

**PATRICK LUIZ SULLIVAN DE OLIVEIRA**



# **ASCENDING REPUBLIC**

**THE BALLOONING REVIVAL  
IN NINETEENTH-CENTURY FRANCE**

*Fanletto Gravis*

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PATRICK LUIZ SULLIVAN DE OLIVEIRA

The MIT Press  
Cambridge, Massachusetts  
London, England

The MIT Press  
Massachusetts Institute of Technology  
77 Massachusetts Avenue, Cambridge, MA 02139  
mitpress.mit.edu

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The MIT Press would like to thank the anonymous peer reviewers who provided comments on drafts of this book. The generous work of academic experts is essential for establishing the authority and quality of our publications. We acknowledge with gratitude the contributions of these otherwise uncredited readers.

This book was set in Bembo Book MT Pro by Westchester Publishing Services.

Library of Congress Cataloging-in-Publication Data

Names: De Oliveira, Patrick Luiz Sullivan, author.

Title: Ascending Republic : the ballooning revival in nineteenth-century France /  
Patrick Luiz Sullivan De Oliveira.

Description: Cambridge, Massachusetts : The MIT Press, [2025] |

Includes bibliographical references and index.

Identifiers: LCCN 2024030349 (print) | LCCN 2024030350 (ebook) |

ISBN 9780262549806 (paperback) | ISBN 9780262380805 (pdf) |

ISBN 9780262380812 (epub)

Subjects: LCSH: Ballooning—France—History—19th century. | Hot air balloons—  
France—History—19th century.

Classification: LCC GV762.5.F7 D46 2025 (print) | LCC GV762.5.F7 (ebook) |

DDC 797.5/1094409034—dc23/eng/20241221

LC record available at <https://lcn.loc.gov/2024030349>

LC ebook record available at <https://lcn.loc.gov/2024030350>

EU product safety and compliance information contact is: [mitp-eu-gpsr@mit.edu](mailto:mitp-eu-gpsr@mit.edu)

Para papai e mamãe.



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## ACKNOWLEDGMENTS

Writing acknowledgments is a tricky enterprise. One must, out of necessity, establish arbitrary cutoffs. To acknowledge all the individuals and institutions that contributed to the completion of this book would require making it into a true doorstopper. To those who did not make the cut, at least you need not worry about being blamed for any faults.

Before ever dreaming of publishing a history book, I first had to fall in love with Clio. This happened during my years as an undergraduate student at the University of Kansas, where Nathan Wood and the late Benjamin Sax inspired me with their classes on nineteenth-century cities and intellectual history. But why French history? Here I have the late Allan Pascoe to thank. Reading Balzac's *Le Père Goriot* in his French literature class was a transformative experience that set me on this path.

This book began as a dissertation at Princeton University, where I was lucky enough to work under the guidance of Philip Nord. He and David Bell made Dickinson Hall a prodigious place to study modern France. Both were fundamental in shaping how I think about the field, and their influence can be found throughout the pages that follow (which they have read way too many times). Just as important, Phil and David have been impeccable mentors and allies. Michael Gordin adopted me as a late convert to the history of science and technology, and his meticulous eye to detail has saved me from embarrassing mistakes. Jeremy Adelman has always encouraged me not to shy away from the big questions. At Princeton I was also fortunate to learn a great deal from D. Graham Burnett, Linda Colley, Elizabeth McCauley, Deborah Nord, and Gyan Prakash.

One does not produce research without money and institutional support—something that we must keep reiterating in the face of callous politicians and administrators cutting humanities programs left and right. At Princeton, grants from the Department of History, the Princeton Institute for International and Regional Studies, and the Program in Latin American Studies were critical in

the early stages of research. A postdoctoral fellowship at the Princeton Writing Program allowed me to improve my own writing by learning to teach the practice under the gentle guidance of Amanda Irwin-Wilkins and Christopher Kurpiewski. During those years, a grant from the University Committee on Research in the Humanities and Social Sciences enabled me to return to France to revisit some archives.

The Smithsonian Institution's National Air and Space Museum believed in this project enough to award me both predoctoral and postdoctoral Guggenheim fellowships. While at NASM, Tom Crouch and Jeremy Kenney served as my advisors, and I also learned a lot from Russell Lee and all the participants of Margaret Weitekamp's writing group. Led by Ben Gross, the Linda Hall Library in Kansas City is a haven for historians of science and technology. Thanks to a fellowship there, I got to spend a few months patiently working through rare aeronautical tracts. Meanwhile, a fellowship at the Huntington Library gave me access not only to its rich archival collections but also to its beautiful gardens (I can think of no site more inspiring for writing). I would also like to thank the American Historical Association for their support with the Bernadotte E. Schmitt Grant.

As indicated in the bibliography, this book would not exist today without the help of the staff at libraries and archives spread through three different countries. Again, the list is too long to present in full, but I would especially like to thank Séverine Montigny (Bibliothèque Historique de la Ville de Paris), Perrine Bisson (Musée de La Poste), Bárbara Cristina Barbosa Pinto da Silva and Ruggery Gonzaga de Melo (Centro de Documentação da Aeronáutica), Lezlie Martin (Linda Hall Library), and the late Collette Williams (Smithsonian Institution).

One also does not produce research without a community. The best graduate cohorts are those that forge friendships for life, and the 2011 Princeton history cohort gifted me Nikhil Menon, Katlyn Carter, Sean Vanatta, Dan Barish, Olivier Burtin, Christian Flow, Morgan Robinson, and honorary member Matthew Chan. From my years at Princeton, I am also thankful to have gotten to know Alex Chase-Levenson, Meg Leja, Sara Vanatta, Fidel Tavares, Veronica Valentin, Joppan George, Diana Andrade, Josh Garrett-Davis, Randall Pippenger, Nimisha Barton, David Moak, Ben Bernard, Zoë Rose Buonaiuto, Margarita Fajardo, Elaine Ayers, Joel Suarez, Paula Vedoveli, and Hannah Stamler.

In France, Emmanuelle Loyer generously hosted me as an exchange student at Sciences Po, where her seminar on history and literature prompted me to think more creatively about sources for the project. The late Dominique Kalifa welcomed me to his high-spirited seminars at the Sorbonne, where up-and-coming and well-established historians of France from all over the world tested out their ideas in an incredibly democratic space. Marie Thébaud-Sorger guided me through archives in Paris and served as a brilliant sounding board for the initial conceptualization of this project.

I must admit I was somewhat hesitant about the decision to take up a position at Singapore Management University when, in the middle of the COVID-19 pandemic, the country's minister of foreign affairs compared foreign workers to ballast that must be shed during challenging times (I was not expecting to encounter that kind of terminology outside of my sources). However, beyond this infelicitous dehumanizing language, the two years I spent in Singapore were critical to the completion of this project. Generous support from SMU allowed the book to be richly illustrated. I could not have asked for better deans than Chandran Kukathas and Elvin Lim. Among my colleagues, Ksenia Tatarchenko, Christine Henderson, Orlando Woods, Justin Tse, and John Donaldson made it so that work often did not seem too *kiasu*.

At IE University, I have encountered a young entrepreneurial program that, under the leadership of María José Ferrari, and Catalina Tejero, shows promising signs of expansion in the humanities. I was not expecting to have this much fun being a new recruit alongside Ted Lechterman, Shana Cooperstein, and Anna Jabloner, but I am guessing wine-soaked dinners at Rolf Strom-Olsen's apartment are partially to blame.

Beyond Princeton, SMU, and IE, my academic community encompasses mainly historians of France and historians of technology. Some of them I met in archives, others at conferences like the Society for French Historical Studies, the Western Society for French History, the Society for the History of Technology, and the History of Science Society. Among the scholars of France, Venita Datta (who was also a member of my dissertation committee), Stéphane Gerson, Daniel Sherman, Alice Conklin, Vanessa Schwartz, Edward Berenson, Catherine Clark, and Colin Foss all provided crucial feedback in various forms. Guillaume de Syon, Patrick McCray, John Tresch, Andrew Denning, Scott Palmer, Jason Pearl, and Brett Holman did the same but with a focus more toward the history of technology. I also want to thank

the participants of the Nineteenth-Century France Reading Group that Elizabeth Della Zazzera and I organized over Zoom while we were all self-isolating during the pandemic—especially Alexia Yates, Hollis Clayson, Jann Matlock, and Charles Rearick.

The team at the MIT Press has done a terrific job in steering this first-time author through the book publishing process. It has been a pleasure to work with Katie Helke, Justin Kehoe, Suraiya Jetha, and Jitendra Kumar. This book would also be much less rigorous if it were not for the diligent critiques offered by the anonymous reviewers.

Finally, one does not produce research if that is all one lives and breathes. My friends in Brazil are also too numerous to name. You know who you are (but it would be *paia* not to mention Marcelo Sarmento, Guilherme Cançado, and Ana Clara Maciel). Jason Beury, with his warm curmudgeonliness, is still as reliable as when we first met back in Lawrence, Kansas (sorry for storing all our crap in your basement for so long). Vir Anand's enthusiasm for life is contagious, and he is one of the reasons Philadelphia remains my favorite city in the United States. Wendy Derrick and Sarah and Clay Selman make Waco, Texas, worth visting. Whether *chope-ing* tables at hawker centers or indulging ourselves at fine-dining establishments, Elisa Prosperetti, Marco Bartoli, Bob Halgren, and Laura Troehler made Singapore an intellectually stimulating and socially exciting place to be. Terrazas in Madrid would not be as *guay* without Jean-Hugues Lestang, Andrés Porras Chaves, and Henry and Lauren Pascoe.

I am certainly biased, but I do not know anyone who is as hard-working and caring as my parents, Luiz Carlos Sullivan De Oliveira and Patricia Sullivan De Oliveira. Beyond showing genuine curiosity for what I would do in archives all day, they also dropped everything to be at my side when things got hard—whether it was struggling with mental health in Paris or undergoing an appendectomy in Rio de Janeiro. I am indeed very lucky, and everything I write is always implicitly dedicated to them. Sibling bickering aside, I am in constant awe of my sister, Viviana Sullivan De Oliveira, who navigates life with impeccable poise alongside her husband André Rubião. They are some of the most thoughtful gift-givers I know, but the best gift they have given me is a joy-bundled niece—the sweet and clever Lia. It pains me to be an ocean away from all of them, but it comforts me to know we are always there for one another.

My best find during my stint at the Linda Hall Library in Kansas City was not some obscure book but the most wonderful of companions. While

readers will appreciate Emily Derrick's eagle-eyed revision of the manuscript, it pales in comparison to everything else she has done. She has taken up more than her fair share of the emotional labor that comes with moving between three continents in just as many years, all while excelling professionally in her own field. When we first met, I was reading Julian Barnes's *Levels of Life* and was struck by the following quote: "Because love is the meeting point of truth and magic. Truth, as in photography; magic, as in ballooning" (37). We are lucky to be at that meeting point. One would expect there to have been ups and downs as we remade our lives in Philadelphia, Singapore, and now Madrid. Ups and downs there have been. And there has been so much love.

An earlier version of chapter 3 is published in "Martyrs Made in the Sky: The *Zénith* Balloon Tragedy and the Construction of the French Third Republic's First Scientific Heroes," *Notes and Records: The Royal Society Journal of the History of Science* 74, no. 3 (2020): 365–386.

A preliminary version of chapter 6 first appeared in "Transforming a Brazilian Aeronaut into a French Hero: Celebrity, Spectacle, and Technological Cosmopolitanism in the Turn-of-the-Century Atlantic," *Past & Present* 254, no. 1 (2022): 235–275.

Some of the material in chapters 4 and 7 appear in "'Ce gentlemen [sic] rider du turf atmosphérique': l'aérostation, la masculinité aristocratique et l'imaginaire colonial au tournant du XXe siècle," *Romantisme* 197, no. 3 (2022): 94–106.



## INTRODUCTION

### The Old Rendered Modern

“Aeronautics is the order of the day,” the French aristocrat Henry de La Vaulx announced in the conservative daily *L’Écho de Paris* on 1 September 1901. An aeronaut himself, La Vaulx was far from a disinterested party. But it would have been hard to disagree. A year earlier, about 150 balloons departed from Paris during the 1900 Universal Exposition. Simultaneously, more than one hundred researchers from around the world attended the second International Aeronautical Congress, where they discussed the global status of aeronautical science.<sup>1</sup> And if visitors to the Exposition were disappointed when an immersive attraction that promised the experience of a balloon ascent through projections on a 360-degree screen never opened, they could still enjoy a real-life ascent in one of six tethered balloons operating in the city.<sup>2</sup> All the while, the Aéro-Club de France entertained the wealthy with ascents from its private park in Saint-Cloud, and the Brazilian Alberto Santos-Dumont awed the world by flying his airship (also referred to as a “steerable balloon”) around the Eiffel Tower. As La Vaulx explained, “The movement in favor of the new locomotion is so powerful that our great polemicists . . . occasionally forget their obsession with politics and devote their editorials to ballooning.”<sup>3</sup>

The 1900 Exposition was the apotheosis of a longer period of intense enthusiasm for balloons in France. In 1883, one aeronaut described France as living amid a “ballooning vogue,” speculating that the country averaged almost one ascent per day.<sup>4</sup> The phenomenon was overwhelmingly concentrated in Paris, where an 1888 government survey counted almost one hundred aeronauts and more than sixty balloons—far more than anywhere else in the world. In addition to individual practitioners, Paris also boasted seven registered aeronautical associations (England had one).<sup>5</sup> The most prominent of these—the Société Française de Navigation Aérienne (SFNA)—published *L’Aéronaute*, a monthly periodical addressing the science of flight that was read all over the world.



Figure 0.1

Participants of the International Aeronautical Congress visit the Vincennes Annex at the 1900 Universal Exposition, 16 September 1900. Courtesy of Smithsonian National Air and Space Museum (NASM 9A10572).

By the turn of the century, the SFNA had been overshadowed by the *Aéro-Club de France*, which was established in 1898 and published the even more widely read *L'Aérophile*. While the SFNA had been exclusively focused on aeronautical science, the *Aéro-Club* was just as interested in cultivating ballooning as a sport—a shift that expanded the practice's popularity. Between 1899 and 1910, the *Aéro-Club's* members conducted more than three thousand ascents carrying more than eight thousand passengers.<sup>6</sup> The club also organized frequent public events that drew tens of thousands of spectators who watched balloons ascend from various sites in Paris—events that were diligently covered by the popular press. Seeking to stimulate a similar vogue in the United States, the Aero Club of America (founded in 1905 and modeled after its French counterpart) imported balloons from Paris and exhibited photos of spectacular ascents in the French capital.<sup>7</sup> Explaining to the *New York Herald* why he had chosen Paris as the site for his experiments,

Santos-Dumont, then the world's most famous aeronaut, did not measure his words: "France is the only nation possessing sufficient imagination and faith to enter seriously and confidently into such a field."<sup>8</sup>

The late nineteenth and early twentieth centuries were marked by an obsession with technologies of mobility, especially in urban centers like Paris, where bicycles, trams, subways, and automobiles transformed how people circulated and experienced time and space.<sup>9</sup> But unlike these technologies, the balloon was not new. It first appeared in the late eighteenth century and had changed very little since then, which makes French enthusiasm for lighter-than-air flight at the turn of the twentieth century something of a puzzle. Why did the balloon achieve such an iconic status in France during the decades between the 1870–1871 Franco-Prussian War and the First World War? Why was this phenomenon significant? In this book, I posit that the ballooning revival happened because aeronauts mobilized the balloon in ways that spoke to major issues stirring Third Republic society. Furthermore, the revival was significant because it became a rallying point for French people of various social groups—people who came together to set up institutions and cultivate a thriving culture of flight that subsequently made France into the epicenter of aviation in the years preceding the First World War. The book is divided into three scaffolding parts to support these claims.

First, following a moment of enthusiasm after its invention in 1783, the balloon's status soon began to deteriorate. For most of the nineteenth century, the technology was maligned as a plaything for entertainers, a means for humbugs to swindle people out of their money, or an object that occupied the minds of romantic socialists harboring utopian dreams. I argue that this situation changed dramatically with the Franco-Prussian War, when the use of more than sixty balloons to break through the Prussian siege of Paris helped rehabilitate the technology by infusing it with new patriotic meaning (Part I: Breathing New Air into the Balloon).

Second, while the balloon did not avert military defeat, during the ensuing decades French citizens found in the skies a venue in which to try to make sense of their place in a changing world order. The social groups involved in this process varied greatly, encompassing republican savants, aristocratic sportsmen, and women who strived to break through from the margins. Just as diverse were the visions they developed for the balloon—or, to use a more technical term, the kind of *airmindedness* that emerged from the revival. Ballooning could simultaneously embody elements of sacrificial

patriotism (aeronauts would strengthen France by putting their lives at risk for the nation), aristocratic modernity (elites would distinguish themselves through their ascents), colonial anxiety (the balloon would be used to manage France's expanding imperial possessions), and technological cosmopolitanism (progress in aeronautics would enable positive exchanges between different nations). Although these visions could stand in tension, they were all oriented by the notion that the balloon would play an important part in guaranteeing French greatness. Before the Franco-Prussian War, one could come across utopians who imagined the balloon as a technology that would emancipate humanity from divisions and bring about a universalist politics of equality. But after the traumatic defeat, French aeronautical culture was defined by a concern for French geopolitical interests. If the British Royal Navy controlled the seas and the army of a unified Germany dominated continental lands, then France, home to the Montgolfier brothers, would take rightful ownership of the skies (Part II: The Airminded Republic).

Lastly, the frenetic activity of French aeronautical associations, which was steadily covered by the national and international press, helped solidify Paris's position as the global center for aeronautical pursuits in the period preceding the First World War. The institutions, practices, and representations developed through ballooning helped lay the terrain for the assimilation of the airplane, which although "born" in the United States "matured" in France. It was no accident that the Wright brothers' first public demonstration of the *Flyer* happened in France in 1908, that French manufacturers quickly improved on its design, and that in the subsequent years the country would host major aviation events like the Grande Semaine d'Aviation de la Champagne and the Salon de la Locomotion Aérienne (the latter surviving to this day as the world's largest aeronautical trade exposition). The ballooning revival established the framework through which the French would go on to engage with the airplane, and in that sense the advent of heavier-than-air flight did not represent a major rupture in the history of flight. As I argue, when making sense of the airplane, the French continued to rely on the same visions of sacrificial patriotism, aristocratic modernity, colonial anxiety, and technological cosmopolitanism (Part III: The Soaring Republic).

Through these arguments, the book builds on and contributes to at least three major fields: the history of technology, the history of modern France, and the history of flight.

## WHAT MAKES A TECHNOLOGY MODERN?

There is some truth to the cliché of turn-of-the-century Paris being a spectacular theater of new technology. On 28 December 1895, the world's first commercial movie screening took place at the Grand Café, and the new medium quickly became associated with the French capital.<sup>10</sup> The city's first metro line was inaugurated to much fanfare just in time for the 1900



Figure 0.2

People gather to watch the placement of the *Blériot XI*, the first airplane to cross the English Channel, in front of *Le Matin's* headquarters. Agence Rol, *Le glorieux Blériot XI exposé devant, Le Matin*, 4 September 1909. Source: gallica.bnf.fr / Bibliothèque nationale de France.

Exposition, itself a massive event that displayed a variety of new and amusing technologies—from moving sidewalks to a Palace of Electricity. As all of this was going on, people zipped down the streets on bicycles, occasionally swerving to avoid one of the new automobiles that had started to appear. In 1909, after Louis Blériot made the first airplane flight across the English Channel, the popular daily *Le Matin* purchased the *Blériot XI* and, to the delight of Parisian crowds, displayed it in front of its headquarters at the Boulevard Poissonnière (figure 0.2).

But one should be careful not to overemphasize new technologies, just as one should not conflate modernity with newness. If the 1881 International Electricity Exposition briefly bestowed Paris with the title of “*la capitale électrique*,” gas lighting remained dominant well into the early twentieth century.<sup>11</sup> Meanwhile, even as the number of bicycles and automobiles grew, in 1900 the city was home to about 98,000 equines (a number that still stood at 55,000 in 1912).<sup>12</sup> Finally, one of the most popular attractions at the 1900 Exposition was a picturesque reconstruction of old Paris. Designed by Albert Robida, an artist known for works like *La Vie électrique* (an 1890 novel that imagined how new technologies would transform everyday life), *Le Vieux Paris* was the Exposition’s third-highest-grossing display. With its narrow winding streets and structures modeled on medieval architecture, the miniature city was a hit thanks to the incorporation of new forms of consumer spectacle, such as promotional postcards and thematic restaurants—an indication that modernity did not simply produce a radical rupture with the past but also engendered complex ways of engaging with “the old.”<sup>13</sup>

The thoroughly modern celebration of the old in *Le Vieux Paris* brings us back to La Vault’s paean to ballooning. Strictly speaking, the practice and the technological artifact enabling it were far from new. Balloon ascents were happening in Paris long before the city installed its first gas lamps—the same lamps that by 1900 many deemed antiquated. On 27 August 1783, 118 years before La Vault’s article, a large crowd gathered in the Champ-de-Mars to observe the first ascent of a hydrogen balloon. Among the spectators was an American diplomat—Benjamin Franklin. According to sources at the time, after hearing someone question the apparatus’s utility, the polymath quipped: “Eh! What is the use of a newborn baby?” Whether Franklin issued this “legendary bon mot” remains unclear, but the anecdote captured the anxieties that weighed over the invention.<sup>14</sup> The balloon finally allowed people to ascend into the sky. The new technology became a centerpiece of

the European scientific landscape in the years preceding the French Revolution, sparking vivid debates about how to put it to practical use in prestigious spaces like the Academy of Sciences. It seemed to offer bountiful possibilities, as long as people found a way to steer it against the wind. But as years passed, the “baby” did not seem to grow up. By the mid-nineteenth century, the technology remained largely unchanged and was no longer considered the harbinger of a new era. So how does one explain the renewed enthusiasm for this century-old technology that seemed to offer very little? Why was ballooning in fashion again at the turn of the twentieth century?

These questions present us with a paradox—a seemingly obsolete technology rendered modern. Or, as one observer from England put it in 1907, “Why all this should so suddenly come about I cannot say, for there has been no special improvement in the machine itself.”<sup>15</sup> The balloon’s turn-of-the-century modernity was not based on technical innovation, but on a qualitative shift in how the French engaged with the technology.<sup>16</sup> The institutionalization of ballooning in the decades following the Franco-Prussian War reflected the fact that revivalists believed the practice itself could transform their fellow French citizens. How? By cultivating attitudes that they thought had been crucially lacking during the war: patriotic energy and technological enthusiasm. For the revivalists, the greatness of modern France was inseparable from its citizens dedicating themselves to aeronautical pursuits. For them, ballooning and nation-building went hand in hand.

For much of the field’s existence, historians of technology have focused on invention and innovation. But since at least 1999, David Edgerton has been forcefully articulating the importance of writing histories of technology in use. Scholars following his footsteps have produced a kaleidoscopically rich literature that not only reveals how much of modern life depends on old technologies but also obliterates any illusions of linear technological progress.<sup>17</sup> Building on this approach, rather than trace the invention and early history of the balloon (a topic not in want of insightful studies), *Ascending Republic* explores how an “old” artifact became “modern” through sociocultural processes, thus highlighting the contingency of ideas like obsolescence and innovation.<sup>18</sup> This is all the more important given how much innovation-speak informs the allocation of attention and resources in our society.<sup>19</sup> If popular discourse in a world enthusiastic about self-driving cars easily falls into the deterministic trap of depicting an invention taking on a life of its own and inevitably altering the course of history, the pages that follow show

how French men and women infused new life into the balloon. In my narrative, it was not the balloon itself that made history. Instead, people made the balloon into a historically significant artifact.

#### WHAT IS FRENCH ABOUT THE BALLOONING REVIVAL?

*Ascending Republic* also offers new insights into the history of modern France. After all, why did this revival happen under the Third Republic? One could fall back on the temptation of origin stories and argue that because the Montgolfier brothers invented the balloon in 1783, it naturally followed that the French would become the most enthusiastic revivalists. But this line of reasoning begs the question: Why was there a ballooning revival in the first place? Here we should take to heart Marc Bloch's critique of "the idol of origins." As he explained, the word "origins" is ambiguous, and historians need to carefully navigate its two meanings: "beginnings" and "causes." Conflating them, Bloch warned us, creates the illusion of "a beginning which explains," or even worse, "a beginning which is a complete explanation."<sup>20</sup> Beginnings can be important—not because they explain but because of how people can marshal a vision of the past to serve their present causes. It is not so much that the French eighteenth-century invention of the balloon explains the late nineteenth-century revival, but that aeronauts from the early Third Republic mobilized the history of ballooning to justify that revival.

Examining Third Republic society through the prism of aeronautical practices allows us to gain greater insight into this critical period of French national formation. While the association of the balloon with France reached a fever pitch during this time, it would be simplistic to assume that the technology inherently embodied Frenchness. That would be tantamount to committing the dual sin of essentializing both technology and national identity. Instead, I explore how French identity and ballooning were mutually constitutive during a period marked by deep anxieties concerning France's place in the world.<sup>21</sup> Ballooning proved to be a fertile ground for the French to imagine themselves as a community and negotiate the values and aspirations that oriented a shared but contested identity—a process that unfolded both through associational practices and through a burgeoning mass press that eagerly represented the spectacle of flight.<sup>22</sup>

A substantial body of scholarship has made the persuasive case that, contrary to older assumptions, nineteenth-century France featured a dynamic

and resilient civil society that served as a breeding ground for a republican culture that would sustain the Third Republic's democratic institutions for seventy years.<sup>23</sup> *Ascending Republic* builds on that body of work and explores how France's rich associational life extended beyond the political sphere and into other realms. French authorities expressed great interest in balloons when the technology appeared in the late eighteenth century. However, when no tangible progress was made, the state pulled back. With few exceptions, the various French governments of the nineteenth century did not offer support for aeronautical pursuits. As science grew increasingly centralized under the aegis of the state bureaucracy, those interested in aeronautics had to form loose networks that could then develop into formal associations and sometimes even exert some influence on the government.<sup>24</sup> The most important of these were the SFNA and the Aéro-Club de France. As we will see, each had their own political, socioeconomic, and cultural makeup (the SFNA was dominated by republican men of science; the Aéro-Club by aristocrats and industrialists who made up France's elite). However, they shared the common belief that the pursuit of flight was a French calling and tried to spread that vision across society.

