on the Planet Mars?” Weighing all the scientific evidence for life on Earth, the writer concludes that conditions, sadly, made the case for life on planets other than Mars impossible.

By 1909, Lowell and his defenders, who had continued to add canals to their maps of Mars, lost the scientific debate when more powerful telescopes revealed the canals were optical illusions. Eugène



Antoniadi, who had worked as an assistant to Flammarion at Juvisy from 1893 to 1902, made the critical observations.

This chart of atmospheric pressure as it relates to altitude is one of many examples where Flammarion included scientific data in his writings.

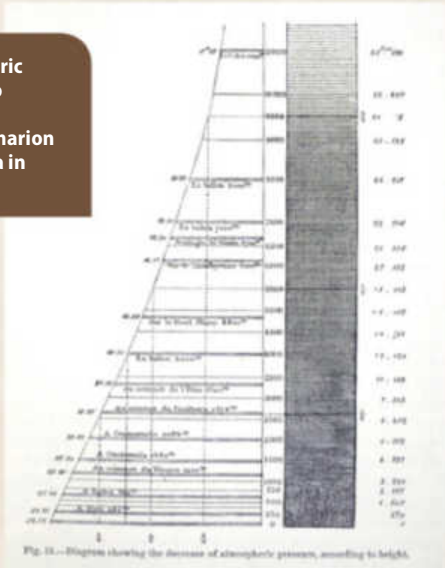


Fig. 11.—Diagram showing the decrease of atmospheric pressure, according to height.

Sci-fi inspiration

Nevertheless, Lowell's and Flammarion's visions of Mars had sparked imaginations. H. G. Wells relied on the model of Mars as a dying planet of advanced engineers in describing his conquering octopus-men in *The War of the Worlds* (1898). Following Flammarion, Edgar Rice Burroughs had his hero John Carter astrally transport to Mars — or Barsoom, as the locals called it — in *A Princess of Mars* (1912).

Burroughs' novels and the pulp science fiction that followed inspired many budding scientists. Carl Sagan, a big fan of Burroughs, had "Barsoom" vanity license plates. And Kim Stanley Robinson, author of a recent Mars science fiction trilogy, has his human settlers of Mars create the previously imagined grand canals in tribute to these motivating myths.



Even when Flammarion was touring the universe with fantastic guides, he made sure the pictures he used were the best available. For example, this realistic illustration of a lunar day appeared in *Urania*.

Flammarion's imagination was too wide roaming to fixate on one planet. Two years later, he followed his study of Mars with another best-seller, *Omega: The Last Days of the World* (1894). In it, he described our planet 500 years in the future when Chicago is the world's commercial capital, electric airship travel is common, women have prominent roles in science and politics, wealthy households have their own observatories as well as trained monkeys as servants, and humans are in contact with inhabitants of Mars and Venus via radio.

Learning that a comet is about to strike Earth, scientists gather in Paris to discuss outcomes and then move on to detail scenarios of the likely end of life on the planet millions of years in the future. Some propose rising oceans will make the planet uninhabitable. Others insist the end will come via continued drying of the planet or falling temperatures. Prefiguring Wells' *The Time Machine* and Olaf Stapledon's *Last and First Men*, the book then depicts the ongoing evolution of humanity, epochal changes to Earth and species, and, in a touch unique to Flammarion, the physical transmigration of humanity from Earth to Jupiter and then on to new worlds.

World War I — with its machine guns, tanks, poison gas, and widespread destruction — dampened naïve optimism in science and technology, and also marked the decline of the elderly Flammarion. While Paris coped with bombing raids from German zeppelins and a flood of refugees, Flammarion took shelter in southern



Although this illustration from *L'Atmosphère: météorologie populaire* may look like a fanciful concept of life beyond Earth, it actually shows a Brocken spectre, the magnified shadow of an observer cast upon clouds of mist or fog and usually seen from high elevation or from an aircraft.

France, and later at Juvisy, where he split his time between astronomical observations and séances. Focused on mortality, his last books were *Death and Its Mystery* (1920) and *Haunted Houses: On the Margin of Death and Its Mystery* (1924).

Flammarion died in 1925. Although his scientific work and popular science efforts have faded (an updated edition of *Popular Astronomy* last appeared in 1964), he inspired many to consider themselves "citizens of the skies."

Current conditions would delight him. Masked in the language of probability, pluralism is flourishing along with renewed fascination with Mars. The Curiosity rover samples geology and atmosphere on Mars, while governments and private corporations plan manned missions.

One way or another, there will be life on the Red Planet. And Camille Flammarion is waiting. While canals no longer figure on the map of Mars, Flammarion does. A 108-mile-wide (174 kilometers) crater that bears his name honors the Frenchman's legacy. ●