Enthusiasm for flight was one way that citizens of the Third Republic could momentarily transcend social and political divisions. But there were also exclusions. After the Franco-Prussian War, France underwent a crisis of masculinity and struggled to find a place for women in the new regime.<sup>25</sup> Ascents became a way to construct idealized masculine models, whether in the form of the self-sacrificial man of science or the self-controlled aristocratic gentleman. Because models imply counter-models, women (who had been very active and visible in the early history of ballooning) were marginalized as male aeronauts sought to legitimize the practice. Ironically, though, the culture of leisure that aristocrats operated in also offered spaces for women to eventually reenter the scene. While the men heading the Aéro-Club saw women as maternal figures who could groom a new generation of aeronauts, female practitioners were not agentless. Just as Third Republic feminists articulated the case for women's rights in relation to their normative social role as mothers, members of the Aéro-Club Feminin Stella strategically engaged with the expectations imposed on them to secure more active roles as aeronauts.<sup>26</sup> Yet the position of female aeronauts remained tenuous and subsidiary to the masculine ideal, a recurring phenomenon in the history of technology.<sup>27</sup>

Associational practices are only one part of the story, for the ballooning revival was also inseparable from Paris's distinct culture of spectacle. One obvious example of that culture was how vigorously Paris adopted the World's Fair model. The Universal Expositions in 1855, 1867, 1878, 1889, and 1900 fostered a public space for the presentation of technology as an entertaining, transformative, and emancipatory force.<sup>28</sup> Much like wax museums, panoramas, the cinema, and other popular late nineteenth-century cultural forms, ballooning coalesced as a spectacle that people from various backgrounds could experience together—whether by witnessing ascents in person or seeing them represented in the mass press.<sup>29</sup> This culture of spectacle served France's image abroad, with publications like the *New York Herald* presenting to foreign audiences a Paris that was an exciting technological theater.<sup>30</sup> The fever for ballooning also mapped onto a broader enthusiasm for sporting spectacles centered on technologies of mobility, such as the Tour de France for bicycles (created in 1903) and the French Grand Prix for automobiles (created in 1906). These were embraced with fervor by the transatlantic press as a form to sell copy to a growing readership seeking amusement.<sup>31</sup> While most Americans did not witness Paris's balloon ascents in person, they could read about them in newspaper articles that were increasingly accompanied by illustrations and photos.

One must remember that the Third Republic was an odd experiment surrounded by monarchies that also endured a series of political crises (the most famous being the Dreyfus Affair, when the false treason conviction of a Jewish officer produced bitter divisions in French society).<sup>32</sup> As such, France's image benefited from technological spectacles that represented it in a positive light abroad. An article in the American monthly *Ainslee's Magazine* captured this dynamic: "Whatever you may think of the Frenchman's opinion of the Dreyfus matter, you can't help but admire . . . the brilliant future that he plans for aërial navigators."<sup>33</sup> The intense aeronautical milieu that enveloped Paris also meant that people abroad turned their sights to the French capital when dreams of flying struck—from those who came to France to conduct their aeronautic experiments (like the Brazilian Santos-Dumont) to those who sought French expertise when developing their own aeronautical field (like the Aero Club of America).

#### THE MAKING OF FRENCH AIRMINDEDNESS

*Ascending Republic* goes beyond explaining why and how a ballooning revival took hold of Third Republic France, it also argues that the revival contributed

to the crystallization of French airmindedness. The term emerged in military circles following the First World War to designate the importance of spreading awareness about the benefits of air power. It has since been repurposed by scholars as an analytical category to unpack the distinct ways in which social, cultural, and political factors affected how different nations made sense of, responded to, and shaped developments in flight. In the past forty years, historians have explored airmindedness in a variety of contexts, including the United States, Germany, Russia, and Peru.<sup>34</sup> But not in France, which is all the more surprising given the country's importance to the early history of flight. Understanding French airmindedness is critical because much of the early culture of flight in other nations developed in relation to France.

In this book I offer a new perspective on airmindedness by shifting the attention to lighter-than-air flight. Existing studies on the topic overwhelmingly focus on airplanes.<sup>35</sup> The bias is partly due to airplanes now being the dominant form of aerial transportation and to our obsession with new inventions—the Wright brothers' flights over Kitty Hawk are ingrained in our collective imaginary as a foundational moment of modern technological society. At the same time, there are numerous works about ballooning in the early modern period that unpack the complex relationships between the new technology, Enlightenment practices, a growing public sphere, new political attitudes, and an emerging consumer culture.<sup>36</sup> The abundance of studies on the nascent years of the airplane at the beginning of the twentieth century and the first years of ballooning at the end of the eighteenth century reflects a telling parallelism. We are excited by origin stories. But by focusing on origins, we tend to emphasize newness and produce narratives of rupture. *Ascending Republic* responds to Nathalie Roseau and Marie Thébaud-Sorger's call to trace continuities in the longer history of flight and argues that a modern form of airmindedness coalesced in France long before the *Flyer* flew above the dunes of Kitty Hawk.<sup>37</sup> Although heavier-than-air flight ushered in a new era of transportation, it was not *sui generis*—it drew from practices and representations preceding the Wrights' feat. Turning our sights to the decades before 1903 brings into sharp relief the continuities between lighter-than-air and heavier-than-air flight, revealing how cultural practices persevere and translate from one technology to another.

According to the historian Robert Wohl, when the airplane made its public debut, France immediately became known "as the 'winged nation' par excellence."<sup>38</sup> But identities do not emerge fully formed—they are always under construction and being negotiated. This brings into question certain

assumptions. Charles Gibbs-Smith, an early doyen of aviation history, argued that between Otto Lilienthal's death in 1896 and news of the Wrights' experiments in 1903, aviation in Europe was at its nadir, and he blamed this dismal situation on enthusiasm for lighter-than-air flight.<sup>39</sup> But Gibbs-Smith's conclusions reflect an earlier, internalist approach to the history of technology that focused on technical factors.<sup>40</sup> By taking a more contextual approach, it should become evident that far from distracting people from the heavier-than-air alternative (which only emerges triumphant if we put on our teleological glasses), enthusiasm for lighter-than-air flight helped foster the institutions and the culture that enabled France to emerge as the so-called "winged nation."

What then were the distinctive elements of modern French airmindedness cultivated through ballooning? Based on extensive research in the popular press and previously unexplored archives, I argue that French airmindedness was weaved together through four different but interrelated strands: sacrificial patriotism, aristocratic modernity, colonial anxiety, and technological cosmopolitanism. The sources I analyze run the gamut of genres—organization reports, government documents, *faits divers*, paintings, novels, scientific tomes, letters, and more. The eclecticism is deliberate, for I want to trace how airmindedness permeated different strata of society. As studies on the social construction of technology show, what a particular technology means changes according to the interest group engaging with it and the context it is situated in.<sup>41</sup> The balloon was embraced enthusiastically by progressive republican savants, who saw in it a path to regenerate French science and republican culture following the Franco-Prussian War debacle. But it was also embraced by conservative aristocrats, who appropriated ballooning as a practice through which they could signal their own distinctive role in the construction of French modernity. The pursuit of lighter-than-air flight could reveal deep colonial anxieties, as it did when it was imagined as a tool to manage France's expanding empire in Africa and Indochina. But it could also express an optimistic sense of technology-driven cosmopolitanism, as it did through the transatlantic celebrity of Alberto Santos-Dumont. Because airmindedness emerges from the confluence of aeronautical developments and wider sociocultural trends, I hope that my investigation into each of these strands (sacrificial patriotism, aristocratic modernity, colonial anxiety, and technological cosmopolitanism) might be of use to historians seeking to explain developments in other spheres of nineteenth-century France.

In summary, the ballooning revival's intensity was only possible because it tapped into several deep currents that shaped Third Republic France—from

fears of national decline and contested class transformations to concerns regarding an expanding empire and ambitions to preserve Paris as a global beacon of progress. The latent and explicit tensions between the different strands that constituted French airmindedness are precisely what allowed it to reach various sectors of French society and persist relatively unchanged even following the advent of the airplane. In that sense, this book is also a genealogy of early aviation culture, revealing how France became the preeminent “winged nation” only because it had already become the quintessential floating nation.



BREATHING NEW AIR INTO THE BALLOON



## A BALLOON'S-EYE VIEW OF THE NINETEENTH CENTURY

To understand the French ballooning revival in the late nineteenth century, we must first grasp how the technology fared from its invention in 1783 until the late 1860s. This chapter surveys that period, exploring the historical narrative Third Republic aeronauts constructed to legitimize their ballooning practices while also highlighting elements that destabilize that narrative. The years following the balloon's appearance in the late eighteenth century were marked by what became a common phenomenon with inventions in the modern era: hopeful expectations that a new technology would change the world followed by disappointment when that anticipatory vision failed to materialize. To justify their own mission, Third Republic aeronauts would go on to develop explanations for the lack of progress in ballooning—in particular, for the failure to find a way to put them into practical use.

The balloon initially drew the attention of both pre-revolutionary and revolutionary scientific and political authorities. But the French state's engagement with the technology did not last long. Because balloons remained at the mercy of the winds, by the early nineteenth century the technology had fallen out of favor with "official" science and into the hands of entertainers—many of them women. Aeronauts in the early Third Republic interpreted this development as a decline in France's aeronautical potential, but they did so through ideological lenses, seeking to disassociate themselves from the ballooning practices conducted under France's monarchical and imperial regimes. Rather than just reproducing the republican narrative, my survey in this chapter highlights how the entertainers dismissed by Third Republic aeronauts (who called for a more scientific—and therefore masculine—approach to ballooning) were key in ensuring the survival of France's rich aeronautical tradition. In other words, what republicans framed as a decline can also be seen as the resilient preservation of a practice under adverse conditions.

Nevertheless, following a brief utopian interlude near the 1848 revolution, the image of ballooning had reached a nadir by the early 1860s. In

response, the irascible photographer Nadar sought to shift attention away from lighter-than-air aspirations and toward heavier-than-air solutions. His movement received enthusiastic press coverage, but his polemical ways backfired. Ironically, instead of fostering an awakening in heavier-than-air experiments, Nadar helped cultivate a renewed interest in balloons that would later be capitalized on during the Franco-Prussian War. But before diving into the combative universe of mid-nineteenth-century Parisian aeronautical polemics, let us first travel to the years preceding the French Revolution—to a provincial town about 440 kilometers southeast of Paris.

1 THE BALLOON TAKES FLIGHT: MONTGOLFIÈRES,  
CHARLIÈRES, AND BALLOONOMANIA

*Annonay, 4 June 1783.* In this small town near Lyon, a crowd undaunted by steady rain gathered in the Place des Cordeliers to watch workers build a scaffold and suspend a large bag of sackcloth between two poles. On the arrival of the Vivarais Estates General (a regional assembly composed of representatives from the nobility and the third estate), the brothers Joseph and Étienne Montgolfier placed a brazier beneath the bag's gaped bottom. The bag swelled and acquired the shape of a globe, and Étienne ordered its release. It shot up about 975 meters and winds carried it to a nearby vineyard, where the brazier tipped over on landfall and set fire to the fabric. Still, the demonstration was deemed a success, and the Montgolfier brothers requested that the Vivarais Estates record an approbation of the experiment. The report then made its way to the Academy of Sciences, which appointed a commission to study the matter.<sup>1</sup>

Meanwhile, the Montgolfiers faced competition from Paris's most popular lecturer on physics: Jacques-Alexandre Charles. In his *cabinet de physique* (a kind of public laboratory) in the Place des Victoires, Charles performed spectacles with the "flammable air" identified by the English chemist Henry Cavendish in 1776. Instead of hot air, his balloon relied on hydrogen—the name later attributed to the substance by Antoine Lavoisier in 1787. On 27 August 1783, thousands of Parisians converged at the Champ-de-Mars to observe the ascent of Charles's balloon, and a competition between the two systems ensued. Some differentiated between them by calling hot-air balloons *montgolfières* and hydrogen balloons *charlières*. The fact that the former neologism stuck while the latter disappeared from usage is indicative of the

brothers' success in establishing their priority as inventors, even if Charles's method became the norm in nineteenth-century ballooning (albeit usually not with hydrogen but with coal gas intended for urban lighting).<sup>2</sup>

These two ascents were soon followed by a series of firsts. On 19 September, the first living beings (a sheep, a duck, and a rooster) became airborne aboard a montgolfière released from Versailles. On 21 November, Jean-François Pilâtre de Rozier and the Marquis François d'Arlandes became the first humans to fly in an untethered balloon when they ascended aboard a montgolfière from the Bois de Boulogne. Ten days later, Charles and Nicholas-Louis Robert made the first manned flight in a charlière from the Jardin des Tuileries. This slew of firsts culminated on 7 January 1785, when Jean-Pierre Blanchard and the American John Jeffries flew from Dover to Pas-de-Calais aboard a charlière—the first aerial crossing of the English Channel. Five months later, Pilâtre de Rozier and Pierre Romain became the first ballooning fatalities when their montgolfière-charlière hybrid crashed as they tried to fly the reverse route.

As these events unfolded, ballooning became all the rage in France (figure 1.1). Ascents in Paris drew as much as half the city's population, and 49 percent of all articles published under the heading "mathematics, physics, natural history" in the 1784 issues of the *Journal général de France* concerned ballooning.<sup>3</sup> The topic did not stay restricted to those rubrics, making its way into poems, plays, and illustrations. The balloon also became a prevalent motif in clothing, furniture, clocks, ceramics, and even haircuts, thus embedding itself in the eighteenth century's burgeoning consumer culture.<sup>4</sup> As enthusiasm spread, the expression "*folie des ballons*" became commonplace, while the English writer Horace Walpole made references to "balloonomania."<sup>5</sup> This obsession is explained by what the technology seemed to promise. The dream of flight had haunted humanity for millennia; everyone made predictions about how balloons would revolutionize commerce and warfare, especially once they became steerable. As the historian Marie Thébaud-Sorger explains, "It was precisely the discovery's incompleteness that opened a prospective field that had to meet the needs of public utility."<sup>6</sup>

Despite the generalized sense of excitement, responses to the new technology were qualitatively different depending on national scientific cultures. In Britain, men of science were hesitant to associate themselves with the new technology, fearing that it was an impulsive fad too vulgar for the standards of the Royal Society of London.<sup>7</sup> Albion's disdain also stemmed



Figure 1.1

A satirical print depicting an excited crowd trying to get a better view of Charles and Robert's balloon ascent from the Jardin des Tuileries. The exposed buttocks of women climbing over the wall signal at anxieties that the balloon was little more than a vulgar form of entertainment. Anonymous, *Dédié aux amateurs de physique*, 1783. Source: gallica.bnf.fr / Bibliothèque nationale de France.

from anxieties over the threat flight posed to Britain's natural defenses as an island (anxieties that would echo in the early twentieth century upon the advent of the airplane).<sup>8</sup> In France, though, the balloon continuously floated through liminal spaces, receiving support from the monarchy and drawing the interest of popular audiences and the Academy of Sciences alike. The latter directed an immense amount of energy to studying balloons, establishing two commissions dedicated to improving the new technology and finding ways to steer it against the wind.<sup>9</sup>

Still, official enthusiasm was short-lived due to a lack of progress in finding practical uses for the new technology. Discussion of balloons in the Academy of Sciences peaked in early 1784, slumped dramatically after June

of that same year, and essentially disappeared by mid-1785. The balloon commissions stopped convening, living a ghostly existence for much of the nineteenth century—something Third Republic aeronauts never failed to criticize. Finally, authorities grew concerned with the risks associated with ascents, from the dangers of fires ignited by montgolfières to the riots sparked by failed ascents. Ordinances on ballooning popped up everywhere, and “balloomania” ended almost as quickly as it began.<sup>10</sup>

## 2 THE REVOLUTIONARY INTERLUDE: BALLOONING IN THE SERVICE OF THE FIRST REPUBLIC

The balloon entered the Revolutionary period burdened by an ambiguous status. Although it carried a hefty symbolic charge of being a product of French genius, it was also a product of what came to be known as the Old Regime. The most generous sponsors of ballooning had been at the head of the old guard: people like the King and the duc de Chartres. It is not surprising, then, that the revolutionary Jean-Paul Marat, a vociferous critic of the Old Regime, attacked early aeronauts for being entertainers who took bread from the mouths of the poor.<sup>11</sup> Aeronauts in the late nineteenth century would go on to conveniently gloss over these political tensions to frame the balloon as a republican technology.

While Marat was critical of ballooning spectacles, other revolutionary leaders appropriated them for their own political gain. They methodically organized revolutionary festivals to celebrate (and manufacture) national unity, introducing balloon ascents with the hopes that the spectacle would produce a moment of transcendence.<sup>12</sup> The crowd that observed André-Jacques Garnerin take off on 30 May 1790—the first time a French flag with the tricolor design was waved high in the sky—cheered him on with cries of “Vive la Nation et ses représentants Vive le Roy!” A year later, the festival commemorating the King’s acceptance of the 1791 Constitution featured an aeronaut who ascended in a balloon decorated with allegorical figures of liberty, love of country, France, and the law (he also tossed out copies of the new constitution as he flew above spectators).<sup>13</sup>

Just as audacious was France’s experiment with military balloons. The Revolution ushered scores of men of science into political leadership.<sup>14</sup> The idea of using balloons for military observations was presented to the National Convention in 1793 by Gaspard Monge. While the promising

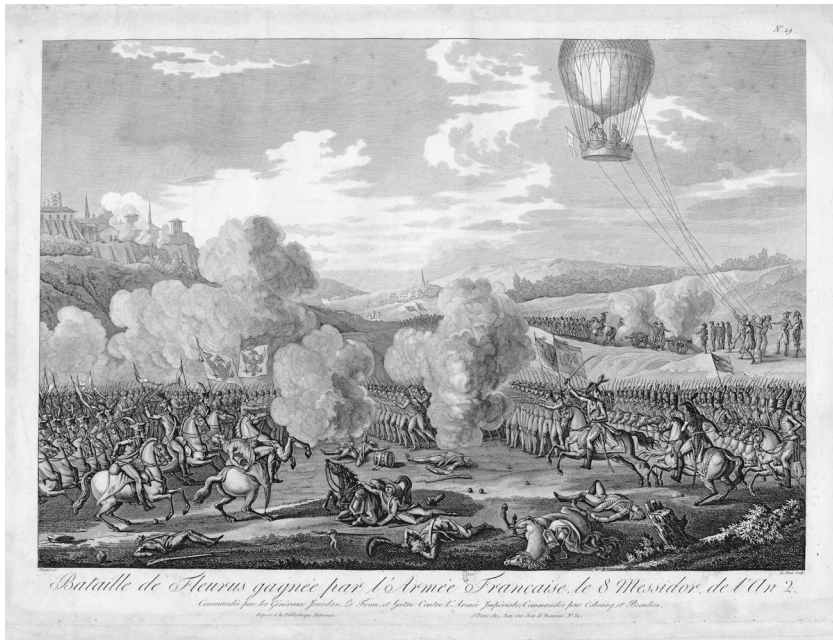


Figure 1.2

Pierre-Adrien Le Beau and Thomas-Charles Naudet, *Bataille de Fleurus gagnée par l'Armée Française le 8 Messidor de l'An 2*, ca. 1798–1802. Source: gallica.bnf.fr / Bibliothèque nationale de France.

mathematician's career had stagnated under the Old Regime because of his non-aristocratic background, he became minister of the Navy in 1792. Following up on Monge's proposal, the Committee of Public Safety (CPS) created a *Compagnie d'Aérostiers* in 1794. Headed by the chemist Jean-Marie-Joseph Coutelle, the company joined the Battle of Fleurus, where for the first time a balloon saw military combat (figure 1.2). While reports on the technology's utility were inconclusive, the CPS followed suit by creating a second company. It also established an *École Nationale Aérostatique* in Meudon (just south of Paris) and placed the chemist and painter Nicolas-Jacques Conté at its head. The balloon was met with resistance from a military hierarchy skeptical of innovation, but with the support of revolutionary leaders like Lazare Carnot, by the end of 1795 France's two ballooning companies were backed by a force of 120 men.<sup>15</sup>

The position of military ballooning in the ensuing decade remained uncertain. According to some scholars, the school in Meudon acquired more

autonomy during the final years of the French Revolution. While its first class had been a hodgepodge of questionable recruits, the school started drawing from the prestigious *École Polytechnique*—recruits who developed improvements in the quality and varnishing of balloon envelopes and in the production of hydrogen.<sup>16</sup> Although there was debate regarding the usefulness of the information gathered by balloons in the battlefield, there was a consensus that the globes served as a symbolic expression of power—a psychological weapon against enemy morale.<sup>17</sup> Even so, other historians argue that the convergence between men of science and political leadership decreased toward the end of the French Revolution, which produced a decline in political and financial support for military ballooning.<sup>18</sup> Indeed, the momentary de-escalation of conflict after 1795 made authorities question the need to maintain the balloon companies and the school in Meudon. However, the Minister of Interior defended their preservation offering the creative historical argument that the science of ballooning was “a child of the Revolution, the history of which is linked to the success of the Republic and which can be truly called the art of the French.”<sup>19</sup> This kind of ahistorical reframing of the early history of ballooning as a triumph of the First Republic would become standard fare during the Third Republic.

Still, because of the Revolutionary Wars and internal conflict between revolutionaries in France, by 1799 those who championed observational balloons in the military were scattered away from Paris. Conté and Coutelle were in Egypt, while Carnot was exiled in Geneva. Without these men to exert their influence, military conservatism prevailed. On 21 March, the government disbanded the balloon companies and closed the school in Meudon. Three years later, with France now essentially under Napoléon's control, the head of the Minister of War's Sixth Division published an article in the *Journal de l'École Polytechnique* urging the government to revamp research on the use of balloons for topographical surveys and military observations. Bonaparte did not heed his counsel. The Corsican likely concluded that the bulky apparatus was inappropriate for his swift style of warfare.<sup>20</sup> With that, the Revolution's experiment with military balloons came to an end.

Following the disbandment of the military ballooning companies and the closure of the school, the French state retreated from aeronautical matters. According to documents in the French National Archives, the various regimes during the first half of the nineteenth century received at least 137 proposals from individuals claiming to have designed machines capable of flight. A

commission occasionally examined these, but the response was always the same: the state could not offer help.<sup>21</sup> Anyone who sought to conduct an experiment had to finance it themselves, and the path usually chosen was that of public subscriptions—a process that would severely damage the balloon's status. Following the collapse of the Second Empire, republican aeronauts would hold Napoléon and his legacy responsible for what they saw as a decline of French ballooning. An apocryphal anecdote frequently found in the histories they published was that Napoléon resented the technology after his coronation ceremony balloon made it all the way to Italy and crashed into a statue of Nero—a bad omen since it associated the Corsican with the Emperor who supposedly burned down Rome.

### 3 FESTIVITIES ABOVE SCIENCE: TRAVELING ENTERTAINERS AND AUDACIOUS SPECULATORS

On 24 August 1804, the *académiciens* Louis Joseph Gay-Lussac and Jean-Baptiste Biot took off from Paris with the intent of studying the atmosphere, reaching an impressive height of 4,000 meters. Less than a month later, Gay-Lussac made a solo scientific ascent, reaching a record-breaking 7,106 meters.<sup>22</sup> These efforts to incite the sustained use of balloons for atmospheric research fell on deaf ears, given the status of ballooning in scientific circles. But, even as official science became disenchanted with balloons, ascents proliferated in the patchwork of urban festivals that dotted the European landscape.

In the early nineteenth century, the locus of aeronautical practices moved to marginal figures—namely, entrepreneurial aeronauts who traveled from town to town to entertain crowds at fairs and festivals. The most famous of these professionals was Jean-Pierre Blanchard, who introduced ballooning to thousands in Europe and the Americas. Political and business leaders requested his services because they judged ascents to be an innovative way to display stately or municipal power while simultaneously entertaining growing urban communities.<sup>23</sup> To take one example, the Magistrates of Hanover wrote Blanchard in 1788 after hearing that he was planning to tour Lower Saxony. In a clear sign of municipal competition, they tried to convince him to stop by their city before heading to Brunswick.<sup>24</sup> By his death in 1809, Blanchard had made more than sixty ascents across Europe and the Americas.<sup>25</sup>

Simultaneously, the structures for a more institutionalized Parisian ballooning scene were emerging. Pleasure gardens that proliferated following

the most violent years of the French Revolution turned to ballooning as they competed for elite audiences in search of distraction. Relying on contracts from managers who sought new ways to impress fickle audiences, aeronauts made their ascents increasingly elaborate. In June 1817, Parisians could choose between watching Mademoiselle Garnerin parachute from a balloon at the Jardins Ruggieri or Monsieur Margat ascend while mounting a stag at the Tivoli. By then, about a dozen establishments were hiring aeronauts for their services during the summer. More democratic spaces of urban entertainment also emerged, with ballooning being introduced into the circuses at the Champ-de-Mars and the Hippodrome.<sup>26</sup>

The first half of the nineteenth century was marked not only by an increase in the number of people who got to watch ascents but also by a growth in the number of people who went airborne. At least 173 individuals made ascents between 1783 and 1815, a number that increased to 386 between 1816 and 1848. While their background remained diverse, the outlines of a professional class also emerged. Between 1783 and 1802, only 4.76 percent of the 126 people who made ascents could be considered professional aeronauts. That share grew to 11.55 percent of 433 in the years between 1803 and 1848, with professionals being responsible for almost 80 percent of all ascents made during the period.<sup>27</sup>

A defining feature of this aeronautical professional class was the visible role played by women. Not a single woman featured among the six aeronauts working between 1783 and 1802, but from 1803 to 1848 they made up twenty of the fifty new professionals.<sup>28</sup> This relative gender balance is explained by ballooning becoming a family affair dominated by dynasties that jealously passed on their *savoir faire* to younger generations. Also, much like the circus, being an aeronaut required an itinerant lifestyle with a family often trailing along. Famous female aeronauts included Sophie Blanchard (Jean-Pierre Blanchard's wife), Jeanne and Élisabeth Garnerin (wife and niece of André-Jacques Garnerin), and Louise Poitevin (Jean-Eugène Poitevin's wife). Madame Blanchard, as Sophie was known, was the most celebrated (figure 1.3). She made her first ascent with her husband in 1804 and continued practicing on her own after his death in 1809. She was hired to make ascents commemorating Napoléon's marriage to Archduchess Marie Louise in 1810, the birth of the Imperial Prince in 1811, and Louis XVIII's entrance into Paris in 1814. Blanchard made more than sixty flights before dying on 6 July 1819, when fireworks ignited during a spectacle at Tivoli engulfed her balloon in flames.<sup>29</sup>



Figure 1.3  
 Luigi Rados, *M.S. Blanchard*, 1811. Library of Congress, Prints & Photographs  
 Division, LC-DIG-ppmsca-02180.

The nineteenth century's most prominent ballooning dynasty were the Godards, with more than twenty members taking up the practice.<sup>30</sup> Eugène, its founder, was born in Paris in 1827 to a family of masons. He studied at the Conservatoire des Arts et Métiers and worked and briefly worked as an architect. But the lure of ballooning proved to be too strong, and at nineteen he contravened his family's expectations and started making ascents. Eugène quickly rose to fame and became a staple at the Hippodrome, one of Paris's most popular entertainment venues. In the mid-1850s, he toured extensively

across Europe and the Americas. While he was away, his sons Louis and Jules associated under the name Godard Frères, taking over the ascents in Paris. In 1859, after returning from his travels, Eugène pitched the use of military balloons to Napoléon III. They were haphazardly mobilized for the Italian Campaign without much to show, but he nevertheless acquired the informal title of "Aéronaute de l'Empereur."<sup>31</sup> Eugène's ultimate significance was not in his dealings with the French state or in setting up institutions, but in cultivating a proud and enduring aeronautical practice that introduced many influential people to ballooning. For instance, he conducted Jules Verne's first and only ascent. In his account of the journey, Verne praised the skills the aeronaut had acquired through his more than one thousand ascents, writing that "a simple aerial promenade, and even a long aerostatic journey, never presents any danger under the direction of Eugène Godard."<sup>32</sup>

Jean-Eugène and Louise Poitevin were also active during the Second Empire, advertising aeronautical spectacles in the Champ-de-Mars that featured equestrian ascents.<sup>33</sup> The picturesque nature of these ascents drew interest, and the Poitevins toured all over Europe making animal flights (they also drew criticism from a budding animal welfare movement). Like Madame Blanchard, Louise continued practicing following her husband's death in 1858. She made 571 ascents throughout her career, the last one in Copenhagen in 1874. Louise also trained neophyte aeronauts, like her son Adrien Duté-Poitevin and son-in-law Théodore Sivel. Duté-Poitevin became the only civilian employed at the aeronautical laboratory the Third Republic reestablished at Chalais-Meudon, where he manufactured balloons and trained the regime's first batch of military aeronauts.<sup>34</sup> Sivel, as we will see in chapter 3, became one of the Third Republic's first scientific martyrs after dying in a high-altitude ascent. These entertainers, then, were critical in preserving ballooning practices and passing them on to younger generations who would enable the late nineteenth-century ballooning revival.

Yet, some thought the ascents made by the likes of the Godards and Poitevins debased ballooning. Such was the case of Jules-François Dupuis-Delcourt, the first aeronaut to systematically record the history of ballooning and to try to organize the practice through formal association. "No, that is not ballooning," he wrote in 1850, "it is rather . . . a dangerous acrobatic exercise."<sup>35</sup> Ironically, Dupuis-Delcourt himself started off as an entertainer. In 1824, a crowd saw him take off from the Champ-de-Mars with a fleet of five balloons, while in 1827 he rented the Tivoli for an ascent, hoping to sell

enough tickets to make a profit.<sup>36</sup> He inhabited the persistent liminal world between science and entertainment, offering scientific and historical courses on ballooning at the Athénée Royal and collecting any aeronautical artifact he could get his hands on.<sup>37</sup>

Dupuis-Delcourt became a doyen to aeronauts everywhere, and in 1852 he founded the Société Aérostatique et Météorologique de France—the world's first aeronautical society. As he saw it, aeronautics was in its infancy and required the efforts of many to usher it into maturity. He planned for the Société Aérostatique to feature a “museum where one will find the instruments and models of the various proposed or experimented machines, and a general collection . . . on the history and the practice of ballooning.” The institution would then help those who were just beginning their career avoid “the costly and dangerous repetition of previous trials.”<sup>38</sup> In other words, the goal was to render research cumulative rather than redundant.

As we will see in chapter 3, the Société Aérostatique struggled to survive, and the French state showed no interest in Dupuis-Delcourt's efforts. After he died in 1864, his widow tried selling his collection of more than 1,500 artifacts to the Conservatoire des Arts et Métiers. The director dismissed the offer, writing that “the devices are organized with no other connection but the mania of a collector.”<sup>39</sup> But even if Dupuis-Delcourt failed in his mission, his efforts were an important prelude to the revival of scientific ballooning during the early Third Republic. His collection eventually fell into the hands of Gaston Tissandier, one of the central figures in the revival, and aeronauts relied on it to construct a patriotic history of ballooning. They also emulated his associational impulses.

While scientific ballooning stagnated in France, the British stepped into the limelight. In the 1850s and 1860s, the British Association for the Advancement of Science, which presented itself as a progressive alternative to the stodgy Royal Society, funded numerous scientific ascents.<sup>40</sup> In 1866, the meteorologist James Glaisher helped establish the Aeronautical Society of Great Britain, which went on to organize a small exhibition at the Crystal Palace. These initiatives across the English Channel never acquired significant momentum, but they sparked a renewed interest in scientific ballooning in France, with people like Tissandier, Camille Flammarion, and Wilfrid de Fonvielle taking the reins from Glaisher and infusing the practice with a new sense of purpose for the French. But all of that was still some years to come, and in the decades leading up to it, the French sentiment toward

lighter-than-air flight would experience a brief utopian moment followed by a profound sense of disillusionment.

#### 4 THE UTOPIAN MACHINE: LIGHTER-THAN-AIR FLIGHT AND ROMANTIC SOCIALISM

During the first five decades of the nineteenth century, the balloon fell out of favor with official science and became associated primarily with entertainers. But lighter-than-air flight continued to draw attention from other sectors of the population, particularly those drawn to utopian ideologies. The search for a solution to the problem of flight thus exited the stuffy halls of the Academy of Sciences and found a nurturing space upon the workbenches of humble artisans who sacrificed sleep for candlelit nights sketching airship designs and imagining a better future.<sup>41</sup>

Post-Napoleonic Paris was a milieu effervescing with utopian ideologies—what scholars today refer to as “romantic socialism.”<sup>42</sup> Despite their significant differences, the various currents of Fourierism, Saint-Simonianism, and Icarianism shared some elective affinities. Early-modern utopians imagined ahistorical communities situated within isolated environments, such as islands. But this changed after the French Revolution, with utopias becoming more akin to “euchronias”—something that could come to life in the future. In other words, when Thomas More coined the term “utopia” in his 1516 satire, it meant *good-place/no-place*, but by the early nineteenth century, the term had acquired the new meaning of *good-place/future-place*. Furthermore, whereas their antecedents tended to construct static and isolated communities, nineteenth-century utopians imagined dynamic and mobile societies that required networks of movement, exchange, and communication.<sup>43</sup>

Ideas about flight also changed with this shift. In utopian writings before the nineteenth century, flight was a form of locomotion that allowed the protagonist to reach a new world. Take Cyrano de Bergerac's *Histoire comique des états et empires de la lune* (1657), where the protagonist flies to the moon and discovers a new civilization, which, in a manner typical to the “extraordinary voyages” genre, serves as a distorted mirror to satirize Cyrano's own society. But the balloon's invention in 1783 had shown human flight to be possible and instigated people's imaginations regarding its transformative possibilities. Flight stopped being imagined as just a kind of portal into a new world and started to be thought of as a constitutive technology for social reform. Flight

was more than just a way to *get to* utopia; it would help *make* utopia. For instance, in 1839–1840, Étienne Cabet published *Voyage en Icarie*, a novel-manifesto that marked the founding of the Icarian movement that drew the interest of artisanal workers suffering with the emergence of industrial capitalism. The book depicts an idyllic centrally planned society where the abolition of private property meant that a worker and his family could reside in a single home, children could go to school instead of work, and the family did not have to worry about being taken advantage of by unscrupulous merchants. In this utopia, steerable balloons were the fastest, most pleasant, and safest mode of transportation and trade, and the government did not hold back on providing savants with the necessary resources to develop them.<sup>44</sup>

According to one contemporary writer, if ballooning had fallen into discredit amid the circles of official science, there were now “men strengthened in their confidence on the power of the human mind guided by the study of nature [who] pursued with a kind of fury a science that for them seemed to contain the seeds of an incommensurable future.”<sup>45</sup> Influenced by the romantic socialist infatuation with technologies of mobility, lacking official support, and with little money of their own, the men behind mid-century projects to steer balloons usually relied on subscriptions to finance their experiments. And, to draw public attention, these subscriptions were defined by bombastic rhetoric. Their authors not only promised that they had found the solution to flight but also claimed that their devices would radically transform society.

An exemplary case of this phenomenon was Ernest Pétin. A milliner with roots in Picardy, Pétin specialized in cotton bonnets and managed a small shop at 34 rue Rambuteau, in the working-class neighborhood just east of Les Halles that was the center of the 1832 rebellion Victor Hugo depicted in *Les Misérables*. But if someone were to walk past Pétin’s shop in the late 1840s, they would have been surprised by the curious apparatus displayed among the bonnets at the window: a sixty-centimeter wooden frame featuring inclined planes, propellers, rudders, and parachutes. Attached to the top of the frame were four red spheres. A label read: “Balloon steering, Pétin system.”<sup>46</sup> The strangely designed airship, which Pétin called a “locomotive aérostatique,” was to become the talk of town (figure 1.4).

Embedded in Paris’s rich romantic socialist milieu, Pétin spent years designing and redesigning an airship that he believed would help create a better world. The design underwent several changes throughout the years, but suffice it to say that it was to be massive. An early description claimed it

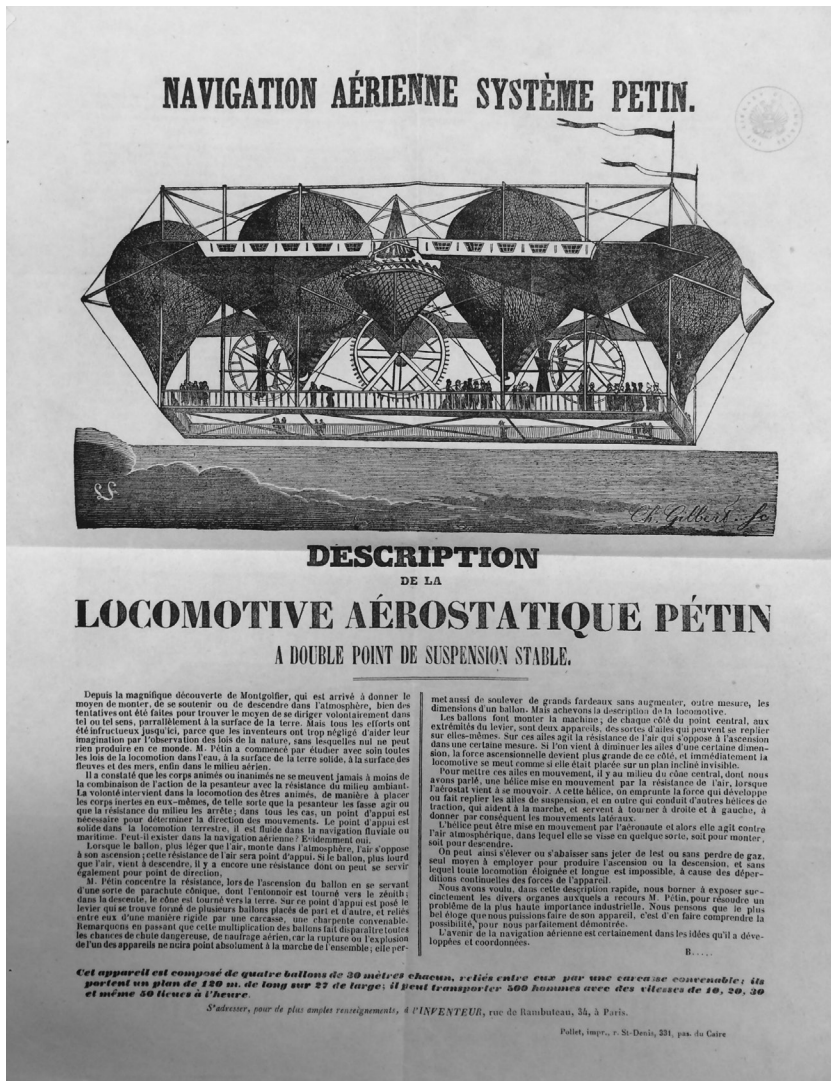


Figure 1.4  
A pamphlet describing Ernest Pétilin's lighter-than-air system. Library of Congress, Tissandier Collection.

would feature four 30-meter-wide balloons connected to a 120-meter-long and 27-meter-wide frame, which could transport 500 people at speeds up to 200 kilometers per hour.<sup>47</sup> Pétin calculated that the project would demand 100,000 francs and opened a national subscription. He then embarked in a promotional campaign, first presenting his project to Fourierist salons all over Paris.<sup>48</sup> He then secured a room at the Palais-National (the rechristened Palais-Royal), where every day at 2 P.M. he offered free lectures. These became so popular that authorities eventually granted him the building's largest room.<sup>49</sup> He also charged people fifty centimes to see the work in progress in his construction yard at 46 Rue Marbeuf, at the corner of the Champs-Élysées. As he manufactured the balloons for his airship, Pétin left them at the disposal of Jean-Eugène Poitevin, who used them to make his audacious equine ascents (purportedly to test the balloon's lift but also to make a buck).<sup>50</sup>

Pétin's project was covered extensively by *La Démocratie Pacifique*, France's most prominent Fourierist newspaper. Victor Meunier, a prolific science writer whose mission to popularize science was shaped by his militant socialism, also became an ardent champion. Utopian aspirations were at an all-time high with the establishment of the Second Republic in 1848, and Meunier hoped the government would embrace aeronautical research to help spread its emancipatory ideals beyond France's borders. He even drafted a decree that would set a deadline for the solution to the problem of flight, provide a provisional credit to finance the research, and establish a commission to guide the initiative.<sup>51</sup> Other prominent Fourierists, like the pseudonymous commentator Perreymond, embraced the project as "the most formidable instrument of the joint action of humanity."<sup>52</sup> Discussion of Pétin's airship was not limited to the socialist press. Théophile Gautier, a writer who usually did not have much to say about technology, felt the need to extend himself beyond the art and theater columns that he wrote for *La Presse*. He argued that while other men were preoccupied with frivolous political questions (like whether France should be a republic or a monarchy), Pétin had realized that "the face of the world will be changed by the great innovations of modern industry."<sup>53</sup> The locomotive aérostatique also appeared in songs and was satirized in theater, while the worker-poet François Barrillot published a poem titled "Icare vengé par Pétin," where he framed the pursuit of flight as a struggle between human reason and the tyrannical forces of religion and monarchy.<sup>54</sup>

Although it caused much hubbub, nothing ever came from Pétin's project. On 18 September 1851, he announced in *La Presse* that he would have to

pursue his invention abroad. He claimed that the space the government had granted him to demonstrate his airship was not large enough.<sup>55</sup> In search of new subscribers, Pétin left for England, followed by the United States and then Mexico, where people showed little interest in his schemes (a Mexican newspaper called him “a liar, a poseur of the first order”).<sup>56</sup> Even so, Pétin never turned a profit from his subscriptions, for he earnestly believed in his project. He died destitute in 1878, living his final years in the charity of a brother who prohibited him from busying himself with balloons.<sup>57</sup>

## 5 THE INCAPACITATED MACHINE: THE BALLOON'S NADIR

Romantic socialism peaked during the Second Republic, but that moment came to an end when an opportunistic Louis-Napoléon Bonaparte (the first Napoléon's nephew) outwitted a divided legislature and solidified power, culminating in the 1852 establishment of the Second Empire. A brutal crackdown on left-wing politics followed. The regime instituted censorship and repression on a scale that had not been seen in decades, driving most socialists into exile. The garden of utopias that had flourished in Paris during the previous decades quickly withered.

France's experience with lighter-than-air flight offers a remarkable parallel to the socio-political story. The most public effort to find a solution to navigating the airs during the Second Empire was Henri Giffard's. Born in 1825, Giffard was a son of the dawning industrial era. He trained as an engineer and eventually made a fortune by inventing the steam injector. In August 1851, he took out a patent for “the implementation of steam in aerial navigation,” thinking that the more powerful engine allied with the ellipsoid envelope would effectively fight wind resistance.<sup>58</sup> Unlike Pétin, Giffard was wealthy enough not to rely on a public subscription, and he built a steam-powered airship with help from Eugène Godard. On 24 September 1852, it flew about 27 kilometers from Paris to Élancourt. But the journey was essentially the airship, powered by a meek 3-hp engine, being carried by the wind.<sup>59</sup> Giffard then made some adjustments and conducted another experiment in 1855, after which he did not make any more attempts. This might be because the 1855 experiment literally ended with a bang, with the airship's envelope exploding. Giffard did not abandon aeronautics completely. He kept close relations with future aeronauts and developed the large, tethered balloons that rose above Paris during the 1867 and 1878 Universal Expositions. But

Giffard's eyesight started failing him in his fifties, and he became increasingly reclusive as he went blind. He was 57 when he killed himself.<sup>60</sup>

Giffard's experiments were certainly more successful than Pétin's but, paradoxically, the public commentary was much more muted. Some of this had to do with the fact that the romantic socialists had failed to give birth to a new world, but it was also a reflection of the repressive situation in France after Louis-Napoléon's coup d'état. Public disillusionment with lighter-than-air flight was further aggravated by high-profile failures. In the mid-1860s, Émile Delamarne made headlines claiming to have found the solution to steering balloons. He conducted a couple of demonstrations in 1865 and 1866, but they were pathetic failures. Describing the second experiment, a journalist wrote how "the balloon looked like a giant potato wearing a dressing gown, swinging with the grace of an elephant dancing on a rope."<sup>61</sup> Whether Delamarne believed in his project or was nothing more than a swindler is beside the point—in the tribunal of public opinion, he came off as the latter.

Design choices also damaged the balloon's image. The atmosphere being just another ocean of fluid, people saw fish as useful analogs while trying to find ways to steer through the air. In the late 1840s, the Sanson father and son duo issued a subscription for a system that took this analogy to the extreme (figure 1.5).<sup>62</sup> Meanwhile, during the 1860s, Camille Vert drew some attention with the small fish-like model that he baptized *Le Poisson-Volant*.<sup>63</sup> As an early historian of aeronautics put it, "In general, the fish shape triumphed, and if all the projects had been successful the atmosphere would soon have been transformed into a vast aquarium."<sup>64</sup> The shape of these designs did not bode well for the image of lighter-than-air flight. Caricatures mocked the fishlike balloons—their form being conducive to making associations with foolery, since in France April Fools' Day is known as *poisson d'avril* (figure 1.6).

By the 1860s, lighter-than-air flight inspired little faith in the triumph of man over the winds—let alone utopian progress. The entry for "AÉROSTATION" in the 1860 edition of the *Dictionnaire des inventions et découvertes anciennes et modernes* made this patently clear. It stated that "the art of aerial navigation had not progressed at all" since the balloon's invention. According to the entry, which was especially critical of Pétin, "*In the present state of our mechanical resources, the steering of balloons should be regarded as a problem of impossible solution.*"<sup>65</sup>

An 1862 lithograph by Edouard Manet can be read as conveying the morose state of French ballooning at the time (figure 1.7). Beginning in

**ASSOCIATION SCIENTIFIQUE**  
**POUR LA FONDATION DE LA NAVIGATION AÉRIENNE**  
*Système Sanson père et fils.*



**Huit cents actions à 25 francs,**

PAYABLES, SAVOIR :

Pour chacune, **CINQ FRANCS** en souscrivant : — **DIX FRANCS** un mois après, époque à laquelle les pièces principales du mécanisme devront être établies ; — et **DIX FRANCS** lorsque l'enveloppe aérostatique étant confectionnée, il n'y aura plus qu'à fixer l'époque précise et le lieu des exhibitions et celui des expériences publiques.

A cet effet, tous les souscripteurs d'action seront réunis en assemblée générale afin de créer une Commission de surveillance qui examinera les comptes de dépenses de confection générale de la machine, contrôlera les dépenses et recettes futures, fera les répartitions de dividendes aux actionnaires, et établira le siège définitif de l'Administration.

**DROITS DES ACTIONNAIRES.**

Chaque Action donne droit 1<sup>o</sup> à un huit centième dans la moitié des bénéfices nets (l'autre moitié étant attribuée aux inventeurs), résultant des exhibitions et des huit premières expériences publiques, après lesquelles les inventeurs, en remboursant préalablement les 25 francs de chaque Action, deviendront seuls propriétaires de tout le matériel et de l'exploitation future ; 2<sup>o</sup> droit d'entrée personnelle aux exhibitions et aux dites huit premières expériences publiques. — Cependant, la présente action restera dans les mains du souscripteur, comme TITRE HONORIFIQUE, et recevra une estampille ainsi conçue : Remboursée à M. (le nom) FONDATEUR DE L'AÉRONAUTIQUE.

*N. B.* Les bénéfices de la Société peuvent être extraordinaires, surtout si, comme les inventeurs l'espèrent, on arrivait à établir des lignes de service pour les particuliers et pour le gouvernement, etc. etc. Cependant, ne comptant même que sur la curiosité publique, on peut évaluer ces bénéfices, seulement pour les huit expériences, à 300 fr. par action. En effet, on irait dans toutes les provinces faire des expériences pour lesquelles ne faisant payer que **UN FRANC** d'entrée et ne basant que sur la *rente-septième* partie de la population (Paris seul produirait au moins 500,000 francs), sans compter l'éventualité d'un prix de 100,000 mille francs fondé en Angleterre, et un de 12,000 fr. à Lyon, que la question intéresse pour ses soies; lesquels prix n'ont jamais été remportés. Enfin, et surtout, l'honneur d'avoir contribué à doter le monde d'une science de plus; et la plus éclatante de toutes.

Le bureau de souscription est provisoirement sis à Paris, au **CHALET**.

Figure 1.5

An advertisement for the Sanson steerable balloon, late 1840s. Bibliothèque Historique de la Ville de Paris (Actualités 125).

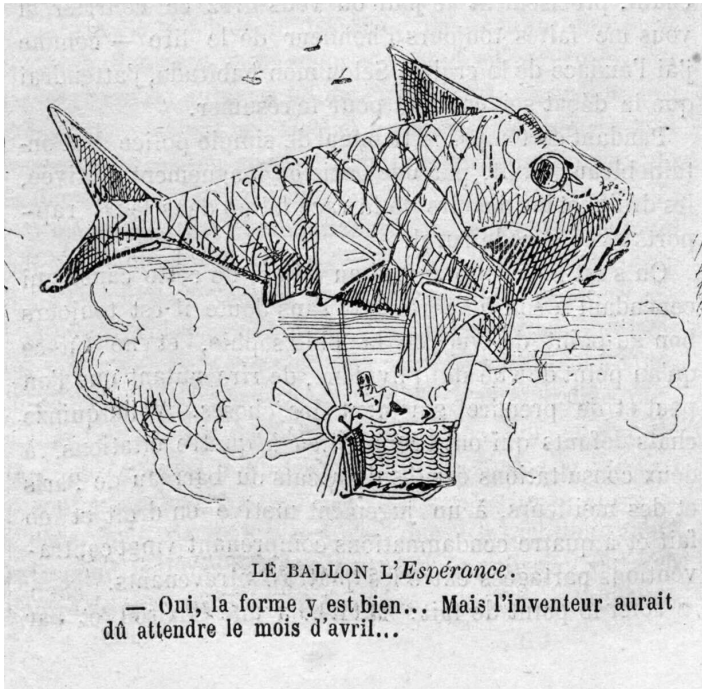


Figure 1.6

A satirical illustration mocking Émile Delamarne's *L'Espérance* with a reference to April Fools' (poisson d'avril). The caption reads: "Yes, the shape is fine . . . But the inventor should have waited until April . . ." *Le Monde illustrée*, 5 August 1865. Source: gallica.bnf.fr / Bibliothèque nationale de France.

1853, an ascent marked every Parisian celebration of the Saint-Napoléon, a Bonapartist holiday grafted onto the Feast of the Assumption.<sup>66</sup> Manet portrayed this propagandist use of ballooning in *Le Ballon*. The piece is an idealized composition, for Manet rearranged the position from where the balloon ascended in the Esplanade des Invalides during the 1862 Fête so that it is aligned symmetrically with the *cul-de-jatte* (legless boy) in the foreground.<sup>67</sup> Art historians have read this deliberate framing through the lens of Manet's staunch republicanism, where the juxtaposition of the balloon with the *cul-de-jatte* ironically comments on the grim reality of the warfare that the celebration of Napoléon III's imperial ambitions obscured via the phantasmagoria of mindless entertainment. Yet, if socio-politically the pairing of the balloon with the legless boy lends itself to a relationship of contrast,

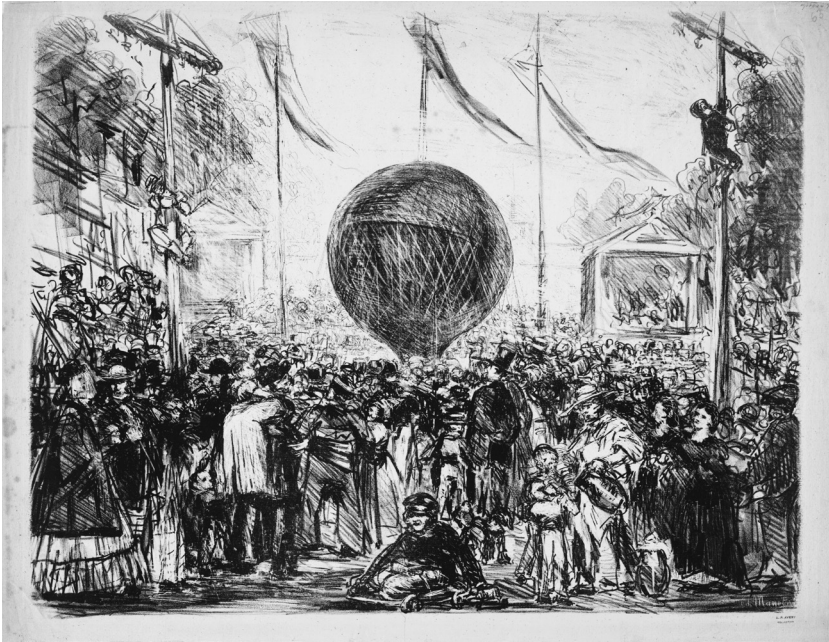


Figure 1.7

Édouard Manet, *Le Ballon*, 1862. The Miriam and Ira D. Wallach Division of Art, Prints and Photographs: Print Collection, The New York Public Library, <https://digitalcollections.nypl.org/items/510d47da-412a-a3d9-e040-e00a18064a99>.

technologically it may very well be read as one of analogy. The balloon, although surrounded by people, is like the ignored child—an incapacitated machine that never fully developed. This, at least, was how Gustave Flaubert depicted the technology in his satirical compendium of bourgeois platitudes, the *Dictionnaire des idées reçues*. In the two entries under the heading “Balloon,” the cynical realist illustrated the chasm between what balloons had promised and what they had delivered. First came a utopian statement: “With balloons we will end up going to the moon.” Then followed a bitingly sober response: “We are nowhere near steering them.”<sup>68</sup> By the 1860s, many had become disenchanted with the prospects of an aeronaut deliberately steering his balloon, just as many had become disenchanted with the ideologies that Marx and Engels had disparaged as “utopian socialism.”

But anticipatory imaginings of the mid-century utopians left their traces, including in the writings of France’s most famous writer: Victor Hugo. The

image of lighter-than-flight as an emancipatory technology appeared in his indictment of Louis-Napoléon, the 1852 pamphlet *Napoléon le petit*.<sup>69</sup> The poeticization of an airship inspired by Pétin's project was also the climax of *La Légende des siècles*, an epic poem Hugo began composing in 1855 that reflected his progressive philosophy of history. According to Hugo, the airship, whose age was to come in the twentieth century, would bring to fruition the ideals of the French Revolution—it would render *liberté*, *égalité*, and *fraternité* possible on a global scale.<sup>70</sup> But even Hugo grew skeptical of what balloons offered. In 1864, he drafted a letter to Nadar, the celebrated photographer who by then had become a fervent partisan of heavier-than-air flight. "Today," he wrote, "the balloon is judged and condemned." It had become an "old ship," and the path forward, the "new ship," had to be heavier than air.<sup>71</sup> Nevertheless, as we will see, Hugo's hymn to lighter-than-air flight would acquire newfound relevance only a few years later, when balloons seemed to offer salvation to a besieged Paris.

6 SMALL HELICOPTERS AND A GIANT BALLOON:  
THE IRONIES OF THE HEAVIER-THAN-AIR REACTION

On 7 August 1863, Parisians who picked up a copy of *La Presse* would have come across a curious manifesto. It began with a prophetic epigraph:

To fight against the air, one must specifically be heavier than air.  
Anything that is not absurd is possible.  
Anything that is possible will be accomplished.

The text, titled "Manifeste de l'autolocomotion aérienne," was a virulent attack on balloons.<sup>72</sup> It was signed by the bombastic Nadar, who stated that the laws of physics made it evident that a body full of gas would never be able to fly against the wind. He chided the "endless parade of inventors" who had searched for a solution to the "steering of balloons" (a combination of words he found disgusting). These attempts, he claimed, had only proved the negative: "To fight against the air, one must specifically be heavier than air." He pointed to birds, which were heavier than the air they flew in, and promoted the results a few inventors with meager resources had achieved manufacturing miniature helicopters—in his words, the "Saint Hélice."

With missionary zeal, Gaspard-Félix Tournachon—a name few used to refer to the photographer—printed thousands of copies of the manifesto.

That Nadar would have written such vitriol against balloons came as a surprise to many who knew how enthusiastically he had initially adopted the technology. In 1857, Louis Godard gave Nadar his aerial baptism in the Hippodrome, and the photographer was hooked. He often talked his way into a free ascent, which he would then write about for the press.<sup>73</sup> Eventually, Nadar concluded that these experiences made it obvious that balloons would never be steerable. The only use he saw for them was for tethered military observations and aerial photography that would help with cadastral operations (this was, after all, when Haussmann was transforming Paris). As explained in chapter 4, while he patented a system for ballooning photography and produced some aerial shots, he was unable to make the enterprise commercially viable (figure 1.8).

In July 1863, Gabriel de La Landelle, a retired marine officer, paid Nadar a visit. For the past two years, La Landelle had been working with Gustave Ponton d'Amécourt, a *touche-à-tout* archeologist and numismatist. The two had found inspiration in helicopter-like toys called spiralifères and started developing heavier-than-air models that could acquire lift through propellers. Someone put them in touch with a clockmaker named Joseph, who manufactured a spring-powered device capable of flying up to three meters. The men then made models powered by steam boilers (figure 1.9). While their experiments showed that the system provided some lift, it was not enough to make the apparatus ascend.<sup>74</sup> As Ponton d'Amécourt stated, "What we need to conquer the air is *a horse inside a watch*."<sup>75</sup>

Nadar, with the intensity that defined all his actions, left the management of his studio to his associate and partnered up with La Landelle and d'Amécourt. In a book that minted the neologism aviation (*avis*/bird and *actio*/action)—La Landelle argued that "the balloon and the prolonged illusions that followed its discovery [were] the reason behind our nearly total abstinence from research on the art of flying; it is not surprising that for more than half a century the issue has moved backward rather than forward." He claimed that mainstream science (i.e., the Academy of Sciences) was embarrassed by its initial enthusiasm for balloons and distanced itself from anything that smacked of aeronautics.<sup>76</sup> To address the problem, Nadar, La Landelle, and d'Amécourt took matters into their own hands and formed the Société d'Encouragement de la Locomotion Aérienne au Moyen Plus Lourd que l'Air (Society for the Encouragement of Heavier-than-Air Aerial Locomotion).

The three men figured that the first step toward solving the problem of aerial navigation was to publicize the imperative of heavier-than-air flight.



Figure 1.8

In this caricature, Daumier celebrates Nadar not only as a photographer and an aeronaut, but also as a master publicist, as indicated by all the “photographic” advertisements on the roofs of Paris. Honoré Daumier, *Nadar élevant la photographie à la hauteur de l’art*, 1862. The Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1926.



Figure 1.9  
Nadar's photograph of one of Ponton d'Amécourt's and La Landelle's helicopters,  
taken June 1863. 1900 print. Source: gallica.bnf.fr / Bibliothèque nationale de France.

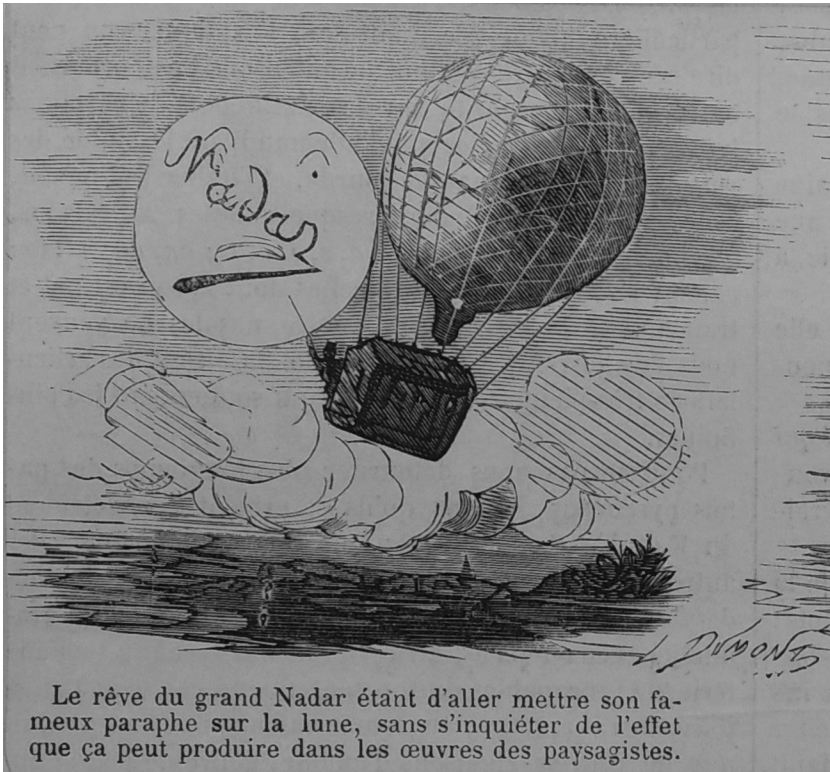


Figure 1.10

The caption below this caricature satirizing Nadar's publicity stunts reads: "The dream of the great Nadar being to put his famous signature on the moon, without worrying about the effect that it could produce in the paintings of landscapers." *L'Illustration*, 9 January 1864. Library of Congress, Tissandier Collection.

And few were better at publicity than the famous photographer, who in 1856 went to court against his brother to defend a copyright over the name "Nadar" (figure 1.10). On 30 July 1863, he held a demonstration of the small helicopters for about five hundred people in his atelier at 35 Boulevard des Capucines. The next day, his new passion became the talk of the boulevards, and a week later he published the manifesto.<sup>77</sup> He followed suit by recruiting people to join the Société d'Encouragement and write for its publication, which he titled *L'Aéronaute* (figure 1.11).

Nadar, Ponton d'Amécourt, and La Landelle were enterprising men, but, like most engaged in aeronautical pursuits at the time, they were also



Figure 1.11 The frontispiece featured on the cover of *L’Aéronaute*. The illustration, engraved by Nadar’s friend Gustave Doré, features a large flying machine based on the helicopters created by Ponton d’Amécourt and La Landelle (see figure 1.9) overshadowing a balloon and a locomotive. The Huntington Library.

outsiders to the scientific establishment. As such, they believed that they needed to recruit someone on the inside to grant legitimacy to their project. They found this person in the académicien Jacques Babinet.<sup>78</sup> In August 1863, Babinet gave a lecture at the École de Médecine’s amphitheater where he disparaged the possibilities of steering balloons and highlighted the promises of heavier-than-air flight. “The theory of balloons itself is absurd,” he began with aplomb.<sup>79</sup> He followed with a series of articles that ran in *Le Constitutionnel* in the second half of the year.<sup>80</sup>

A look at *L’Aéronaute*’s masthead reveals that Babinet was the only major voice of official science to actively support Nadar. The other names who publicly supported the cause tended to be journalists, particularly those active in scientific popularization—people like Victor Meunier, Louis Figuier, and an up-and-coming writer by the name of Jules Verne. Even more than falling in the good graces of official science, Nadar’s priority was to win over public

opinion and raise money to finance heavier-than-air experiments. His status as one of the most famous living Parisians brought attention to the cause, and caricatures celebrating and mocking his belief in the “Saint Hélice” stamped the pages of Parisian periodicals (figure 1.12). But Nadar still faced a major challenge with financing. Obstinate like few, he refused to issue subscriptions (a method people had grown skeptical of) or request support from the government (he was a staunch republican who loathed Napoléon III). The solution he developed was ingeniously ironic. He would manufacture a giant balloon—“the *Last Balloon*”—and use the funds earned through its spectacular ascents to finance his heavier-than-air dreams.

Nadar advertised that the machine he baptized *Géant* would feature an innovative design: a large balloon superimposed on a smaller one that would serve as a compensator for any expelled gas during the ascent. The entire apparatus was to stand 60 meters tall—only 14 meters shy of Notre Dame. But the *Géant*'s reveal was a blow to Nadar's credibility, for it did not feature the compensator balloon and stood 15 meters shorter than advertised. Even so, it was a sight to be seen. Instead of a typical gondola, it hoisted a shed-like structure featuring six divisions: two cabins, lavatory, provisions, photography, and printing press. The upper level was designed as a balcony from where passengers could observe the voyage. Nadar argued that these gigantic proportions would allow the *Géant* to stay aloft longer and travel farther than ordinary balloons, and he was optimistic that these spectacular features would help him raise money for the heavier-than-air cause.

An enormous amount of effort was required to pull off the *Géant* stunt. The summer was ending, and to secure the ascent Nadar had to navigate the bureaucracy of a regime he despised. He got permission from the Ministry of War to use the Champ-de-Mars as an ascent site, dealt with municipal authorities to have a 1,200-meter gas cable run from the École Militaire to the balloon, and negotiated police security for the event. To bring in as many people as possible, he requested the Compagnie de Chemin de Fer de Paris à Orléans place an extra train in service and rushed orders for advertising placards. Finally, he had to obtain the largest balloon the world had ever seen. He hired the Godards and Gabriel Yon as manufacturers and eventually found some financiers (silk alone cost 60,000 francs).

The spirited Nadar managed to mobilize all his connections, and on 4 October 1863, the *Géant* was ready to depart from the Champ-de-Mars.<sup>81</sup> According to *La Presse*, the ascent drew 200,000 people.<sup>82</sup> But the flight itself



Figure 1.12

The caption below this illustration satirizing Nadar's heavier-than-air flying devices reads: "View of Paris in three years and a few months, taken while flying a *Nadaréostat*." Bertall (pseudonym of Charles Albert d'Arnoux), "Les Nadaérostats," *Le Journal amusant*, 19 September 1863. Source: gallica.bnf.fr / Bibliothèque nationale de France.

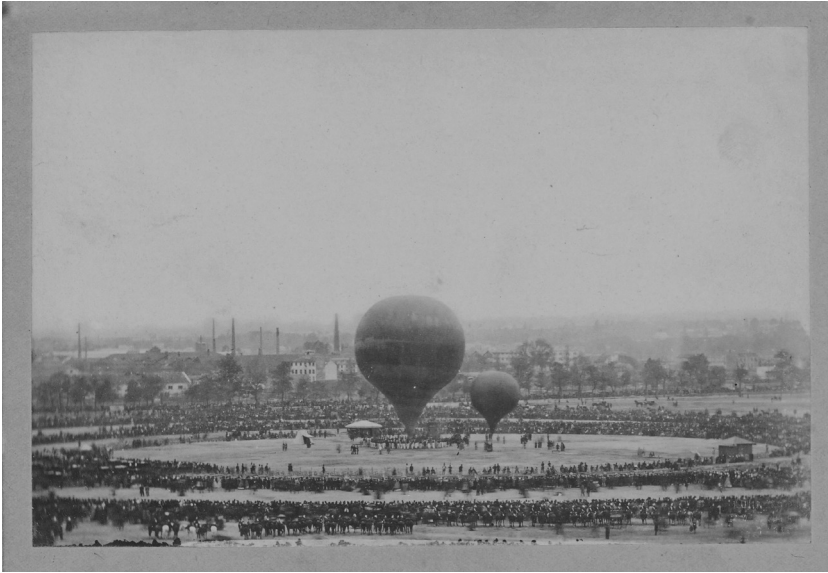


Figure 1.13

The *Géant* next to a regular-sized balloon before its second ascent. Nadar, *Le Ballon Le Géant sur le Champ-de-Mars pendant les préparatifs de la seconde ascension*, 1863. Source: gallica.bnf.fr / Bibliothèque nationale de France.

was a dud. Instead of staying aloft longer than a typical balloon, the *Géant* landed after only a few hours a mere 40 kilometers from Paris. Jules Godard explained to Nadar that the escape valve's springs had given way under the rope's weight, which slowly released the gas needed to stay aloft. Nadar was furious but kept the brothers on the team for the next ascent.<sup>83</sup>

The crowd that came to watch the *Géant* take off on 18 October was smaller, but the ascent was more memorable (figure 1.13). This time Nadar departed with eight other passengers, including his wife. The winds first took the balloon to Brussels and then toward the Netherlands. Concerned about the sea, at around 1 A.M. Louis Godard recommended they descend and wait until daytime to continue. Nadar, still upset about the previous flight, refused. The balloon then made its way to the Kingdom of Hanover, and as the day broke, the gas inside dilated and they reached 4,500 meters. At 8 A.M. the wind turned west, taking the balloon in a direct line to the North Sea. The passengers were also tired, so, to Nadar's disappointment, a descent was imminent.

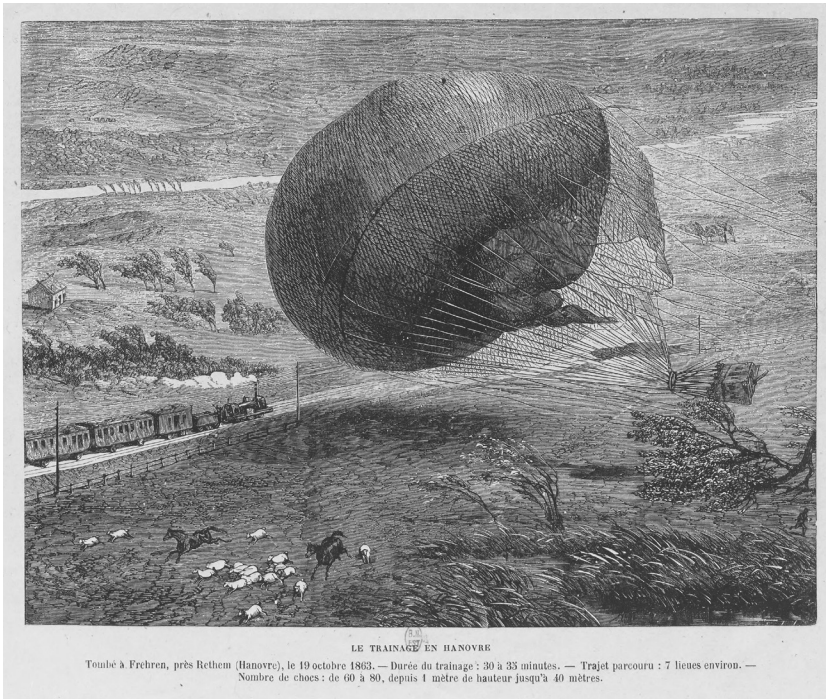


Figure 1.14

Nadar constructed an elaborate 3D model of the *Géant*'s crash on which this print was based. *Le Trainage en Hanovre*, 1863. Source: gallica.bnf.fr / Bibliothèque nationale de France.

The landing was disastrous. Louis Godard released too much gas and the balloon tumbled down at great speed. Its large size made it even more susceptible to the whims of the wind, which blew intensely that morning. When the balloon touched the ground, it bounced repeatedly while being dragged horizontally at speeds of 60 kilometers per hour. According to Nadar's recollection, the artifacts of modernity seemed to come together to spell impending doom, with the *Géant* barely avoiding a collision with a train and plunging through some telegraph wires (figure 1.14). Jules Godard eventually managed to climb up the netting and pull the cord to further empty the balloon, but the escape valve was too small and the dragging continued. What was left of the balloon finally stopped when it reached an area with higher tree density. Everyone was injured, but no one died.<sup>84</sup>

Nadar broke with the Godards after the *Géant*'s second ascent, and their relations only worsened once he sued the brothers for stealing 1,000 meters of silk during the manufacturing process. The Godards responded with a suit of their own claiming that Nadar had not paid them in full. The bitter legal battle caused a rift that lasted years.<sup>85</sup> While recovering from his injuries, Nadar sent the *Géant* to England hoping to earn some money by exhibiting it at the Crystal Palace. In 1864, he published *A terre & en l'air . . . Mémoires du Géant*, his personal account of the events. Nadar's rambling staccato prose can be frustrating to readers today, but it expressed the fashionable tempo of the progress-minded nineteenth century. Even if some reviewers criticized Nadar for the ferocity of his attacks against those who disagreed with his ideas, the book was well received.<sup>86</sup>

Nadar's papers reveal that while the *Mémoires* garnered him sympathy, people also questioned his judgment. Some were troubled by how his foolhardiness put his wife at risk. Others were disappointed by how the *Géant* did not live up to their expectations. Nadar preserved various "anonymous insulting letters," but his friends burned most to spare his feelings.<sup>87</sup> Someone—whether a teasing friend or a mean-spirited attacker is unclear—sent him an April Fools' note featuring a balloon and mocking his gullibility (figure 1.15).

Nadar eventually returned to ballooning on 26 September 1864, when he ascended aboard the *Géant* from Brussels' Botanical Garden. He then published *Le Droit au vol*.<sup>88</sup> The pamphlet drew in readers with its ambiguous title, which could be read either as "The Right to Flight" (the title of the 1866 English translation) or "The Right to Theft" (reminiscent of Pierre-Joseph Proudhon's anarchist slogan "Property is theft!"). In it, Nadar did his best to explain in plain language why he thought the heavier-than-air path was the only way to achieve steerable flight. Still seeking to make a profit, he then made two more ascents in 1865, one in Lyon and one in Amsterdam.

Despite his efforts, Nadar's master plan was a financial fiasco. The *Géant* made a public impact, but the photographer was a dreadful businessman. Naively, he had not considered that people could watch the *Géant*'s ascents from outside the paid section, and he was running a 121,000-franc deficit by the time he recovered from his injuries.<sup>89</sup> Meanwhile, impresarios from Saint Petersburg to Montevideo tried to get him to visit their city, and even P. T. Barnum showed interest. But negotiations never got far. Tired of losing money, Nadar requested exorbitant rates.<sup>90</sup> Crestfallen, he returned to his

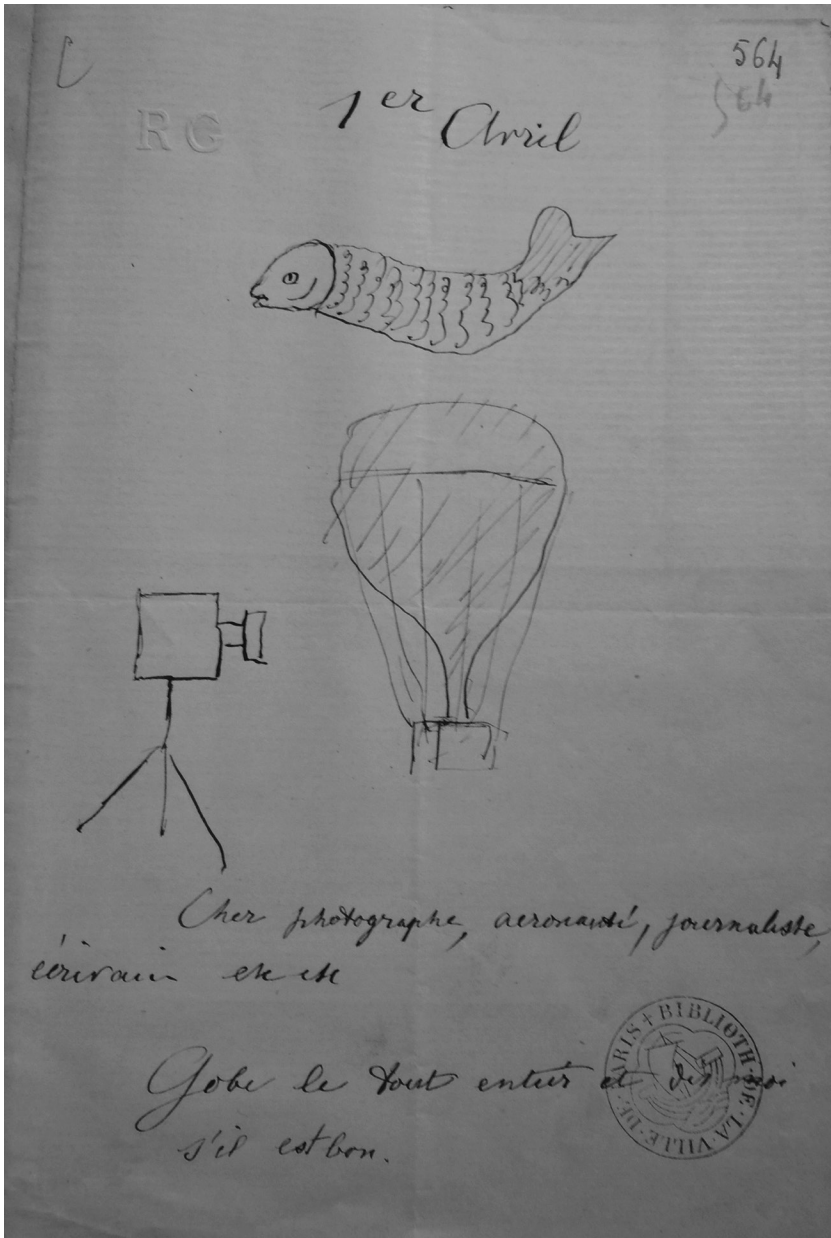


Figure 1.15  
April Fools' note received by Nadar, undated. Featuring a camera, a balloon, and the mocking poisson d'avril, the note reads: "Dear photographer, aeronaut, journalist, writer, etc etc. Gulp it all down [gullibly] and tell me if it's good." Bibliothèque Historique de la Ville de Paris (MS-NA-474, f. 564).

studio and sold the balloon to speculators who would go on to make ascents at the 1867 Universal Exposition.

As Nadar's *Géant* strategy deflated, the Société d'Encouragement flailed. Its first meeting happened on 15 January 1864. The sixty people in attendance listened to Nadar make a speech full of hope about acquiring the capital to bring into existence "the third and most glorious scientific achievement of this century" (the first two being the railroad and photography).<sup>91</sup> There was plenty of rhetorical gesturing toward the spirit of association, and by 1867 the Société d'Encouragement boasted 415 members. Behind the scenes, though, it suffered from a concentration of strong personalities loyal above all to their own egos. Eugène Moreau, one of its rapporteurs, submitted his resignation in February 1864. He had issues with La Landelle, who apparently exerted an almost dictatorial role in shaping the program and whose "amour propre" did not accept criticisms.<sup>92</sup> On his part, La Landelle complained that "collective action" was crippled by "the indifference, the discouragement, the lack of sacrifices or efforts" of too many members.<sup>93</sup> The Société d'Encouragement also struggled financially. By February 1867, it had only 915.95 francs at its disposal. According to records, its meetings came to an end sometime in 1867.<sup>94</sup>

Meanwhile, Nadar proved to be just as adept at making enemies as he was in building alliances. In the first issue of *L'Aéronaute*, he argued that the endeavor would need support from newspapers around the world, since the press was essential in changing skeptical minds.<sup>95</sup> But that same issue revealed the problems with Nadar's polemical impulses. It featured a letter by the photographer, who viciously attacked the Abbé Moigno (founder of the influential scientific review *Cosmos*) for publishing a critical account of the 30 July 1863 helicopter demonstration. Moigno, whom Nadar called an "epileptic batrachian" (the photographer was a master of the insult), had claimed that "the first tests of the new system were nothing more than the manifestation of an absolute helplessness."<sup>96</sup> Influential figures like Victor Meunier felt that Nadar's attack went too far and demanded removal from *L'Aéronaute's* masthead.<sup>97</sup> Beyond costing him important supporters in the fight for public opinion, the publication also failed to turn a profit.<sup>98</sup> When the fifth and final issue came out, it had only forty-two subscribers.<sup>99</sup> Nadar's mission to bring about heavier-than-air flight from the bosom of the balloon had been a disaster. To settle some of his debts, he auctioned part of his precious art collection.<sup>100</sup>

In an ironic end to his deliberately ironic strategy, Nadar's efforts also sparked new enthusiasm for lighter-than-air flight. A student who read *Mémoires du Géant* several times informed Nadar that he was "ignited by the

most violent desire to get to know everything concerning ballooning from its birth to today's projects of aerial navigation."<sup>101</sup> Others wrote asking to be passengers in future ascents.<sup>102</sup> Nadar became frustrated with newspapers claiming that he was searching for a way to steer balloons. A survey of his papers at the Bibliothèque Historique de la Ville de Paris (BHVP) reveals that from 1863 to 1891 he received at least 339 letters from all over the world proposing ways to achieve aerial navigation.<sup>103</sup> Of these, 181 were lighter-than-air systems and only eighty-four concerned heavier-than-air designs (another seven were hybrid and sixty-seven undefinable). A frustrated Nadar complained that even after repeatedly stating his goals people would still ask: "Do you really believe that you will be able to *steer your balloon*?"<sup>104</sup>

As the next chapter will show, Nadar briefly returned to ballooning during the Franco-Prussian War, but for the rest of his life he found himself trying to make people understand his staunch opposition to lighter-than-air flight.<sup>105</sup> Providentially, this nineteenth-century icon lived long enough to hear that his dream had come true. One can only imagine the pathos when his trembling hands picked up a pen on 25 July 1909. The fragile words he put down read: "Heartfelt gratitude for the joy with which your triumph has finally filled the 'Heavier than air' (1863) antediluvian before his eighty-nine years take him six feet under." Their recipient? Louis Blériot, who on that same day became the first man to fly an airplane across the English Channel.<sup>106</sup> Eight months later, just days shy of his ninetieth birthday, Nadar drew his last breath.

#### CONCLUSION: REMEMBERING THE BALLOON

One can approach the history of ballooning in the first two-thirds of the nineteenth century from a declinist perspective. That was the framing adopted by aeronauts in the early Third Republic. However, that perspective was just as much a product of their biases, for as partisans of the new regime they wanted to dissociate themselves from the practices that occurred under non-republican governments (especially the Second Empire) and establish a direct link to the First Republic. Third Republic aeronauts fashioned themselves as patriotic, scientific, and serious, in opposition to earlier men and women who they complained were concerned only with amusement, profit, and untethered utopian dreams.

But by facilitating their ascents and transmitting technical know-how, entertainers from the Godard and Poitevin dynasties enabled the future success of these ostensibly soberer men of science. Not only did Eugène

Godard help bring Giffard's airship to fruition (the only effort most Third Republic aeronauts saw as legitimate) but his dynasty also established itself as one of Paris's most important balloon manufacturers, selling their products to countries all over the world. Meanwhile, Delamarne, who was the subject of much ridicule in the 1860s, became one of the aeronauts who breached the Siege of Paris aboard a balloon (unluckily, he was captured by Prussian troops). As we shall see, the Poitevin dynasty, which was famous for its animal ascents, found itself connected to the organized efforts of scientific ballooning during the early Third Republic; one of its members, Théodore Sivel, became one of the regime's first scientific martyrs.

Finally, although Nadar admonished balloons in the press and wanted nothing more than to see his heavier-than-air dreams materialize, he must have retained a soft spot for the globes. How else could one explain the enormous aeronautica collection he amassed, which was especially rich in balloon prints? Nadar was in touch with antiquarians all over Europe who reached out whenever they came across a new balloon artifact.<sup>107</sup> In fact, the fate of his collection is indicative of the improved status of ballooning under the Third Republic.

In 1881, Nadar started negotiating with Jules Cousin, head of the BHVP, to sell his aeronautica collection to the city of Paris.<sup>108</sup> The Municipal Council finally approved the purchase in 1897 for 6,000 francs, and today the items are split between the BHVP and the Musée Carnavalet—two eminently Parisian institutions.<sup>109</sup> This transaction acquires relevance when compared to how authorities had snubbed Dupuis-Delcourt's collection in the 1860s. By the late 1890s, republican officials were concerned with inscribing Paris into the annals of the early history of flight. But that was still decades to come, and before republicans could embrace the balloon as a respectable French technology, France had to become a republic. The way this happened could have hardly been more favorable to the floating globes.

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THE SIEGE OF PARIS AND  
THE BALLOON'S REDEMPTION

One cannot understand the Third Republic's birth and consolidation without considering the 1870–1871 Franco-Prussian War—a conflict that forged a new sense of republican national cohesion that, allied with a longer history of republican activism, proved critical to the Third Republic's longevity.<sup>1</sup> Just as the conflict was a key event in French republican history, the use of balloons during the war functioned as a catalyzer in renewing enthusiasm for the technology. While balloons were used in earlier conflicts, those experiences had a much smaller impact. The aeronautical experiments during the French Revolutionary Wars and the American Civil War were limited to one balloon in a battlefield relatively isolated from the general population. In stark contrast, the Franco-Prussian War saw scores of balloons mobilized during the Siege of Paris. The ensuing ballooning revival was inexorably connected to this experience.

What follows is a close reading of this aeronautical turning point. Siege narratives may lend themselves to a kind of picturesque history that makes historians raise their eyebrows, but it is worth evoking the emotions of those fateful days to try to understand how Parisians experienced the events that unfolded in all their urgency. As the republican man of letters Edgar Quinet wrote in a preface to his wife's journal, "If our calamities are to be of any use, we must preserve not only the memory of the facts but also the unthinking emotion of each day."<sup>2</sup> The analysis of a diverse array of sources (newspapers, diaries, and previously unexamined letters sent by air) reveals how, upon witnessing and reading about balloons escaping the Siege of Paris, the French imbued the technology with new meaning. Facing a crisis before the Franco-Prussian War, the balloon emerged from the conflict as a symbol of French greatness that potentially signaled the new republic's ascendancy.

1 THE CAPITAL BECOMES AN ISLAND:  
THE FRANCO-PRUSSIAN WAR AND THE SIEGE OF PARIS

The end of the Napoleonic Wars in 1815 produced decades of relative peace in Europe, but the inauguration of Napoléon III's Second Empire in 1852 disrupted this tenuous geopolitical balance. The Crimean War (1853–1856) and the Second Italian War of Independence (1859) were especially consequential. France emerged from them victorious over Russia and Austria, making its neighbors east of the Rhine anxious. In response, the Prussian army underwent a series of reforms. Under the leadership of General Helmuth von Moltke, the army became a well-oiled machine capable of concentrating significant power in focal points through speedy movements supported by an extensive railroad network. As such, all the pieces were in place to mobilize Prussian troops to the Rhine in July 1870, when Chancellor Otto von Bismarck goaded the French into declaring war after the Hohenzollern candidature for the Spanish throne sparked a diplomatic crisis. While France possessed some superior technology, like the chassepot rifle, its army was nowhere near as organized as Prussia's. France's declaration of war in July quickly turned into a ruinous Prussian counterinvasion. Louis-Napoléon—truly a *petit* on the battlefield—was debilitated by kidney stones and transferred the command of the Army of the Rhine to the irresolute François Achille Bazaine, who let victories at Rezonville and Gravelotte slip through his hands. By 19 August, Bazaine and his army were besieged in Metz. Meanwhile, Louis-Napoléon joined the Army of Châlons and, alongside General Patrice de MacMahon, came to Bazaine's rescue. The unprepared French troops were no match for the Prussians, who encircled them at Sedan and forced the emperor's ignominious surrender.<sup>3</sup>

All the while, Parisians stayed abreast of the movements in the east. On 29 August, Henri Dabot, a lawyer from the Quartier Latin, was vacationing at Vitry-sur-Seine with his family when he heard rumors that the Prussians were marching toward the capital. Dabot hastily made his way back to Paris, describing the movement as he approached the city as a “lamentable spectacle” with “women and children perched on mattresses on top of carts.”<sup>4</sup> Felix Whitehurst, a correspondent for the *Daily Telegraph*, jotted down a comment laden with cynicism, referring to those seeking refuge as “the entering foe; for they will all be enemies when they begin to eat.”<sup>5</sup> While authorities requisitioned empty apartments to harbor refugees, those who could afford to do

so decided whether to stay for the siege or flee. As a member of the National Guard, Dabot could not leave, but he sent his family to Armentières, near the Belgium border.<sup>6</sup>

As the warm August days went by, a patriotic mood settled upon Parisians, who worked to reinforce the city's walls. Then, on the evening of 3 September, news of the defeat at Sedan reached the capital. At 3 P.M. the following day, Parisians took to the streets to celebrate after Léon Gambetta, who in the final years of the Second Empire rose from shopkeeper's son to popular opposition figure, proclaimed the Republic from the Hôtel de Ville.<sup>7</sup> Troops marched down the Rue de Rivoli singing "La Marseillaise," and republican icons like Victor Hugo rushed back from exile.<sup>8</sup> The defeat at Sedan sparked a feverish republican nationalism. Reflecting on the events, Hermione Quinet evoked how the republican project, which was now threatened by the Prussians, acquired an apocalyptic aura. "The greatness of the danger and the triumph of the Republic—these were the two emotions that initially fought over the souls and soon merged into one," she wrote. "This resulted in an extreme stress on moral life; all the thoughts, all the abilities of the Parisians concentrated on a fixed idea: all-out resistance. Republic and national defense soon became synonymous in the mind of the great city."<sup>9</sup>

Rhetoric from republican leaders mirrored Hermione's sentiments of "all-out resistance," which became a rallying cry. An interim Government of National Defense (GND) hurriedly established itself and proclaimed that it was "not in power, but in war."<sup>10</sup> Gambetta took the position of minister of interior and began issuing proclamations that called for the defense of the Republic and a "fight to the death against the invader."<sup>11</sup> Military patriotism became the fashionable position, and the képi became the new Phrygian cap. Even the portly Hugo awkwardly sported one in public.<sup>12</sup> The proclamation of the Republic and the ensuing burst of patriotic resistance threw a wrench into the usual script of warfare, transforming the conflict into an existential contest.

Paris continued its preparations in a defiant mood until 19 September, the day the Prussians closed their circle around the city. This was no meager feat considering how much territory Paris's enceinte covered. Its walls were six meters thick, ten meters tall, featured ninety-four bastions, and ran for thirty-four kilometers. Fifteen forts increased the protective perimeter to sixty kilometers. All of this meant that to besiege the city an army had to cover at least eighty kilometers of circumference.<sup>13</sup> The *Revue des deux mondes* estimated

that at least 700,000 men were necessary to lay siege to Paris, but the Prussians did so with just 180,000 troops and 700 cannons.<sup>14</sup> As an account published a few years later explained, “The Germans had accomplished a miracle of strategy with dizzying speed.”<sup>15</sup>

The Prussian maneuver isolated Paris from the rest of the world—a situation that must have been especially offensive to Hugo, who in his essay celebrating the 1867 Universal Exposition exalted the radiance of Paris as a beacon to humanity.<sup>16</sup> Dabot resorted to diluvial metaphors, stating that the “Prussian inundation” had rendered Paris “truly the *île de France*.”<sup>17</sup> On 19 September, the Prussians cut the last regular telegraph line. Postal agents tried crossing enemy lines, but most had to return to Paris or risk imprisonment and death. A telegraph line surreptitiously placed in the bed of the Seine operated until 27 September, when a lockkeeper betrayed its existence.<sup>18</sup> As the seal tightened, it dawned on Parisians that they would have to find some other way to reestablish contact with the rest of the country, especially if they were to coordinate a national resistance with the provinces. During this moment of despair, besieged Parisians turned to the much-disparaged balloon.

## 2 SLUGGISH BUREAUCRACIES AND ENTERPRISING CIVILIANS: THE SIEGE BALLOONS TAKE FLIGHT

The adoption of balloons during the Siege of Paris was a meandering process that only succeeded thanks to the tenacity of French civilians. As soon as the war broke out, Eugène and Louis Godard offered their ballooning matériel to imperial authorities, who did nothing. Only on 18 August, after Prussian victories in Borny and Gravelotte cleared the path to Paris, did authorities consider adopting tethered balloons to observe approaching enemy troops.<sup>19</sup> On that same day, Nadar signed an agreement with two professional aeronauts who had been part of his *Géant* crew—Duruof (Claude-Jules Dufour) and Dartois (Camille-Albert-Joseph Legrand)—and created an improvised *Compagnie d'Aérostiers Militaires*. The next day, General Louis-Jules Trochu, who was made governor of Paris, received a letter from the scientific writer and aeronaut Wilfrid de Fonvielle highlighting “the importance of the services that balloons could offer to the defense of Paris.”<sup>20</sup> Trochu then created an *ad hoc* commission headed by Colonel Henri Usquin to study the utility of tethered balloons.<sup>21</sup> Although Nadar despised the Second Empire, he was eager to offer his services to the defense of France, and he worked

long into the night writing a memoir detailing how balloons could serve a besieged city.<sup>22</sup> According to the photographer, they would be particularly useful for observation, for while Notre-Dame (the city's tallest structure) was seventy-four meters tall, tethered balloons could reach as high as five hundred. He also posited that balloons could be used to attack the enemy.<sup>23</sup>

On 22 August, Usquin submitted his report supporting the use of tethered balloons. He called for one in Montmartre to observe the north, another near the Porte d'Orléans for the south, and a smaller one that could move between various forts in the east. Usquin explained that manufacturing these balloons would take at least fifteen days, so initially they would depend on existing ones. He judged that there were no more than three in Paris that could be of use—two belonging to the Godards, and Napoléon III's *Impériale* (also manufactured by the brothers).<sup>24</sup> Whether due to confusion between different government branches or just plain inaction, things remained in limbo, so the Godards went ahead and installed the *Citta-di-Firenzi* near the Barrière d'Italie (in the southeast) while Fonvielle inflated the *Céleste* in Vaugirard (in the southwest).<sup>25</sup>

Nadar, an ardent republican, was pained by the slow gears of the Empire's bureaucracy (commentaries he wrote in the early days of the war make numerous references to what he saw as the only solution: a revolution). On 18 August, he jotted down a gleeful note registering his arrangement with Dartois and Duruof. "Joy sings in me! Best news from the army and I will be able to *be of use to something!*" But during the following week he expressed frustration that nothing had changed. On 27 August, he celebrated that a deal was finally struck with Usquin, who allowed Nadar to start conducting observations from the Place Saint-Pierre in Montmartre. Four days later, the *Neptune* (owned by Duruof) was ready for service.<sup>26</sup> Yet, Nadar continued running into obstacles. It was only on 10 September, a week after the Second Empire's collapse, that crowds packed the mounds of Montmartre to observe the *Neptune's* first tethered ascent (figure 2.1).

Because the rise of balloons above Paris coincided with the establishment of the republican GND, people associated one with the other. Newspapers cheered Nadar's initiative, evoking the memory of the First Republic's *aérostiers militaires*.<sup>27</sup> Writing in *La Liberté*, Fonvielle argued that "the deposed government brought to the study of aeronautical questions the same incompetence as it did to other branches of public service" and that "it was only with the proclamation of the Republic that we started filling

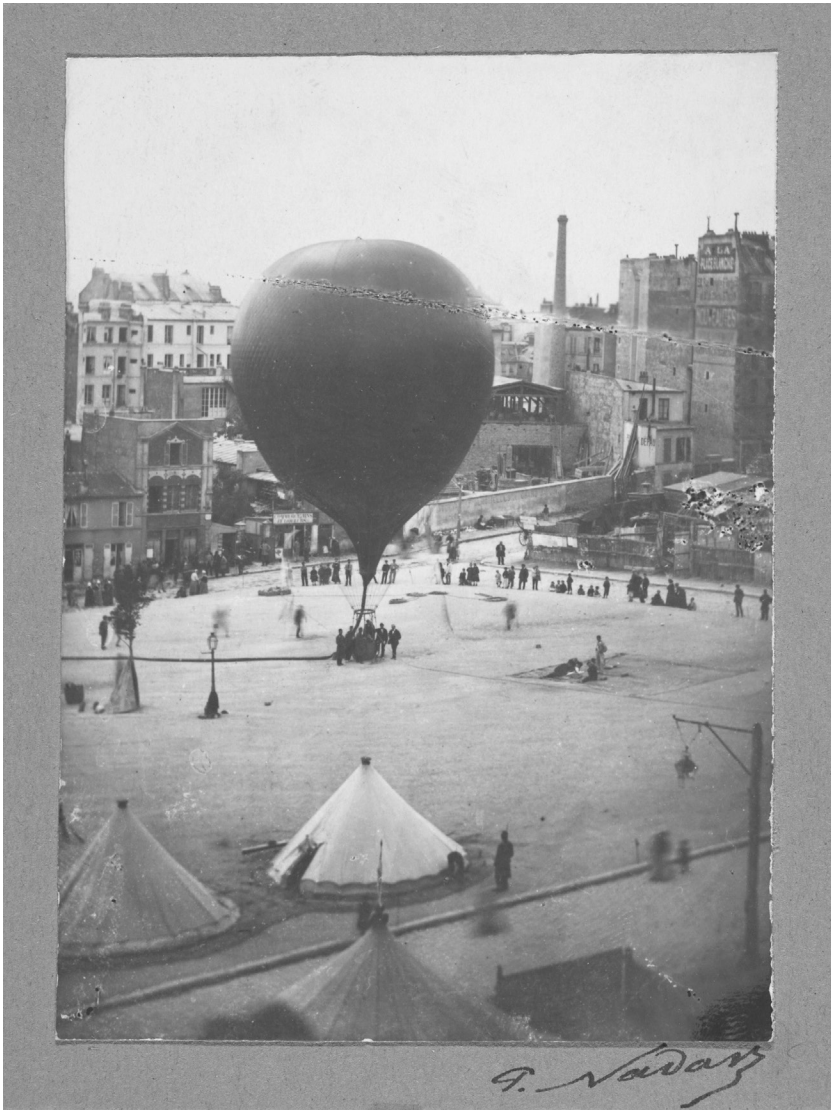


Figure 2.1  
Nadar, *Le Neptune, Place Saint-Pierre à Montmartre*, 23 September 1870. The Art Institute of Chicago.

with gas one of the aerostats intended for the works of the military commission."<sup>28</sup> Before the siege ended, Nadar penned a virulent pamphlet criticizing the Second Empire's lack of initiative in using balloons for the war effort, juxtaposing it against the First Republic's wholehearted embrace of the technology (which, as we have seen, was not quite the case).<sup>29</sup>

With the *Neptune* operational, Nadar began sending Usquin aerial reports that were of questionable strategic utility at best.<sup>30</sup> But, in his first report, he posited another use for balloons: transporting communication in case all other avenues were blocked. For this to happen, Nadar argued, they had to start producing balloons. Soon after, Duruof and Dartois were enlisted to manufacture three balloons for the Telegraph Lines Administration, which was anticipating an eventual communications blackout and exploring alternatives.<sup>31</sup>

The first attempts to fly a balloon out of Paris failed because they relied on old and deteriorated equipment.<sup>32</sup> Worried about the lack of progress, on 22 September Germain Rampont, the Postal Service's director, reached out to Paris's major aeronauts. At the meeting, it was decided to convert the city's decommissioned train stations into balloon factories. Nadar would set up a workshop at the Gare du Nord, while the Godards were assigned the Gare d'Orléans (they migrated to the Gare de l'Est in January, once the Prussians bombardment began). Balloons were to be made of high-quality percaline varnished with linseed oil, have a 2,000-cubic meter capacity, and feature gondolas that fit four people. Once complete, each balloon underwent a stress test where it was filled with gas and expected to float for ten hours while carrying 500 kilograms. The government paid 4,000 francs per unit, of which 300 went to the aeronaut. In case production was delayed, the manufacturer incurred a fifty-franc fine per day.<sup>33</sup> At the Gare du Nord, Nadar used machines to sew the balloon, which accelerated the process and required a smaller workforce. Balloons at the Gare d'Orléans were sewn by hand—a slower technique that gave them better consistency. Women played a central role in both cases, especially at the Gare d'Orléans, where about one hundred seamstresses labored under the supervision of Mme. Eugène Godard.<sup>34</sup>

Still, the manufacturing of new balloons would take time, so, for the next attempt, authorities chose the *Neptune*, which had shown some reliability during Nadar's observational ascents. Duruof, one of the more stellar aeronauts who toured France during the Second Empire, was named its captain.<sup>35</sup> At 7 A.M. on September 23, Rampont transported several bags of mail to the

Place Saint-Pierre, where a large crowd observed preparations. At 7:15, with the balloon fully loaded, Duruof sounded the sacramental call to release the ropes (“Lâchez tout!”) followed by a “Vive la République!” Emulating cries resonated across the square as the balloon reached toward the sky.<sup>36</sup>

Duruof’s departure aboard the *Neptune* was a spectacular event that amalgamated the anxieties of a besieged city with the amusement crowds grew to associate with balloon ascents during the nineteenth century. The spectacle reached far more people than just those at the top of Montmartre. A writer for *Le Figaro* described how “many tender eyes followed this new kind of messenger: in every street of the capital, in every intersection, up and down the boulevards, curious masses pointed it out to the crowd; and it was only at 9 A.M., when it had disappeared into space, that the groups dispersed.” The author included his reaction to the event, claiming that he felt “a sincere and profound emotion” at the sight of the balloon.<sup>37</sup> Winds pushed the *Neptune* toward the Arc de Triomphe. As it flew over the city’s walls, the Prussians aimed their artillery, but the projectiles reached their vertex below the balloon’s altitude. Protected by height, Duruof “saw clouds of smoke and heard the crackle of guns,” and showered Prussian troops with Nadar’s *cartes de visite*. The *Neptune* continued east until it landed at 11 A.M. near Evreux. Soon after, the region’s prefect arrived, and Duruof fulfilled his mission by delivering the mail.<sup>38</sup>

Following Duruof’s success, the government made the balloon post official. On 27 September, the *Journal officiel de la République française* published a decree outlining that the postal service was “authorized to dispatch by way of captained balloons ordinary letters destined to France, Algeria, and abroad.”<sup>39</sup> At first, officials recruited professional aeronauts to captain the balloons, but their numbers soon dwindled. Sailors were then selected based on the assumption that they had experience navigating volatile fluids, and the Godards offered basic lessons to these improvised aeronauts.<sup>40</sup> Nadar was also approached for advice by those unfamiliar with ballooning and received at least forty-three letters from people requesting to serve as aeronauts.<sup>41</sup> As he did not trust “entertainers” like the Godards to teach these novices (ironic, since he had learned from them), he printed a handbook recommending that the new aeronauts take as little luggage as possible, wear warm layers, avoid flammable material, and bring a gourd of wine, some eau-de-vive, and food with high nutritional value. Nadar also advised them to carry a pair of binoculars, a barometer, and a map. Most importantly, he told the novices to be careful with their ballast and avoid descending at night or near the water.<sup>42</sup>

From 19 September to 28 January, sixty-five manned balloons departed from Paris—an average of one balloon every other day. They transported a variety of correspondence (certified letters, postcards, newspapers, official dispatches) and occasionally special cargo like scientific equipment.<sup>43</sup> The balloons were deemed so important that on 30 November the government cut the supply of gas to residents so that it could be preserved to inflate the globes.<sup>44</sup> About one hundred passengers accompanied the sixty-five aeronauts (numbers vary according to the source). The Prussians managed to capture five balloons, and although there were some injuries, the enterprise produced just two fatalities (both caused by balloons being lost at sea). Most balloons landed within three hundred kilometers of Paris, but some traveled much farther. Paul Rolier and Léonard Bezier, who departed on 24 November aboard the *Ville-d'Orléans*, were aloft for more than fourteen hours and landed near Christiania (present-day Oslo).

Parisians and people all over the world read narratives of these ascents, which were structured by a series of tropes—emotional goodbyes and cheers from spectators as the balloon departed Paris; a barrage of fire as the balloon flew over Prussian lines; the flight over the provinces, in which the aeronaut was both enchanted by the sublime landscape and anxious about his precise location; an adventurous landing; and a warm reception by peasants who ushered the aeronaut and mail to safety before the Prussian uhlans arrived.<sup>45</sup> These narratives presented the balloon service as France's most redeeming effort in what was otherwise a humiliating war. Paris's heroic resistance hinged on the fickle balloon. Aware of the propagandist potential of this unique initiative, authorities named many of the balloons after republican icons: the *George-Sand*, the *Victor-Hugo*, the *Lafayette*, and so on.

### 3 “YOU CANNOT BESIEGE THE SKY”: THE BALLOON ASCENT AS PATRIOTIC SPECTACLE

The Siege of Paris lasted four months, and all the turmoil that had marked sieges since the age of castles—from boredom to hunger to disease outbreak—plagued Parisians. Horse meat, relatively common with the lower classes, became a staple across the board. Meanwhile, as dismissed *domestiques* begged on the boulevard Saint-Michel, elites engaged in gastronomic safaris and ate a variety of zoo animals, including the famous elephant duo Castor and Pol-lux.<sup>46</sup> By late October cats and dogs were being sold on the streets, with the

littérateur Jules Claretie regretfully writing in his journal that a “man eating a dog looks like a cannibal.”<sup>47</sup> By mid-November the food situation was serious enough that rat prices doubled in two days.<sup>48</sup>

As Rebecca Spang argues, these peculiar conditions produced “a near epidemic of writing and speaking.”<sup>49</sup> No longer fettered by the Empire, the press proliferated. Anywhere between seventy-six and 130 new periodicals were created between 4 September 1870 and 28 January 1871, and the city experienced a paper shortage.<sup>50</sup> There were also countless diarists who intentionally set out to leave a record for posterity. One of the themes that emerged from this vast archive was a “joy in suffering”<sup>51</sup>—a discourse that constructed Paris as a hardened city nobly resisting the “barbarians” at the gates.

The siege also produced many picturesque scenes. The snobish critic Edmond de Goncourt expressed amusement at the thousands of sheep that grazed in the Jardins du Luxembourg (the new ovine residents, plus the three thousand oxen that moved into the Jardin des Plantes, became a valuable resource in the following months). The city acquired a martial veneer, since it harbored an unwieldy composite army nearing a half a million men. Encampments took over the boulevards and the Champ-de-Mars, while the nannies who strolled the Tuileries made way for artillery.<sup>52</sup> Mary Corinna Putnam, an American who had moved to Paris to study at the *École de Médecine*, wrote her mother in September describing how “[t]he streets swarm with bataillons of soldiers,—Marine, mobiles, national guard in uniform and blouses,—drilling conscientiously and making progress every day—marching,—countermarching, to the chant of the Marseillaise and cries of *Vive la République*.”<sup>53</sup>

Under the Second Empire, Paris was defined by spectacle—a place where the show played out not only on the stages but also on the boulevards. While the siege rendered Paris an insulated and isolated community, it did not destroy this theatrical quality. When most theaters shut down for the war, Parisians searched for entertainment elsewhere, like going to the walls to watch artillery exercises.<sup>54</sup> But the greatest show in town was the departure of a balloon. Duruof’s ascent aboard the *Neptune* was only the inaugural salvo of a recurring spectacle imbued with meaning for Paris’s besieged denizens. Parisians anxiously waited for newspapers to announce a departure so that they could rush their letters to the post.<sup>55</sup> “I deliberately woke up bright and early to write you immediately,” Nina Hesse wrote to her mother, “because Isidore

told me that a balloon is departing today and I hope that it will carry away this letter: may the winds lead it safely to its destination!!”<sup>56</sup> People yearned to see those they were separated from, and the balloons that transported their letters became the medium through which they imagined that possibility. As the future prime minister, Georges Clemenceau, wrote to his wife, “Another balloon is going to leave tonight. I wish I could go with it and take a little trip to Féaule” (at the time Clemenceau was mayor of the 18th Arrondissement, where the Place Saint-Pierre is located).<sup>57</sup> Parisians grew attached to the floating globes because they carried precious epistolary cargo. As one chronicler explained, “Paris has reason to rejoice [at the departure of a balloon] because attached to this departure is our supreme hope . . . that which should give news to our distant families, to our wives, to our children.”<sup>58</sup>

For Théophile Gautier (the writer who had championed Pétin's airship project), observing a balloon ascent was a moment of pride. As he explained, the Prussians believed they had “walled [Parisians] up in a sepulcher,” but they could not “besiege the sky.” It was also a moment of reflection, for “along with the aeronaut flies our thoughts, our wishes for the cherished absent, the outpouring of our hearts, all that is good, tender, and delicate in the human soul.”<sup>59</sup> Others expressed similar feelings. A writer in *Le Gaulois* described an ascent where “an excited crowd gathered around this dear balloon, as in the departure of a friend; the air was filled with sunbeams and joy. . . . The huge envelope seemed swollen with hope, and one would have said that the wind itself murmured a kind of household *Marseillaise*.” As the globe flew across the sky, “everyone stopped at their doorsteps, in the middle of squares, every head in the air and all the eyes on the sky.” According to the author, each Parisian pondering the sight felt the same thing: “It seems to me that this aerial messenger carries away a part of myself.”<sup>60</sup>

The balloon that captured the most attention—both during and after the war—was the *Armand-Barbès*. In response to the impending Prussian siege, the GND sent a delegation to Tours. There was some logic to the decision, but it also created a political hydra that became unwieldy once communication between the two heads was cut off. On 23 September, fearing that politics might interfere with the war effort, the Paris-based GND decided to postpone elections for the Constituent Assembly. The Tours Delegation, however, chose to follow through with them, believing they would appease separatist regions. To try to resolve the issue, on 3 October Vice-President

Jules Favre proposed for a GND member to depart on the next balloon to bring the Tours Delegation into line. After some debate, the mission was assigned to the commanding Léon Gambetta.<sup>61</sup>

News of Gambetta's forthcoming ascent spread around Paris, and on the morning of 7 October thousands of people made their way to the Place Saint-Pierre, where they encountered two inflated balloons—the *George-Sand* and the *Armand-Barbès* (figure 2.2). As the balloons ascended, spectators shouted “Vive la République!” and “Vive Gambetta!” The Prussians greeted the balloons with a fusillade, so the *Armand-Barbès*'s captain tried to ascend higher. For some reason, the balloon lost altitude and hit the ground not far from an enemy post. A discharge of ballast made it rise again, but the airborne crew encountered another barrage of enemy fire near Creil, where a bullet grazed Gambetta's hand (or nearly grazed, depending on the account) before they ascended to a safer distance. Short on ballast, the balloon continued its journey at a low altitude. Following another salvo of Prussian fire, the globe got caught on an oak tree in Épineuse, eighty-five kilometers from Paris. Luckily, the passengers were rescued by French peasants and ushered to Amiens before Prussian uhlans arrived.<sup>62</sup>

Gambetta's ballooning act was an important element in the construction of his image as the Third Republic's indefatigable stalwart. All Parisian newspapers reported on his escape, and the feat also drew much attention from the foreign press.<sup>63</sup> According to *Le Petit Moniteur universel*, leaders of the past rode on horseback, but, for the first time, one courageously flew through the air.<sup>64</sup> Hermione Quinet was more hyperbolic, rapturing on how Gambetta, “putting his life at risk, soared to the aid of France” and was “responsible for the enormous weight of the salvation of an entire people.”<sup>65</sup> Indeed, Gambetta's flight was subsequently constructed as the high point of French bravery during the war and juxtaposed against Bazaine's surrender at Metz, which stood antithetical as the most craven betrayal. A balloon was named after Gambetta before the siege ended, and his ascent was presented as the centerpiece in the flurry of ballooning history books that appeared in the mid-1870s. The *Armand-Barbès* was also featured in nationalistic images d'Épinal that commemorated Gambetta's death in 1882 (figure 2.3), while Third Republic school manuals mentioned the event in their anecdotal construction of him as “the great patriot.”<sup>66</sup> The oak tree in Épineuse became a minor pilgrimage site until the property owner—a conservative politician—cut it down, after which the Oise General Council erected a column in its



Figure 2.2

This painting depicting Gambetta's departure by balloon from the butte of Montmartre was one of thirty-six paintings commissioned by A. Binant to document the Siege of Paris in a heroic mold. Jules Didier and Jacques Guiaud, *Départ de Léon Gambetta pour Tours sur le ballon l'Armand-Barbès, le 7 octobre 1870*, 1871. Paris Musées / Musée Carnavalet - Histoire de Paris.

place.<sup>67</sup> In a caricature mocking Gambetta's glorification, André Gill depicted him ascending in a balloon through his various iterations, from lawyer to politician to military leader to a Zeus-like mythical figure (figure 2.4). As one historian explains, "Gambetta's departure aboard a balloon grabbed people's attention and remains today the only memory of the hero."<sup>68</sup>

But the kind of daytime spectacle that defined Gambetta's ascent did not last throughout the siege, much to the chagrin of some. On 12 November, the Prussians captured the *Daguerre* and its crew, and in response French authorities decided to conduct ascents under the cloak of darkness. Both Nadar and Fonvielle criticized the nocturnal ascents on the basis that they posed a greater risk to the aeronaut who would have trouble recognizing the terrain below and potentially find himself above water (their critique bore out given that the only two fatalities were of balloons lost at sea during nocturnal ascents).<sup>69</sup> Fonvielle was also against the changes because nighttime ascents eliminated the patriotic spectacle. Daytime ascents, he argued, were good for morale.

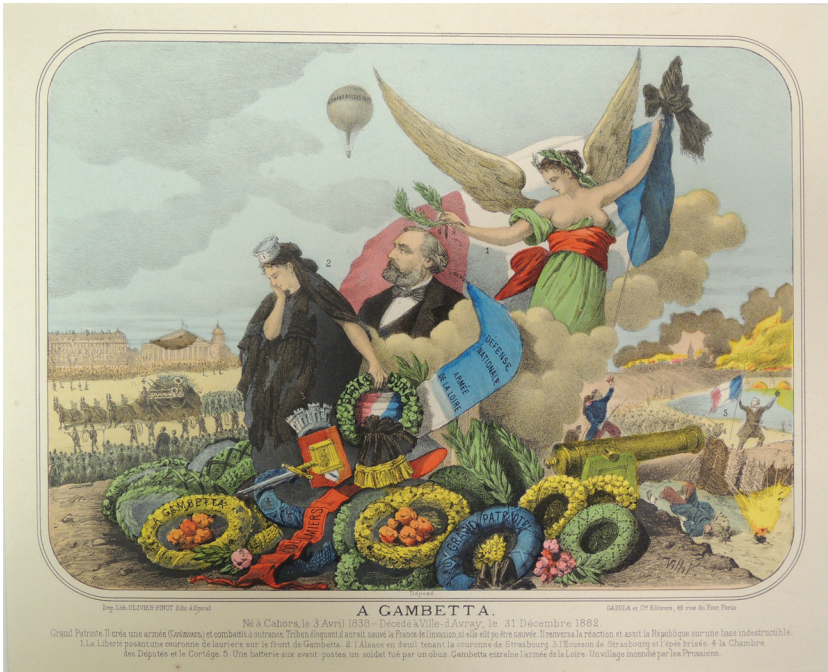


Figure 2.3

À Gambetta, Imp. Lith. Olivier-Pinot, ca. 1883. McDermott Library, U.S. Air Force Academy.

“So many noble tears, cruel but sweet, were shed at the sight of our tricolor flag flying in the clouds from where the invader could not chase it away,” he wrote in his account of the siege. “Alas, administrative routine would soon interrupt this patriotic and consoling spectacle.” Compared to patriotic daytime spectacles, Fonvielle found the nocturnal ascents from train stations to be lugubrious sights. Instead of a general sense of public communion, each person went about their duty like “automatons obeying hushed orders.” The enthusiastic cheers of “Vive la République!” were replaced by whispers that struggled to be heard in the still cold air, which now and then was disturbed by a strident whistle blast.<sup>70</sup> The number of people who attended nighttime ascents was indeed much smaller. Worried about intelligence leaks, officials stopped publicizing them. According to *Le Gaulois*, only about one hundred people came to watch the *Général-Uhrich* ascend on 18 November.<sup>71</sup>



Figure 2.4

The caricature associates Gambetta's meteoric rise as a political celebrity (from his initial burst into the public sphere as a skilled lawyer up to his charismatic leadership of the republican resistance against the Prussians) with his own balloon ascent to escape the Siege of Paris. André Gill, *Léon Gambetta*, ca. 1870s. Library of Congress, Prints & Photographs Division, LC-DIG-ppmsca-02353.

Although fewer people witnessed the night ascents, they were still widely reported on and inscribed into Third Republic memory as examples of patriotic heroism. One such case was Jules Janssen's 2 December escape aboard the *Volta*, which carried telescopic equipment that would allow the famous astronomer to observe a solar eclipse from Algeria (overcast skies in Oran ruined his plans). The press argued that the *Volta* ascent offered Bismarck "striking evidence of the energizing vitality of this France that he hopes to destroy," and Janssen was compared to the likes of Archimedes during the Siege of Syracuse.<sup>72</sup> Janssen's balloon journey for science was all the more meaningful because it stood in sharp relief with how the French construed the Prussian engagement with science. A witticism attributed to Louis Blanc and repeated across the press neatly encapsulated how the French perceived their enemies: "The Prussians are like Mohicans who graduated from the *École Polytechnique*."<sup>73</sup> For the French, the experience of the siege balloons was a civilizational triumph antonymic to the kind of scientific savagery attributed to the Prussians.

#### 4 "J'ÉCRIS, DONC J'EXISTE": AERIAL EPISTOLARY PRACTICES

Whether or not Parisians observed them depart, balloons became an intrinsic part of daily life under the siege. After all, if one were to personify nineteenth-century Paris, "she" would be *une ville bavarde*—a city who enjoyed both talking about herself and being talked about by others. Throughout the nineteenth century, Paris was more than just the political and cultural capital of France; it was also a central node in European networks—from the sciences and the arts to finance and politics.<sup>74</sup> Proud Parisians saw their city like Théophile Gautier: "It is the country concentrated, sublimated to its highest expression, a quintessence of national forces, that which each province produced of most intelligent, energetic, and perfect." The siege upended this situation, and Gautier evoked the image of it extinguishing the light that the *Ville Lumière* projected.<sup>75</sup>

But the new use of balloons to transport mail allowed some rays to break through the Prussian clouds, and Parisians were attuned to that in their correspondence. As one Parisian put it in a letter sent by balloon, "The capital of the world is isolated from the entire world," but "the balloons that seem to safely cross the Prussian lines at a respectable height . . . carry news to the four corners of the world."<sup>76</sup> Sending letters by balloon was a novel experience, but Parisians grew to trust it enough that some even mailed money orders.<sup>77</sup>

The volume of correspondence that balloons transported was staggering—according to one report, 9,654 kilograms of certified mail, which amounted to more than 1.5 million letters.<sup>78</sup> The service was reliable enough that people in the provinces grew frustrated when they did not receive letters from a loved one stuck in Paris. “There’s a lot of negligence on your end because the letters by balloon arrive very well,” someone in Alençon wrote in a letter they tried smuggling into Paris.<sup>79</sup>

Besides starving a city for resources, siege strategy also relies on demoralizing the besieged through isolation. As such, writing letters became an act of resistance, for Parisians imagined the frustration Prussian troops felt as they saw balloons breaching the blockade (figure 2.5).<sup>80</sup> The practice also acquired urgency because Parisians believed that relaying their experience would rally the provinces to send troops to rout the Prussians.<sup>81</sup> Just as important was how the exercise allowed Parisians to boost their own morale. Language of duty, courage, and discipline permeates the fragile letters.<sup>82</sup> Even though the balloons offered no military threat against the enemy, they became powerful symbols of Parisian resistance and ingenuity, and were invested with emotion. In a tender epistle to his wife and daughter, Charles Dujardin wondered whether his letters were reaching them (he penned more than forty during the siege). He then explained that regardless of whether the letter arrived, he still “had a very pleasant time” composing it.<sup>83</sup> Meanwhile, Louis de Chastaigner made an escapist allusion to the balloon that was carrying his message: “Ah! If one could rise like that in the air and isolate oneself from the miseries of this world, how delightful that would be, especially today when miseries have turned into calamities!”<sup>84</sup>

In the preface of a published collection of letters he wrote during the siege, Georges Beringier aptly paraphrased Descartes: “J’écris, donc j’existe.” If we were to take Beringier at his word, Parisians did their best to exist under meager conditions, writing with “troubled soul[s], empty or distressed stomach[s], frozen feet and hands.”<sup>85</sup> Newspapers instructed Parisians that they needed to write letters transported by balloon on a single sheet of lightweight onion-skin paper so that it did not weigh more than four grams (hawkers sold it by the name *papier ballon*).<sup>86</sup> Because of this, writers adopted epistolary strategies like crosshatching to fit as much content as possible within the limited space (figure 2.6).

Parisians also toyed with existing media. The revival of the press brought with it a new kind of publication that only lasted for as long as balloons



Figure 2.5

This caricature by Draner (pseudonym of Jules Renard) depicts a French aeronaut mocking a Prussian soldier attempting to shoot down his balloon. The caption reads: “My exit pass? Well, here it is!” The caricature was part of a set of thirty-one humorous prints depicting the defense of Paris. Draner, *Aérostier*, 1871. Author’s collection.

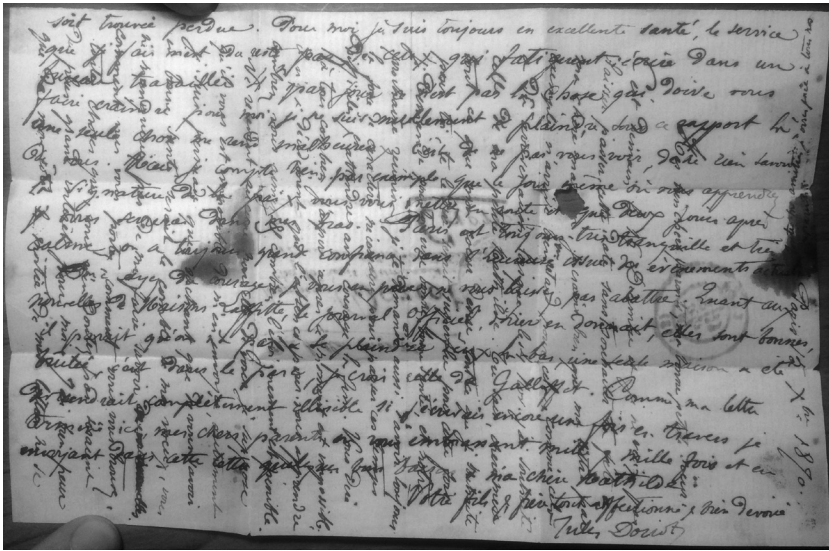


Figure 2.6

A crosshatched letter sent by balloon during the Siege of Paris. The writer concluded by acknowledging the difficulties of expressing himself in such limited space: “As my letter would become completely illegible if I wrote crosswise yet again, I end here, my dear parents, by kissing you a thousand times.” 15 December 1870 letter addressed to Monsieur Doriot. Smithsonian National Postal Museum.

escaped the city: the *lettres-journaux*. These newspapers, printed on onionskin paper, summarized the news from the past few days while leaving blank spaces for the sender to include personal comments. The *lettres-journaux* reported on everyday life under siege, the politics of a tumultuous city, the balloon ascents, and the stock exchange. According to Gabriel Richard, *Le Ballon poste*'s manager, “This special form of journalism seems to us bound to become popular. It will bring Paris closer to France and will foster the communion of ideas between friends and families separated by the circumstances.”<sup>87</sup>

Parisians appreciated the novelty. A man called Marcel sent his “dear Ernestine” a copy of the “new invention destined to make you aware of the news from Paris without us having to write it down. There is still space to give news of oneself and chat a little with the family. It’s very ingenious.”<sup>88</sup> A man named Albert agreed. He sent his wife a copy of the *Gazette des absents*, which he found “very intelligent,” since it would “inform [her] of the general facts” while he discussed “intimate matters.”<sup>89</sup> Someone in the provinces wrote

that the newspapers were a source of “reassurance” and read with “delight.”<sup>90</sup> Correspondence sent by balloon was not subject to official censorship, but Parisians remained cautious about the information they included. In letters sent to his parents, Aristide Couteaux vacillated between withholding details about public and military affairs being discussed in Paris and including the dates of major scheduled military operations.<sup>91</sup> Writing to his wife in early January, Dujardin, a member of the National Guard, explained that he would not offer her many details about how Parisians were preparing for the expected Prussian onslaught, since the letter might fall into enemy hands.<sup>92</sup>

Whether on blank paper or alongside the news, Parisians continued to write for the usual reasons, such as to celebrate special occasions—an important ritual in preserving social bonds, which the siege rendered even more urgent.<sup>93</sup> Parisians also wrote when there was nothing new to say and to complain about the monotony of life under siege. Paul Boys tried to maintain regular correspondence with his son, Sylvius, and a common refrain in his letters was “rien de nouveau” (nothing new).<sup>94</sup> Another writer wondered whether he was just rehashing the same old things letter after letter but concluded that the recipient (his wife) would not mind as long as he remained healthy.<sup>95</sup>

The balloons also allowed enamored men to keep courting their romantic interests. Aimé, for example, wrote his beloved Lydia three letters in the space of two days—the last one a *lettre-journal* in which he added a note hastily written from a café because he just had to add a final flourish: “Je t’aime! Je t’aime! Je t’aime!”<sup>96</sup> In a letter to his wife Emma in London, Valentin Costallat switched between French and English expressions of affection, commenting on how he knew how much she missed cuddling him.<sup>97</sup> Alfred Roseleur sent his wife no fewer than sixty-seven letters through the official balloon post. Roseleur, though, was unsure of the service, and took it into his own hands to produce one of the war’s most novelistic episodes (coincidentally, he was also George Sand’s family doctor). Throughout the siege, Roseleur went to his balcony and released scores of children’s balloons carrying letters to his wife in Aubusson, about three hundred kilometers south of Paris. Traveling through tortuous routes, close to twenty reached his “bon mignon bien aimé” (as he usually began the letters). When the mayor of Archères came across one, he attached his own note explaining that since postal services did not function under the occupied zone, the letter had to move furtively from hand to hand until it finally reached territory where the post continued to operate.<sup>98</sup>

Commentary on the siege itself was just as prevalent. Parisians often included anecdotes that gave the impression that they maintained some semblance of normal life—from lamenting the loss of money at a domino match and complaining about nightmares to strolling through the woods.<sup>99</sup> Food was a constant topic of discussion. Everyone talked about what they ate, for everyone made changes to their diets—whether they were buying exotic cuts of butchered zoo animals or having to catch dogs, cats, and mice.<sup>100</sup> People wrote about food to assuage the concerns of those outside Paris who worried their loved ones might starve. A man, likely quite rich, wrote to his daughter describing how in the past days he had managed to eat some lamb, salsify, beef à la mode, chicken, baked fry, veal galantine, sheep kidney, and sirloin. As he explained, “If I give you all these minute details, my dear little Rosa, it is because I know how much you must all torment yourselves about us, and I am anxious to reassure you that you should not feel sorry for us.”<sup>101</sup>

Writing a balloon letter proved to be a bittersweet exercise, for the activity encompassed both the hope of reaching a loved one and the realization that a reply was unlikely. G. Teiller, who wrote to his family often, expressed how much he would be relieved by the certainty that at least one of his letters had reached them:

But no, always doubt! We happily see a balloon depart, but that is all. Every time I see it fly toward our friends of France, my Heart aches. I send aboard it a thousand kisses for you, my soul departs with it and for a moment I indulge in the joy of seeing you, but all of a sudden my illusion disappears [Teiller uses *s'envole*, which means flies away, like the balloon]. The sound of a cannon quickly brings me back to the sad reality, then nothing: the balloon has disappeared, I have nothing left but the hope that it will faithfully bring you news of me.<sup>102</sup>

The closest Parisians got to establishing a return mail route was a carrier pigeon system where birds were sent out with the balloons and released from the provinces to return with messages to the capital. At first it was only available for official correspondence, but it did not take long for authorities in Tours to adopt photography to reduce the size of messages, making it possible to open the service to the public.<sup>103</sup> Parisians responded enthusiastically, and to make the process more efficient on 12 November the microfilm pioneer René Dagrón escaped aboard *Le Niépce* (a balloon named after the early photography pioneer) to organize a system where microscopic sheets

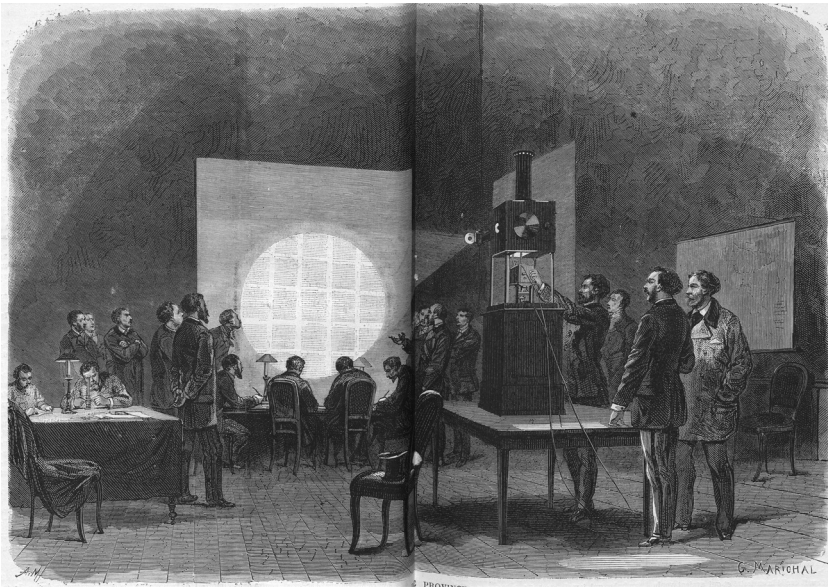


Figure 2.7  
 “Les Nouvelles de province,” *Le Monde illustré*, 21 January 1871. Bibliothèque nationale de France.

of collected telegrams would be layered onto tiny collodion film to be transported by pigeons and magnified in Paris by a magic lantern (figure 2.7).<sup>104</sup>

From 8 November to 1 February, officials processed 95,642 private telegrams—more than 1,200 per day.<sup>105</sup> People paid fifty centimes per word for regular telegrams, or one franc for a response telegram in which they answered “Yes” or “No” to up to four questions received by balloon letter. Still, communications remained sketchy at best. Only seventy-three of the 363 carrier pigeons sent out on balloons made it back to Paris.<sup>106</sup> Nevertheless, some news was better than no news, and one writer argued that “it was the pigeons that saved Paris from the moral death that could have been caused by the total absence of news.”<sup>107</sup>

During the siege, the pigeon became a living counterpart to the balloon and also acquired remarkable esteem.<sup>108</sup> Newspapers reported that Parisians chased after birds in the hopes that they carried dispatches, and rumors circulated that Prussians used falcons to intercept the winged couriers.<sup>109</sup> A decree issued three days before the armistice penalized those who harmed a pigeon with up to five years of imprisonment if the offender knew that the

bird was carrying a dispatch, and some even suggested feeding all pigeons at the city's expense and honoring them with a spot in Paris's shield.<sup>110</sup>

The pigeon partnered with the balloon to form a curious patriotic diptych, which Pierre Puvis de Chavannes depicted in pendant paintings that treaded an evocative line between allegory and realism. Completed in the fall, *La Ballon* was received with enthusiasm by many critics. Paul de Saint-Victor penned a fawning review in *La Liberté* that embraced the balloon as the ultimate symbol of Paris's resistance and juxtaposed Puvis de Chavannes painting with the epic airship stanzas in Victor Hugo's *La Légende des siècles*:

These balloons, by which the soul of the city escapes and soars, will one day be the marvels of history. This fragile sphere launches into space only heroic breaths, only burning and tender sighs, filled with the messages and wishes of a people. Ascension has replaced evasion. Belted by iron, blocked by fire, Paris, still not able to break its chains, has created wings. . . . This bubble of air laughs at the hail of bullets. . . . One is better off cannonading a shooting star. . . . Victor Hugo, in *La Légende des siècles* sang and prophesied, in magnificent verses, the future of the balloon. . . . But what the poet could not have guessed in this dazzling vision of human genius freed from gravity and subjugating the air, was the balloon becoming, even before this supreme progress, a messenger of salvation, a celestial phenomenon, a sort of helpful archangel, opening to an imprisoned Paris the sublime gateways to deliverance.

Saint-Victor only regretted that Puvis de Chavannes had not included a pigeon returning to Paris. As he wrote, "There will be no legend in history more touching or more beautiful than that of these savior birds, bringing back to Paris the promises of distant France, the tenderness and memories of so many separated families."<sup>111</sup> In a poem printed in one of the newspapers sent by balloon, he rhapsodized how "the nation's soul beat under their tiny wings," and how "like the storks of the towns in the north, like the pigeons of Venice, they also deserved to become sacred birds."<sup>112</sup> Whether influenced by Saint-Victor or not, Puvis de Chavannes completed another painting in January, *Le Pigeon*. These two images were so popular that they were reproduced in tens of thousands of prints during the siege's final months (figures 2.8 and 2.9).<sup>113</sup>

But desperation in the face of isolation only increased as the siege entered its winter months and fewer carrier pigeons found their way back to the city. On the 11 December entry of a diary that she kept during the siege, Caroline Chaumot explained how every time a pigeon arrived it brought along both joy and disappointment, since many who waited for news from their



Figures 2.8 and 2.9

These lithographs by Émile Vernier made after Pierre Puvis de Chavannes's paintings *Le Ballon* (1870) and *Le Pigeon* (1871) became very popular during the Siege of Paris and operated as a diptych that conveyed the city's resilient spirit. In *Le Ballon*, the armed woman in spartan dress (an allegory for Paris) stands guard at the ramparts and waves at a departing balloon (the caption reads: "The besieged city of Paris entrusts the air with her appeal to France"). In *Le Pigeon*, the woman protects a messenger pigeon from a threatening Prussian eagle (the caption reads: Having escaped from the enemy's hold, the long-awaited message elates the proud city's heart"). Source: gallica.bnf.fr / Bibliothèque nationale de France.

loved ones did not get any.<sup>114</sup> The unusually cold winter also affected Parisian morale. Temperatures regularly dipped to  $-10$  Celsius, and the Seine froze for three weeks. On Christmas Day, the painter Edouard Manet wrote to his absent wife: "We are really suffering here, it is bone-splittingly cold and we are short on fuel, I will not even mention food, we sit at the table from habit. We carry on well despite it all."<sup>115</sup> Another blow came on 5 January, when the Prussian bombardment began. Parisians wrote to assure their loved ones that they were safe, some trying to convey a kind of thrilling excitement brought by the unusual situation.<sup>116</sup> But, as the situation worsened, the burden of isolation became even heavier. A few days after Christmas, Charles Lebaigue sent his wife a letter conveying his heavy heart. "It is not, believe me, that I have

lost all hope on the outcome of the fight; but I find the absence of news to be agonizing to the last degree . . . the isolation in which we find ourselves is intolerable.”<sup>117</sup>

Hungry for news from the outside world—and facing the triple threat of physical starvation, growing mortality rates from disease, and death by shelling—the ability to navigate through the air acquired an unprecedented urgency for Parisians. More than ever, the balloon had proven that it could be useful and yet seemed frustratingly far from rising to its full potential. The need to find ways to steer the awkward globes had never been more pressing, and the imaginative practices by which Parisians appropriated the technology made this manifestly clear.

## 5 SCIENCE UNDER SIEGE: THE SEARCH FOR AERIAL PANACEAS

In a pioneering work about science during the Franco-Prussian War, Maurice Crosland argued that “one of the most remarkable features of the siege was the extent to which science was called upon.”<sup>118</sup> Initially, the siege brought scientific practice to a halt, with procedures at the Academy of Sciences decreasing and leading scientists like Louis Pasteur finding it difficult to work. But soon enough, others saw in the war an opportunity to expand science beyond the laboratory. Parallel scientific institutions open to the wider public emerged, like the Scientific Committees for the Defense of the Arrondissements of Paris—a sign that people from varying backgrounds hoped that a scientific breakthrough would allow the French to snatch victory from the jaws of defeat.<sup>119</sup> Proposals from the mundane to the bizarre abounded. To solve the hunger problem someone advocated for “philanthrophagy,” which meant having “all persons over sixty years of age slaughtered.”<sup>120</sup> There were also some who claimed to have (re)invented Greek fire, which became a cause for concern for the police as the notion of an “all-out resistance” gathered force.<sup>121</sup> While Crosland analyzed developments in French science during the Franco-Prussian War, he explicitly focused on those from “men with scientific training, and ideas that were possible, at least in principle.”<sup>122</sup> I make no pretenses of distinguishing between possible and impossible proposals, for what I am interested in is how the idea that an aerial solution could bring an end to France’s turmoil permeated French society during these fateful months.

Although the Academy of Sciences had ignored balloons for almost a century, during the siege it received numerous notes on the technology

and felt pressured to investigate the matter. By and large, the institution did not find the proposals worthy of serious consideration.<sup>123</sup> But the government did finance an airship project developed by one of the *académiciens*. In October, the naval engineer Henri Dupuy de Lôme made public a “steerable aerostat project equipped with a propeller.” His goal was to manufacture an airship that could move at about eight kilometers per hour. At that speed, it would barely fight against a breeze, but Dupuy de Lôme explained that his objective was for the airship to move at an oblique angle while being carried by the wind. Pressed for urgency, he based his design on Henri Giffard’s 1852 airship. The only major change was for the propeller to be operated manually to avoid adding weight with an engine.<sup>124</sup>

Dupuy de Lôme secured a forty-thousand-franc subvention from the GND to build the airship.<sup>125</sup> At first, the press championed the project, arguing that there was reason to be optimistic given that Dupuy de Lôme was a respected engineer, but it soon grew frustrated with constant delays.<sup>126</sup> The specialized aeronautical community also criticized the project. Félix Caron, *L’Aéronaute*’s manager, argued that the blueprints offered nothing new and that the machine was bound to fail.<sup>127</sup> Steady in his belief that aerial navigation was only possible through a heavier-than-air machine, Nadar attacked the GND’s choice to finance the “chimerical hopes” of yet another “flying fish.”<sup>128</sup>

The airship was only completed a year after the end of the siege. On 2 February 1872, a commission arrived in Vincennes to see it in action, and the crew managed to conduct some basic maneuvers before the airship was swept away by the wind. While Dupuy de Lôme claimed the experiment was a success, the aeronaut and scientific writer Gaston Tissandier made a convincing case that no improvements had been made to Giffard’s 1852 model. In fact, Dupuy de Lôme’s decision to forgo Giffard’s steam engine and instead use manual power stupefied Tissandier, especially since the engine had managed to exert the force of thirty men. It was nothing but “a step back,” Tissandier argued.<sup>129</sup>

Despite its failure, Dupuy de Lôme’s project was the most the government had committed to aeronautical research since the late eighteenth century. But an even more distinct feature of the siege was the extent to which the aeronautical imagination was active outside official institutions. The press discussed all kinds of projects, and these articles excited readers even when they were nothing more but *blagues*, like the rumor that balloons would be

steered by half-starved eagles harnessed to a balloon chasing after a piece of meat hanging from the end of a long pole.<sup>130</sup> Furthermore, amateurs from different professional backgrounds tried to come up with contributions to the French war effort that made use of balloons. Nadar, who had achieved aeronautical fame thanks to the *Géant*, later wrote that, much to his frustration, he was flooded with proposals for “pseudo-dirigible balloons.”<sup>131</sup>

Beyond the myriad ideas of how to navigate through the air, Nadar received proposals for other ways balloons could serve the French war effort, including elaborate schemes to use them for communication beyond the established balloon post. One proposal recommended the use of more than sixty balloons to sustain telegraph wires that would span the distance from Paris to Orléans.<sup>132</sup> Another amateur inventor suggested using a paper balloon attached to a fuse that would be activated by a timer set according to the wind's speed and direction. As the balloon burned, it would drop a parachuted cargo near the desired destination (figure 2.10).<sup>133</sup>

Others imagined balloons as engines of destruction. In the early months of the siege, Nadar received at least twenty-one letters suggesting ways to use balloons to bomb the Prussians. As one correspondent argued, the aerial option was compelling because the Prussians outnumbered the French in men and cannons.<sup>134</sup> Most of these proposals resembled one advising Nadar to manufacture as many balloons as possible that could then be used to drop nitroglycerin and nitric acid bombs on the Prussian General Staff.<sup>135</sup> A few went even further and proposed suicide missions. A mother of two soldiers whose only regret was that her youngest could not yet serve the French flag wrote asking why the government would not make balloons that would explode once they crashed onto Prussian camps. “The Republic will easily find men willing to die for their devotion on the condition that the country adopts those left in need by these heroes,” she argued.<sup>136</sup> Nadar later claimed that he was approached by a patriotic old man with no family who offered to detonate himself aboard a balloon filled with explosives.<sup>137</sup>

The introduction of aeronautical practices into warfare, even if just in the realm of imagination, gave rise to concerns. The GND regulated airspace during the siege, prohibiting balloon ascents without prior government authorization.<sup>138</sup> Parisians also considered the ethics of aerial warfare. The press discussed whether balloons should be used as weapons, for it might encourage the Prussians to do the same and escalate violence.<sup>139</sup> The Scientific Committees for the Defense of the Arrondissements of Paris rejected



Figure 2.10  
 Léon Brin's proposal for an automated balloon delivery system to be used to break the Siege of Paris, 9 September 1870. Bibliothèque Historique de la Ville de Paris (MS-NA-471, f. 110).

any proposal to use balloons as engines of war on the grounds that it went against the Geneva Convention.<sup>140</sup> Another issue concerning the laws of war was the status of captured aeronauts. Bismarck sent Jules Favre a letter by way of Elihu Washburne, the American ambassador to France, threatening to treat them as spies.<sup>141</sup> The government made this communication public and rumors circulated that captured aeronauts would be executed, which *La Patrie* characterized as another example of the Prussian “system of war by terror.”<sup>142</sup> A professor of international law at the Faculté de Paris gave a conference comparing unintentional balloon landings in occupied territory to ships that accidentally sank in enemy waters, and he argued that aeronauts should not be taken prisoner because their capture was not the product of Prussian acts but the consequence of chance.<sup>143</sup> These issues remained unresolved, lingering in the aeronautical imagination and occasionally being brought up by French jurists until the 1899 Hague Conference prohibited the discharge of projectiles and explosives from balloons and established that those sent aloft to deliver dispatches could not be considered spies.<sup>144</sup>

The Siege of Paris invested a new sense of urgency into aeronautics. A general sense of understanding coalesced that the suffering and humiliation inflicted by the Prussians could have been avoided if France had advanced further in the pursuit of flight. The aerial route was imagined as a panacea—one often cast in a vengeful mold. One year and a half after the war, a feuilleton titled “La Revanche fantastique” ran in *Le XIXe siècle* which reimaged the outcome of the recent traumatic events by recasting them in the future. The narrative begins on 23 August 1882—146 days into a second Prussian siege of Paris. Prize-winning savant Jacques Martin, who for six months had been asking the government to look at his secret invention, finally meets with Adolphe Thiers, now president of France. Martin convinces the government to adopt his bat-shaped flying machines. Piloted by heroic Frenchmen, they end up stopping another Commune insurrection, massacring the Prussians at Paris's walls, liberating Metz, reconquering Strasbourg, and flying to Berlin, where they shower the city with propaganda that encourages the Germans to topple the emperor and install a republic. In the end, it is revealed that the entire story had been a nightmare suffered by Bismarck, who then decides to prioritize German research into steering balloons—a fictional warning for the French not to ignore the importance of leading the aeronautical field.<sup>145</sup>

More utopian minds also saw in the sky a path to peacefully end the war. Thomas-Casimir Regnault, an engraver who was in London during the

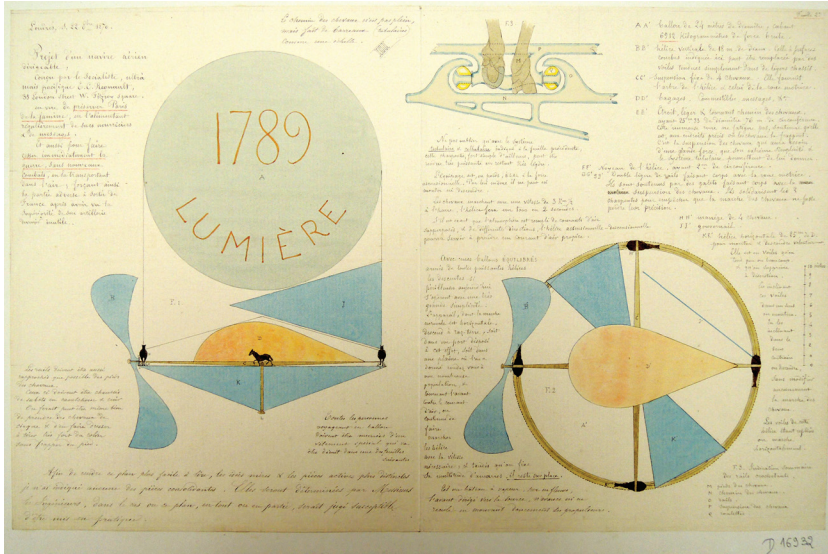


Figure 2.11  
 Regnault named this horse-powered airship design after the Enlightenment ideals that inspired the French Revolution. Thomas-Casimir Regnault, *1789 Lumière*, 22 October 1870. Musée Carnavalet, Collection Nadar.

Franco-Prussian War, concocted various lighter-than-air designs that he hoped would bring an end to the conflict (figures 2.11 and 2.12).<sup>146</sup> An inconnu, Regnault left traces of his political views in a placard he published during the Commune, where in typical Fourierist fashion he articulated a vague philosophy on the essential duality of universal laws (good is linked to evil, spirit to matter, the sublime to the abject) and championed a socialist, universal republic able to harmonically encompass a diverse humanity.<sup>147</sup>

Regnault sent at least one of his designs to Christina Groh, who was married to the eminent socialist Louis Blanc, hoping that she would then forward it to French authorities. Regnault explained to Groh that, while he had been inspired by Nadar’s adventures with the *Géant* to design his own balloon for profit, he had instead come to realize that his invention, which he titled *Le Premier Né*, could be used to transport correspondence and provisions to Paris. If authorities were interested, he was more than eager to provide further details about this “debonair project that, more so than the homicidal hail of bullets, can BRING THE PEACE that I passionately hope for both PEOPLES . . . and to the rest of the world.”<sup>148</sup>



the rest of France and beyond. Regnault was particularly enamored of this project because any “democrat” could prepare a balloon at home and release it from their window at night, thus enabling them to “practice universally free thought” without risking persecution. He claimed that the Commune granted him a credit of 100 francs to demonstrate his system and he released four trial balloons before Duruof stole his idea (an episode discussed in more detail in the next section).<sup>151</sup> Regnault did not survive long after the Commune’s brutal repression. According to Nadar, he killed himself with cyanide the following year after the death of his dog—his only companion. The photographer jotted down in a note that Regnault was “the most generous and heroic madman” he had ever known.<sup>152</sup> If the Paris Commune can be interpreted as the apotheosis of an artisan revolutionary tradition developed through a proud history of associationism, Regnault’s airship designs were the dying paroxysms of the romantic socialist vision for flight cultivated in the mid-nineteenth century by workers like Ernest Pétin. The French state’s massacre of the Commune was to be the final nail in the coffin of radical utopian designs for flight.

Kranzberg argued that the less educated were especially susceptible to the claims of silver bullet scientific breakthroughs that could bring an end to the war.<sup>153</sup> But we should not trivialize the proposals Nadar received, fictions like “*La Revanche fantastique*” or utopian blueprints like those Regnault dedicated himself to, for they all reveal how much French people from different backgrounds invested their hopes on an aeronautical panacea—a dream that would coexist with the lingering trauma of defeat in the ensuing decades. Overwhelmed by the Prussians, the French looked up for a way to survive and compete. After Wilhelm I was proclaimed Kaiser of the newly formed German Empire in Versailles’s Hall of Mirrors, the fear of German supremacy on land became a lingering trope that helped structure French enthusiasm for flight. As we will see in the following chapters, whether it was in the case of scientific ascents, sports competitions, spectacular feats, or colonial competition, the German shadow loomed large over French aeronautical pursuits.<sup>154</sup>

## 6 THE AFTERLIFE OF THE SIEGE BALLOONS: THE COMMUNE, COMMEMORATION, AND RESEARCH

By early 1871, it was clear to leaders of the GND that further resistance to Bismarck’s troops was futile. The parties signed an armistice on 26 January, and the GND held national elections ten days after. A conservative parliament

buttressed by the rural vote took form, placing Adolphe Thiers, an old-guard conservative republican, at the helm of the new government. Most representatives elected by Paris, however, were on the left. Political tensions between the capital and the provinces were more explicit than ever. Then, on the dawn of 18 March, troops sent by Thiers headed up Montmartre to seize cannons that had been under the protection of the National Guard since the siege. Thiers wanted to establish his authority and worried how Parisians would respond to the planned Prussian parade through the city. That was the final straw for proud working-class Parisians, who had financed the cannons themselves, were frustrated with the election results, and felt that they had endured enough humiliation from Bismarck. The city broke up in insurrection, the red flag waved over the Hôtel de Ville, and the Commune was proclaimed. For more than two months, Parisians improvised a progressive municipal government while resisting the French army, which rallied behind Thiers in Versailles. Finally, in late May, the Versaillais broke this second siege and reestablished control over the city, but not before massacring thousands in what came to be known as the *Semaine Sanglante*.<sup>155</sup>

The ephemeral Paris Commune also flirted with balloons to spread the message that an autonomous workers' government was resisting the siege imposed by Versaillais troops. Nadar wrote to Félix Pyat, one of the Commune's leaders, expressing his support for the insurrection and advising the Communards to use the ballooning matériel accumulated during the siege so that they could counter the lies spread by "iniquitous men" who wanted to sway the rest of France against Paris.<sup>156</sup> The Communards made movements in that direction. On 21 April 1871, the Commune's *Journal officiel* announced the creation of a *Compagnie d'aérostiers civils et militaires de la Commune de Paris*, making Duruof its captain.<sup>157</sup> The Communards, however, were tragically short on resources and did not have enough time to enact their plans. According to police reports, in the subsequent month, Duruof only managed to release about ten small, unmanned balloons containing proclamations from the Commune (the project Regnault claimed was his idea).<sup>158</sup>

The French government persecuted Communards who survived the *Semaine Sanglante*. Thousands were arrested, deported, and executed.<sup>159</sup> Duruof was one of those the police hunted down. There were reports that he had been in regular contact with François-Louis Parisel, the head of the Commune's scientific delegation who disappeared after the Versaillais invaded Paris (it was even posited that he manufactured a balloon for Parisel to escape the



Figure 2.13

A postcard celebrating the inauguration of Frédéric Auguste Bartholdi's monument honoring the Siege of Paris aeronauts, undated. Bibliothèque Historique de la Ville de Paris (Actualités 125).

city).<sup>160</sup> The police eventually arrested Duruof in 1873, after which Nadar wrote a passionate defense of his aeronautical collaborator, highlighting his critical role in the creation of the siege balloons and his bravery in being the first one to fly out of the city. Nadar's plea for patriotic clemency may have been effective, for Duruof was acquitted the following year.<sup>161</sup>

Duruof's acquittal is indicative of the symbolic value that siege balloons acquired. In 1872, the government commended siege aeronauts with a military medal and made several of them chevaliers of the Légion d'Honneur (the Conseil Municipal de Paris also minted commemorative medals for their services).<sup>162</sup> The siege balloons were also a feature in the Third Republic's *statuomanie*—the burst in commemorative monuments driven by the regime's pedagogical understanding of public space.<sup>163</sup> Beyond the column in Épineuse celebrating Gambetta's flight, memorial plaques commemorating the two aeronauts who perished at sea were placed at the Gares du Nord and d'Orléans. But the major monument honoring the siege's aeronautical pursuits was unveiled in 1906, with the inauguration of Frédéric Auguste Bartholdi's *Monument aux Aéroplanes du Siège* in Paris (figure 2.13).

Better known as the designer of the Statue of Liberty, Bartholdi also had a thriving career conceiving sculptures that memorialized the Franco-Prussian War. He claimed to have come up with the idea for one celebrating the siege aeronauts when he saw a balloon fly overhead as he stood guard at the city's fortifications.<sup>164</sup> The monument, which was financed through a national subscription, rose fifteen meters from the ground and featured the balloon as the centerpiece. Flying by its side was a pigeon, and below it sat the allegorical female figure of Paris cradling a baby and gently extending her hand to the sky calling for the winged courier. A scared child hid behind her, while an exhausted soldier rested to the side. A defiant teenager bearing a short blade stood at the front, while another one held on to the ascending balloon. Behind the soldier, one also saw part of the Parisian ship, which also served as the balloon's gondola, thus conflating the vessel of the air with the nautical symbol of Paris. As Janice Best explains, the sculpture "recalled both Gambetta's intransigent attitude and emphasized the role played by civilians in the defense of Paris."<sup>165</sup> But anyone seeking to find this work today would be disappointed. Bartholdi's sculpture was melted down in 1941, a victim of Vichy's campaign to supply Germans with metal while simultaneously erasing the Third Republic's pedagogical use of public space.<sup>166</sup>

Finally, the experience with the siege balloons prompted the Third Republic to revive a First Republic aeronautical institution. In 1877, thanks to pressure from Gambetta and other politicians, the government inaugurated the *Établissement d'aérostation militaire* at Chalais-Meudon.<sup>167</sup> According to Charles Renard, who headed the institution, the siege experience helped people realize that France could not settle for "an improvised matériel, handled by inexpert troops."<sup>168</sup> Yet, authorities remained hesitant to spend too much on aeronautics—an understandable position, given the Dupuy de Lôme debacle. Officials at Chalais-Meudon often complained that the government was not investing enough resources in the facility.<sup>169</sup> Even so, by 1887, every army corps featured a tethered balloon unit, and, as we will see in chapter 5, observational balloons were used during the 1883–1886 Tonkin Campaign.<sup>170</sup> It was also at Chalais-Meudon that Renard and Arthur Krebs developed *La France*, which on 9 August 1884 became the first airship to successfully conduct a roundtrip voyage (by then the standard for success). It traveled 7.6 km in twenty-three minutes—a feat that added credence to the belief that lighter-than-air machines could fight against the wind and navigate the skies.<sup>171</sup> While government authorities remained skeptical about human

flight and were conservative in resource allocation, the situation had changed substantially when compared to before the Franco-Prussian War.

#### CONCLUSION: THE ASCENDANT BALLOON

Thanks to the work of passionate civilians, France emerged from the Franco-Prussian War with at least one redeeming story it could cling to: the use of balloons during the Siege of Paris. Michèle Martin and Christopher Bodnar argue that balloons supplied the means to circulate news from Paris to the provinces and beyond—news that was critical to the construction of French national identity during a moment of crisis.<sup>172</sup> My argument here goes even further, positing that in doing so, balloons were invested with emotion and acquired a prominent spot in French national consciousness. The floating globes enabled the continuation of the subjective practice of letter writing during a traumatic period and represented the collective triumph of French ingenuity over Prussian military might. As someone who relocated to the provinces put it in an undelivered letter to a loved one in Paris, “We bless the invention of the balloons that allow us to learn that you are all in good health in this sad Paris that we so regret having left.”<sup>173</sup>

The siege experience also prompted the French to reconceive taking to the air as a way to preserve their dignity, as a sign that France was not decadent beyond repair. The balloon acquired significant cultural capital by becoming an emblematic symbol of French resistance in the face of a growing power to the east (figure 2.14). This experience proved to be a turning point in the technology’s public image, which acquired a refreshing legitimacy after decades of being associated with frivolous entertainment, utopian cranks, and swindlers seeking to make a quick buck. This transformation was crucial in setting the scene for the ballooning revival in the last third of the nineteenth century. Hollis Clayton’s study of art during the Siege of Paris reveals that artists were unable to embrace some kind of coherent experience during those months, which helps explain why the siege was a parenthesis in the aesthetics and practices of French artists.<sup>174</sup> For those invested in the pursuit of flight, the opposite happened. The use of balloons during the Franco-Prussian War invested the French aeronautical community with a new sense of purpose. One of the immediate lessons drawn from the conflict was that France “was defeated through science,” as one author put it shortly after the war.<sup>175</sup> As we will see in the following chapter, aeronauts embraced that lesson with fervor, with

EMBLÈMES PATRIOTIQUES.



Saillant Editeur: 5 et 10 Rue du Croissant

Imp. Lemercier et C<sup>ie</sup> Paris

Emile Cugny Inv<sup>r</sup> 8<sup>h</sup>

LE BALLON.

J'ai été exilé de Paris et c'est lui qui m'a apporté des nouvelles de la Capitale.

LE CHEVAL. J'ai été assailli dans Paris et m'a nourri.

LA TORCHE. Ma Maison a été détruite ou endommagée.

L'OBUS. Ma Ville ou mon Village a reçu la visite de l'ennemi.

LE SABRE. J'ai été armé pour la défense de la Patrie.

DEUX ANNEAUX. J'ai été fait Prisonnier.

CROIX DE GENÈVE. J'ai servi dans les Ambulances.

CROIX DE DEUIL. J'ai perdu un proche Parent.

LE PIGEON. M'a apporté des nouvelles de la Province.

Figure 2.14

The balloon became an emblematic symbol of French resistance and ingenuity during the Franco-Prussian War, making its way into the conflict's rich iconography. In this print, the balloon appears as a heraldic charge at the top of Marianne's shield. The legend reads: "The Balloon: I was exiled from Paris, and it was it that brought me news from the Capital." Jean-Adolphe Bocquin, *Emblèmes patriotiques*, ca. 1870. Library of Congress, Prints & Photographs Division, LC-DIG-ppmsca-02640.

associations mobilizing the memory of the siege to justify their activities. In no other country did the balloon achieve the sort of symbolic status that it did in France during and after the Franco-Prussian War. The technology became an allegory of the new republic's ascendant regime, but it was also capacious enough to be embraced as a general symbol of French greatness. That flexibility was central in fostering the enthusiasm for aeronautical pursuits in the last third of the nineteenth century, a phenomenon that initially manifested itself in the republican-driven effort to legitimize scientific ballooning but eventually expanded into the new aristocratic practice of ballooning as a sport.

But one undercurrent that had sustained enthusiasm for flight for much of the nineteenth century would be excluded from hereon. Dreams of an emancipatory politics of universalism had been prominent among many lighter-than-air enthusiasts before 1871. But those largely perished together with Thomas-Casimir Regnault. Following the traumatic defeat to Bismarck and the violent suppression of the Paris Commune, French aeronautical practices would be informed mainly by anxieties concerning France's vulnerable position in a new geopolitical order.

II

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THE AIRMINDED REPUBLIC



## MARTYRS MADE IN THE SKY

## Republican Aeronautical Science and Sacrificial Patriotism

A rare sunny February day in Paris—a Sunday, as luck would have it—and foreigners and French alike walk through the Père-Lachaise Cemetery gates on Boulevard de Ménilmontant, stopping in front of the map to jot down which tombstones to visit. Most people head east, seeking the tombs of Oscar Wilde and Edith Piaf, and the memorials to those deported by Vichy. The cemetery's northwestern end, bounded by Avenue Gambetta, is quieter. Few walk through sector 71, where a bronze effigy almost two meters long depicts two shrouded corpses holding hands. The sculpture, by Alphonse Dumilatre, is in the style of François Rude's famous effigy of Godefroi Cavaignac—stark, somber realism evoking a sacrificial pathos. The bronze shows some wear on the right thumb of the man closer to the path—hinting that maybe at some point in time people rubbed that thumb, perhaps as a gesture of affection, perhaps hoping that it would bring good luck (figure 3.1). Judging by the inscription on the marble base, affection is the likelier interpretation, for these men were far from lucky:

CATASTROPHE DU BALLON LE ZENITH, 15 AVRIL, 1875  
CROCE-SPINELLI et SIVEL  
MORTS A 8600 METRES DE HAUTEUR<sup>1</sup>

The two men depicted, Joseph Crocé-Spinelli and Théodore Sivel, died from anoxia (deprivation of oxygen) during the *Zénith* high-altitude ascent, the most dramatic event to result from a broader effort to transform ballooning into a heroic science, thus endowing the chimerical pursuit of flight with an aura of respectability. By focusing on the lead up to and aftermath of Crocé-Spinelli and Sivel's deaths, this chapter explains how men of science and ordinary citizens alike aligned the practice of scientific ballooning with republicanism, an arrangement that facilitated the emergence of the aeronaut as a self-sacrificial patriot.



Figure 3.1  
Alphonse Dumilatre, *Monument à Crocé-Spinelli et Sivel*, Père-Lachaise Cemetery, Paris.  
Photo by author.

The *Zénith* tragedy was an early manifestation of the Third Republic's cult of the hero, a phenomenon especially important in the forging of French national identity after the Franco-Prussian War.<sup>2</sup> The decades following the war witnessed the growing public stature of men of science as they fused their scientific ambitions with revanchist zeal.<sup>3</sup> Like the rest of the French scientific community, aeronauts used the defeat to articulate a discourse that portrayed ballooning as a key piece to France's regeneration.<sup>4</sup> Paradoxically, while science-minded aeronauts thought that the path to legitimize ballooning laid in refashioning the practice as a safe and rational enterprise, they were only able to acquire popular support because the activity allowed for the fusion of science and adventure in a heroic mold. Republican aeronauts presented themselves as self-abnegating patriots willing to put their lives on the line in their pursuit of science for French grandeur, associating long-distance and high-altitude ascents with the heroic virtues that the French obsessed over after the Franco-Prussian War. As such, responses to the *Zénith* tragedy

can be understood as the most salient expressions of the imprinting of sacrificial patriotism into French air-mindedness.

The deaths of Crocé-Spinelli and Sivel prompted both public and more intimate forms of mourning that made them into the Third Republic's first official scientific martyrs—a process that not only set the template for future narratives of heroic science but also allowed the balloon to fully crystallize as a patriotic technology that could unite a divided nation. This is made evident by the fact that the memorialization of the two aeronauts, who were also staunch republicans aligned with Gambetta, occurred under the so-called government of Moral Order. Headed by Patrice de MacMahon (the same general who had surrendered alongside Napoléon III), the government that lasted from 1873 to 1877 was backed by royalists who hoped to undermine the republican project. Yet, popular support for the martyrs was so great that even the reactionary forces had to acquiesce and accept them as heroes, signaling the new status enjoyed by ballooning after the Franco-Prussian War.

#### 1 THE CRUCIBLE OF DEFEAT: THE REPUBLICAN ORIGINS OF THE SOCIÉTÉ FRANÇAISE DE NAVIGATION AÉRIENNE

As explained in the first chapter, apart from a few isolated scientific ascents, by the mid-nineteenth century balloons had become associated with entertainers and swindlers trying to make a quick buck. In 1850, Jean-Augustin Barral and Jacques Alexandre Bixio conducted two scientific ascents from the Paris Observatory, but these did not sustain the public's attention. Furthermore, they did not lead to additional efforts, for after Napoléon III's seizure of power, the Observatory became an inauspicious space for aeronautical experiments. Barral and Bixio had been supported by François Arago, a stalwart republican who headed the Observatory until his death in 1853. However, his successor, the conformist Urbain Le Verrier, was both anti-republican and vehemently against "amateur science," neither of which boded well for aeronauts seeking institutional support for scientific ascents.<sup>5</sup>

As such, the pursuit of scientific ballooning remained largely external from France's institutions of "official" science. It was only in the last third of the nineteenth century, through the works of James Glaisher in England, and Camille Flammarion, Gaston Tissandier and Wilfrid de Fonvielle in France, that the balloon began to be systematically conceived as a tool for

the construction of scientific knowledge. In the 1860s, Glaisher, a fellow of the Royal Society and founder of the Meteorological Society, did his best to disassociate ballooning from Victorian entertainment and link it with rigorous scientific observation.<sup>6</sup> Flammarion followed suit in Paris. A journalist and astronomer who operated outside the centers of institutional power, he emerged as the Second Empire's powerhouse popularizer of science. He wrote scientific columns for newspapers and published bestselling scientific novels and speculative tracts that were voraciously consumed by an increasingly literate French public. His ballooning adventures also became a crucial component of his mission to instruct and entertain.<sup>7</sup>

According to a report by the Société Aérostatique et Météorologique de France (the society Dupuis-Delcourt founded in 1852), sixty to eighty ascents took place in Europe in 1866, but only two (both by Glaisher) had a scientific orientation.<sup>8</sup> Things started changing in 1867, when Flammarion, struck by the urge to study wind currents, asked the Société Aérostatique for help. In a bleak financial state, the society did not own a single balloon, so Flammarion turned to Eugène Godard, patriarch of the famous ballooning family. With a balloon in hand, Flammarion now had to sort out how to finance the ascent (since gas was not free) and where to depart from (his popular approach to science made him persona non grata at Le Verrier's Observatory). Godard suggested they depart from a turf he knew well, the Hippodrome, which in turn could turn a profit by selling tickets for the spectacle. Flammarion wondered if that would "profane science," but he ultimately embraced the idea.<sup>9</sup> From thereon he made eleven more ascents. He wrote accounts of these voyages for the press that were republished in three different books: *Voyages aériens* (1870), *Voyages aériens: Impressions et études* (1881, 1882, and 1883), and *Mes voyages aériens* (1911).<sup>10</sup> In his accounts, Flammarion argued that the study of atmospheric currents was the most obvious way to achieve aerial navigation, since patterns would emerge as scientists collected and shared information from around the globe.

Fonvielle and Tissandier came to ballooning thanks to the productive convergence of science and republicanism that intensified toward the middle of the nineteenth century and found a fertile ground in the popular press. Fonvielle came from the realm of politics, starting as a republican agitator who was deported to Algeria following Louis-Napoléon's 1851 coup. Tissandier started off from the scientific terrain, having trained as a chemist at the Conservatoire des Arts et Métiers before heading a laboratory. By the 1860s, both men were

active scientific popularizers, which in turn brought them into Flammarion's orbit. Given the growing fashion for atmospheric science, both men also gravitated toward ballooning.<sup>11</sup> Here, Nadar's *Géant* once again played an important role, for it inspired both to pursue the practice. Fonvielle secured a place in its gondola during the 1867 Universal Exposition. But he criticized the ascent as the work of speculators seeking to make a profit, and from thereon he made it his life's work to transform ballooning into a scientific enterprise.<sup>12</sup> Tissandier received his aerial baptism a year later. On 16 August 1868, the chemist found himself in Calais for the Fête Imperiale, where Jules Duruof, the skillful entertainer who served in the *Géant*'s crew and went on to become the first aeronaut to escape the Siege of Paris, was amusing audiences aboard the *Neptune*. Tissandier tagged along in a thrilling ascent, during which Duruof maneuvered the balloon up and down different air currents to travel back and forth from the shore to the sea. The experience was a revelation for Tissandier, who, like Flammarion, embraced the study of air currents as the path toward finding a solution to aerial navigation.<sup>13</sup>

Tissandier and Fonvielle became avid aeronauts, and in 1870 they published *Voyages aériens* alongside Glaisher and Flammarion. This groundbreaking work systematically made the case for ballooning as a practice to study the atmosphere.<sup>14</sup> In its conclusion, Fonvielle and Tissandier argued that "a vast field of exploration opened out to [them]" and criticized the Academy of Sciences for ignoring atmospheric and aeronautical matters. They also explained that more frequent ascents were necessary to uncover new findings and hoped that the book would "make an epoch in the history of aërostatics, for it is the first time that a series of aërial scenes have been published as observed by aëronauts."<sup>15</sup>

Like Dupuis-Delcourt and Nadar, Fonvielle believed that a thriving association was paramount to achieve any kind of progress in aeronautical pursuits. As such, he called for an "aeronauts club, where all the members would have to do at least one untethered ascent."<sup>16</sup> As it turns out, at this moment the pieces were coming together for the emergence of the Société Française de Navigation Aérienne (SFNA), France's most important aeronautical organization until the appearance of the Aéro-Club de France in the late 1890s. The SFNA's origins can be traced to Dupuis-Delcourt's Société Aérostatique, but its ethos was defined by the Siege of Paris.

In the decades following its creation, Dupuis-Delcourt's Société Aérostatique et Météorologique de France lived a tenuous existence, its lamentable

pecuniary situation barely covering a small print run for pamphlets.<sup>17</sup> Tides started turning in April 1868, when its members became concerned that Britain was taking the lead in aeronautical matters. The Aeronautical Society of Great Britain had recently organized a small exhibit at the Crystal Palace, and one of the Société Aérostatique's members, Hureau de Villeneuve, responded by relaunching Nadar's *L'Aéronaute*. An independently wealthy doctor, Villeneuve was in a much better financial situation than the photographer and could cover the costs of maintaining a regular periodical.<sup>18</sup> He also pushed the Société Aérostatique to change its name to Société Aéronautique et Météorologique de France, arguing that "aérostatique" tended to refer to apparatuses that were sustained in the air without any effort at navigation, while "aéronautique" was more appropriate for a group of men pursuing the solution to flight in all its forms.<sup>19</sup> Under Villeneuve's leadership, the new *L'Aéronaute* became a mouthpiece for the renewed society, and it spent the next couple of years publishing studies on animal flight and theoretical treatises on gliding. Some readers called for reports on balloon ascents across Europe, but the editors explained that doing so would distract it from its purpose: solving the issue of aerial navigation.<sup>20</sup> Fonvielle and Tissandier were critical of that position, arguing that excluding balloons risked prematurely discarding a viable field of research, but the society was still very much under the influence of Nadar's heavier-than-air crusade.<sup>21</sup>

On the eve of the Franco-Prussian War, *L'Aéronaute* articulated a sanguine narrative of steady advancement. Félix Caron, its manager, celebrated the publication's internationalist position, claiming in a letter to readers that it had decided against requesting a state subvention because aerial navigation was an international question, and "an agent of peace and civilization" that should "be available to all."<sup>22</sup> But, as Prussian troops headed toward France, the Société Aéronautique shifted its goals, claiming that it would concern itself "almost exclusively with the application of aeronautical science to war," closing its ranks to new members, making meetings secret, and rupturing relations with German correspondents.<sup>23</sup> Yet, the siege experience made the Société Aéronautique more receptive to balloons. Breaking with its policy, *L'Aéronaute* featured an account of the *Ville-d'Orléans's* journey from Paris to Norway.<sup>24</sup>

The Société Aéronautique lamented France's defeat but drew a lesson from the war: aeronautics was a question of survival, and, therefore, the society could only accept members that proved their loyalty to France. Many

members also recognized the balloon's utility during the siege and saw it as a moral imperative to put the technology to use. Like much of the French scientific community, these members mobilized a discourse arguing that Prussia had defeated France with science and technology.<sup>25</sup> Under this patriotic context, a new society emerged from the bosom of the Société Aéronautique. On 12 August 1872, separatists who thought that the Société Aéronautique was not pursuing aerial navigation in a sufficiently scientific and patriotic manner established the Société Française de Navigation Aérienne.<sup>26</sup>

The separatists made Joseph Crocé-Spinelli, an engineer educated at the École Centrale des Arts et Manufactures, their provisory president and immediately developed stricter membership procedures. While they were concerned with the dissemination of ideas, they also wanted to restrict knowledge production to those they deemed capable. As Villeneuve was part of the dissenting group that broke off from the Société Aéronautique, the SFNA was born with a journal in hand. While *L'Aéronaute* would contribute to knowledge dissemination, knowledge production was controlled through a two-tiered membership structure. Deliberative powers were exclusive to initiated members, a status acquired only after "achieving scientific notoriety or producing at least one serious work." The remaining members were associates who could attend SFNA meetings but had only a consultative voice. Entry to either tier required one to go through a strict admissions procedure.<sup>27</sup>

As revealed by Luc Robène's statistical analysis, the changes helped the SFNA foster a more disciplined scientific identity. In March 1872, before the split, approximately 35 percent of the Société Aéronautique's membership were men of science, engineers, or military. The remaining 65 percent belonged to a grab bag of professions—mechanics, journalists, politicians, lawyers, and even a painter. In 1875, the SFNA had reversed that ratio; approximately 62 percent of its membership were men of science, engineers, or military.<sup>28</sup> And that was not all. Renowned political, scientific, and military names were found among the SFNA's leadership—its presidents included Jules Janssen (the famous astronomer and Institut de France member) and Paul Bert (professor at the Sorbonne and deputy).

Just as important, the SFNA featured in its ranks Gaston Tissandier, who in 1873 founded the periodical *La Nature*. Driven by a zealous belief that republicanism and science went hand in hand, Tissandier developed a strategy to popularize science among the French using a richly illustrated publication—a form of instruction through entertainment (his brother, Albert,

was a prolific illustrator).<sup>29</sup> *La Nature* began with a circulation of two thousand and grew to be France's most popular scientific publication, reaching a print run of fifteen thousand by 1885 (given the predominance of social reading institutions, like the *cabinets de lecture*, it reached at least several times that many readers).<sup>30</sup> Tissandier published numerous articles about ballooning and the SFNA in *La Nature*, and his multiple roles as man of the press, dabbler in science, and aeronaut were critical in spreading enthusiasm for the technology across France (figure 3.2).

Even though aeronautical societies had existed before and concomitant to the SFNA, none managed to exert a similar influence.<sup>31</sup> With a scientific journal to publish its findings, an organizational structure that integrated prestigious members from different sectors of French society, and connections to other publications, the SFNA became the central node of an extended network of individuals concerned with aerial matters. Its general assemblies in the mid-1870s became a popular attraction in Paris and often drew up to eight hundred attendees of both sexes.<sup>32</sup> The SFNA's ethos was set by Crocé-Spinelli's inaugural speech, in which he asserted that France had "created aeronautics" and that the French would continue to be "the indefatigable pioneers of aeronautical science."<sup>33</sup>

Ties between SFNA leaders were further strengthened by their staunch republicanism. A curious document found in Paris's police archives indicates the extent of the society's republican character. In 1875, an informant who signed off with the number "32" reported that a "distinguished member of the Institut" told him that the SFNA "was a purely republican assembly under Gambetta's reins and that science was their lowest priority."<sup>34</sup> Some members of the SFNA had also joined the short-lived *Ligue Anti-Monarchique* and showed a deep concern over the Third Republic's fate under the conservative government of Moral Order that took power after the war.<sup>35</sup> In their writings and speeches, they articulated a scientific patriotism in service of republican ideals, invoking how the siege balloons had rescued the technology from a hollow existence dedicated to trivial entertainment.

Fonvielle, for example, was so committed to republican ideals that it strained his relationship with Glaisher, whose sympathies were with Napoléon III's imperial regime.<sup>36</sup> Due to his history of political activism, the police monitored Fonvielle's lectures.<sup>37</sup> These featured seemingly-anodyne titles like "The Conquest of the Air: The Lives and Dangers of the Great Aeronauts," but they always offered a politicized history that blamed the Second

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LA CARICATURE

## LES HOMMES DU JOUR, — par LUQUE



M. GASTON TISSANDIER

Figure 3.2

A caricature of Gaston Tissandier distributing copies of *La Nature* while aboard a balloon. Luque, "Les Hommes du jour. M. Gaston Tissandier," *La Caricature*, 6 October 1888. Source: gallica.bnf.fr / Bibliothèque nationale de France.

Empire for causing ballooning to stagnate for decades and advanced the idea that “only the Republic permitted the aeronautical art to vigorously soar.”<sup>38</sup> Associating the republican form of government with aeronautics became a thriving trope in the years after the Franco-Prussian War, even if staunch republican views were eyed suspiciously by the conservative government elected to power after the Paris Commune. That being said, the republicanism SFNA members invoked had little of Pétin’s or Regnault’s emancipatory universalism. Instead, it was a patriotic republicanism that framed the balloon as a technology that would serve France’s grandeur.

But, even with all the patriotic sentiments associated with balloons, it was still unclear how they could be put to practical use. With no siege in place, it was once again more efficient to send mail by land instead of risking its accidental arrival in Norway. As the solution to aerial navigation remained a chimera, Crocé-Spinelli argued that SFNA members should, while they waited, make inquiries into “more immediate applications of aeronautics.”<sup>39</sup> The astronomer Jules Janssen was especially adamant about orienting the SFNA toward scientific ascents to study the atmosphere.<sup>40</sup> The other major champion of scientific ballooning was Paul Bert, who is better known today for his profound anticlericalism that shaped the establishment of free mandatory secular education during his tenure as minister of public instruction. But Bert was also a distinguished physiologist who conducted research on how changes in atmospheric pressure affected the human body. No one had used balloons to conduct physiological observations at high altitudes since Glaisher in the early 1860s, and Bert saw an opportunity for France to take the lead in the field. In the runup to the *Zénith* campaign, he used the pressure chambers in his Sorbonne laboratory to experiment on Crocé-Spinelli and Sivel. Noticing a correlation between oxygen intake and mental impairment, in 1878 he published the monumental *La Pression barométrique*, which featured a long discussion of the *Zénith* ascents. The study was the first major work to establish that low partial oxygen pressure was responsible for physiological problems experienced at high altitudes, and Bert was posthumously crowned the “Father of Aviation Medicine.”<sup>41</sup>

Finally, in unpacking the social character of the SFNA, one would be remiss not to factor in the gendered dimensions of late nineteenth-century science. As we saw in the first chapter, one of the defining features of the aeronautical professional class up until the second half of the nineteenth century was the visible role played by women. However, the SFNA’s effort to differentiate

itself from this earlier form of ballooning and develop a more legitimate scientific identity also produced the systematic exclusion of women from ascents, which began to be informed by certain epistemic virtues—discipline, abnegation of luxuries, division of labor, and careful observation. These virtues were understood to be the privilege of white men who had the cultural, social, and financial capital to be expensed in the form of self-sacrifice.<sup>42</sup> In short, women aeronauts did not have the opportunity to sacrifice themselves for science—that mission was reserved for men who had to redeem the nation following the 1871 debacle.

## 2 BRINGING A LABORATORY TO THE CLOUDS: THE PRODUCTION OF ATMOSPHERIC SCIENCE

On 26 April 1873, the SFNA partnered with the Société Météorologique de France to organize a preliminary scientific balloon ascent led by Crocé-Spinelli. The other passengers aboard the *Étoile Polaire* were Claude Jobert, Alphonse Pénaud, Félix Petard, and Théodore Sivel. Ironically, Sivel was a former mariner who, as Poitevin's son-in-law, came from a tradition of entertainment ballooning—the practice much maligned by scientific-minded aeronauts. But it was precisely this background that made him the crew's most experienced member.

The SFNA saw the *Étoile Polaire's* ascent as the first step to study the atmosphere in more depth. To frame the ascent with some degree of methodological rigor, Crocé-Spinelli and his team created a series of tableaux divided into different observational columns (triangulation; physical, meteorological, and chemical observations; physiological observations; aeronautical observations; and experiments). They also brought along specialized equipment, such as an aneroid barometer that Janssen had built for his climbs up the Himalayas. As the ascent took place, the aeronauts systematically divided their labor—Sivel maneuvered the balloon, Pénaud and Jobert read the various instruments, Petard observed physiological changes, and Crocé-Spinelli took notes. Petard claimed that the ascent demonstrated the kind of discipline required of a scientific aeronaut—there was to be no champagne popping, no long meals, and no gawking at the marvelous spectacle unfolding below them.<sup>43</sup> The men presented themselves as disciplined soldiers of science.

Even so, the construction of scientific knowledge through ballooning was not in control of these men. An 1867 satirical illustration from *Le Charivari*



Figure 3.3

The caption below this illustration satirizing the tensions embedded in scientific balloon ascents reads: “It can’t be a scientific ascent because while I can’t read or write, I can still see it!” Cham, *Le Charivari*, 21 July 1867. Source: gallica.bnf.fr / Bibliothèque nationale de France.

mocked the discrepant relationship between scientific ascents and “common” observers who were amused by the sight of a balloon without understanding its purpose (figure 3.3). But the SFNA’s scientific-minded aeronauts relied on these people—individuals far removed from the circles of science—to produce scientific facts. One example of how ballooning science could hardly extricate itself from the nonscientific world is how aeronauts collected details about their journey. The crew brought along hundreds of prestamped questionnaire sheets to throw out from the gondola, hoping that people would fill them out with data collected from the ground and mail them back to the SFNA’s headquarters in Paris.

Some of these sheets now survive at the Musée de l’Air et de l’Espace archives, and at the top of them one can read in bold characters the title: “**ASCENSION SCIENTIFIQUE.**” Whoever found a sheet would encounter the following appeal:

**IN THE NAME OF SCIENCE**, we request the person upon whose hands this paper has fallen into to hand it over to M. le Maire or to M. l'Instituteur who, we hope, will willingly forward to the headquarters of the SOCIÉTÉ FRANÇAISE DE NAVIGATION AÉRIENNE, **95, Rue Lafayette, Paris**, the following information, which will serve as terms of comparison with those obtained aboard the Aerostat that has just passed above the region.<sup>44</sup>

Questions included the time the balloon was seen flying above the region, the temperature in the shade, the barometric reading, a description of the sky, and the strength and direction of the wind. These sheets were found by all types of people, who then brought them to the local mayor or schoolteacher to help complete the form. Even the most marginalized of figures could come across them, as was the case when a beggar known as Jean Maton found one of the sheets used during the tragic April 15 ascent.<sup>45</sup>

What kind of interactions did these mediating instruments of science foster? It is difficult to tell, given that they contain little additional information. However, in 1894, the aeronaut Georges Besançon used a similar strategy, attaching postcards to small balloons intended to explore the higher reaches of the atmosphere. Someone in Louze, a commune in northeastern France, came across one of Besançon's balloons and brought it to the local schoolteacher, who then toyed around with the balloon in front of his amused students. The schoolteacher reported that this "treasure" of a find became the subject of a lesson and that his "young audience listened very attentively."<sup>46</sup> We can only speculate, but these earlier encounters could have also been auspicious opportunities to discuss the importance of science and ballooning for the Third Republic. Schoolteachers and mayors—often local representatives of the Republic and, therefore, its idea of progress—would have known something about the Montgolfiers' invention and the Siege of Paris balloons. Every sheet someone came across in the provinces offered the potential opportunity to foster sympathy for the balloon and national pride in France's adventures in the air. In that sense, the balloon sheets operated as "boundary objects," which in Susan Leigh Star and James R. Griesemer's classic definition "are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites."<sup>47</sup> For the scientific-minded members of the SFNA, they communicated field data necessary for the construction of atmospheric science; for the people who found them, they could be an amusing curio; for authorities

who mediated the exchange, they presented an opportunity for a moment of scientific and nationalist pedagogy.

### 3 THE ZÉNITH CAMPAIGN: THE RHETORIC OF SCIENTIFIC ASCENTS

A few months after the preliminary ascent, Crocé-Spinelli started campaigning for a high-altitude scientific ascent, hoping to reach seven thousand meters to make meteorological and physiological observations. He argued that the SFNA had to do so for France's sake, since England was emerging as the leader in the field thanks to Glaisher's efforts.<sup>48</sup> Paul Bert, who was deep in his own studies of atmospheric pressure, was drawn to the scheme and introduced the idea of having the aeronauts carry small oxygen balloons. With additional support from the Academy of Sciences and the Ministry of Public Instruction (evidence of how efficient the SFNA was in mobilizing its political ties), Crocé-Spinelli and Sivel conducted an ascent aboard the *Étoile Polaire* on 22 March 1874. They reached 7,400 meters, beating the previous French altitude record.<sup>49</sup>

Additional scientific ascents took place during this period, which meant that balloons, at first shunned by the Société Aéronautique, had now moved to center stage under the SFNA.<sup>50</sup> In his opening speech at the 27 November 1873 general assembly, SFNA president Charles-François Hervé-Mangon focused exclusively on balloons, not once mentioning heavier-than-air flight. He explained how the war had changed the perception that balloons were frivolous forms of amusement and instead had ennobled France during the *année terrible*:

Paris had no more bread to eat, no more wood for heat, no more gas for lighting; Paris did not even have any more horses to take the countless dead—victims of hunger, victims of Prussian bullets and shells—to their final resting place, but Paris wanted to stay in communion with France, with the world. Paris deprived of everything, however, was able to dispatch a balloon nearly every day.

For 1875, the SFNA decided to organize two scientific ascents, one long-distance and one high-altitude. Both took place aboard the *Zénith*, a three thousand-cubic meter balloon owned by Sivel. For the long-distance ascent, Sivel, Crocé-Spinelli, Jobert, and the Tissandier brothers departed on 23 March from the La Villette gasworks in northeast Paris (where the balloon

was inflated with coal gas—a cheaper alternative to hydrogen). The globe stayed aloft for 22 hours and 40 minutes, and landed in Gironde, about five hundred km from Paris—a new record for time spent in the air. The Parisian press paid close attention to the flight, for the SFNA regularly invited journalists to watch ascents.<sup>51</sup> In general, accounts of the *Zénith* voyage that were published in Parisian newspapers briefly relayed the scientific activities undertaken by the aeronauts while highlighting their bravery and expounding on the picturesque panorama of the trip.<sup>52</sup> A closer analysis of the ascent's portrayal in various publications reveals the narrative choices intended to captivate different audiences.

Among the many publications that featured detailed accounts were *L'Aéronaute*, the *Comptes rendus hebdomadaires des séances de l'Académie de Sciences*, *La Nature*, and *Le Monde illustré*. The account published in *L'Aéronaute* and the one presented to the Academy of Sciences were essentially the same; the former offering more details about the data collected.<sup>53</sup> These accounts effaced the picturesque descriptions of the journey and the aeronauts' emotional responses (the “subjective” elements), and instead focused on the scientific equipment and the information that they provided (the “objective” elements). They reduced the *Zénith*'s itinerary to a single sentence: “Departing from the La Villette gasworks at 6:20 P.M. on 23 March, we executed our descent at 5 P.M. the following day, 24 March, at Monplaisir, not far from the Arcachon basin, after staying twenty-two hours and forty minutes in the atmosphere.” Any additional description of the scenery during the voyage was included only to make a scientific point. For example, both accounts described how transitioning from flying over a pine forest to flying over a “bare yellowish land” caused the balloon to rise, since the former absorbed sunlight while the latter reflected it, thus heating and expanding the gas inside the balloon's envelope.

In contrast, the report Tissandier published in *La Nature* featured environmental descriptions that not only made scientific points but also added picturesque flourish. Take his account of the balloon's departure:

We rise in the atmosphere, traversing Paris, where thousands of lights sparkle like the constellations of a starry sky; we slowly pass over the Jardin des Tuileries, over the dome of the Invalides, and soon the spectacle of the great metropolis disappears in the horizon to give way to the no less majestic tableau of the countryside. The sun casts its last lights over the distant mists amassed into large layers of vapor, darkness falls, and our Davy lamps illuminate only us in the middle of

the night. After having organized the gondola and methodically arranged the bags of ballast, we start to make our experiments.<sup>54</sup>

The account continues by introducing the scientific instruments used during the ascent. But these are not abstracted from their operators like they were in the accounts featured in *L'Aéronaute* and the *Comptes rendus*. Instead, the text in *La Nature* describes Sivel using a compass, Crocé-Spinelli handling two different spectroscopes, Jobert throwing out information sheets, his brother Albert drawing some “aerial landscapes,” and Tissandier using an aspirator to filter air and absorb carbonic acid to be measured in a laboratory.

The *La Nature* account makes clear that while instruments produced objective facts, they were still mediated by individuals who underwent powerful subjective experiences while decoding nature. For example, all accounts reference the crossing of the Gironde River, which served as a reference point to trace the atmosphere’s electric charge. While the accounts in *L'Aéronaute* and the *Comptes rendus* followed these observations with a discussion of the data collected with the spectroscope, *La Nature* followed them with a paragraph describing the crossing, which was “one of the most stirring moments of [their] voyage.” According to Gaston, the *Zénith* “majestically” crossed the Gironde at its widest point, taking thirty-five minutes to reach the other bank. The account reveals that during the crossing the aeronauts were distracted from their scientific duties, taking the time to bask in the spectacle of the view from above:

While we hover in the middle of the river, sailboats sail to and fro the surface; two steamships go downstream, they pass just below our gondola, and at this moment they hoist their tricolor flags three times. We respond to this friendly salute by waving our handkerchiefs. This river viewed from above, these Lilliputian ships, this lighthouse of Cordouan, reduced to the proportions of a pin shining on a foggy background, this yellowish water that is wrinkled by the waves, are colored by the warm tones of a beautiful sun and give shape to one of these delightful tableaux that leave in the mind the most lasting impressions.

The passage places the *Zénith*’s crew on another plane. In exploring the atmosphere and trying to uncover nature’s secrets, the voyage acquired an epic tint. Lone adventurers in the vast empty sky, the aeronauts stared down at some of humanity’s most ingenious technologies, which from their perspective appeared to be little more than trivial playthings. For a *La Nature* reader, then, the data was not simply collected with advanced scientific instruments



Figure 3.4

Albert Tissandier often inserted balloons in his illustrations of atmospheric phenomena, and their scale made clear the tenuous grasp man had over nature's grandiosity. His "aerial landscapes" also made their way into the press, especially *La Nature*. *Lunar halo and luminescent cross observed during the Zénith's long distance ascent from Paris to Arcachon in 23–24 March, 1875*. Library of Congress, Prints & Photographs Division, LC-DIG-ppmsca-07435.

but heroically seized by the aeronauts. Albert Tissandier's "aerial landscapes" also articulate that message. One of them features the lonely *Zénith* in the upper atmosphere with an enormous lunar halo in the background—a powerful visual representation of the aeronauts' sublime experience of nature (figure 3.4).

Meanwhile, Wilfrid de Fonvielle's account in *Le Monde illustré* included an illustration depicting the aeronauts at work (figure 3.5). Like Tissandier's account in *La Nature*, Fonvielle made use of the rhetoric of the sublime, comparing the sight of Paris's lights during the evening ascent to "a marvelous constellation." However, as mentioned, Fonvielle wanted to imbue ballooning with a professional aura, so much of his account didactically explains how

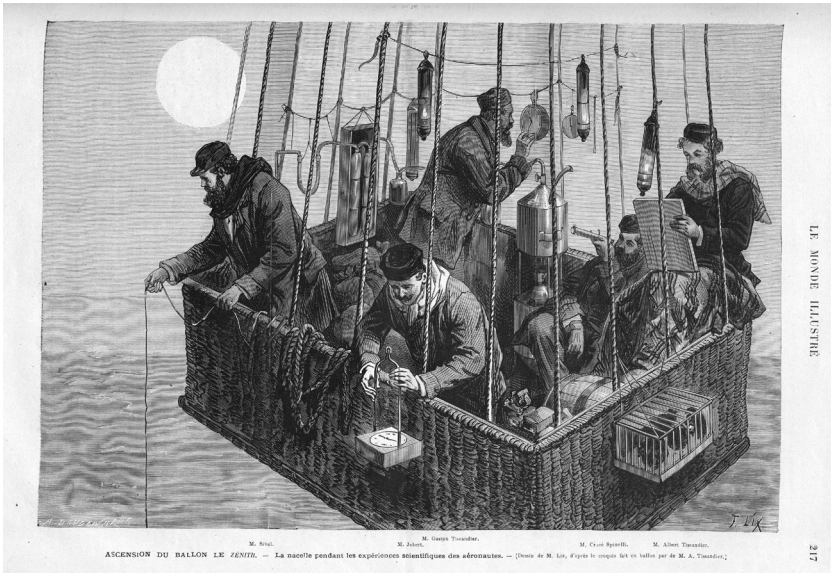


Figure 3.5

Albert Tissandier, “Ascension du ballon le *Zénith*” *Le Monde illustré*, 3 April 1875.

Source: gallica.bnf.fr / Bibliothèque nationale de France.

each aeronaut operated his scientific instrument. The narrative concludes with high praise for the scientific virtues of the trip: “The gondola resembled a true laboratory of study. Each went about their duties with as much calmness and presence of mind as if he were in M. Bert’s office at the Sorbonne.”<sup>55</sup>

Historians who have studied Glaisher and Flammarion’s ascents have also looked at how they negotiated their identities through written accounts of their ascents. Jennifer Tucker argues that Glaisher, a respectable member of the Royal Society, cultivated a “public image as a neutral, detached observer who focused on his instruments even at dizzying altitudes above the clouds.”<sup>56</sup> Meanwhile, Fabien Locher makes the case that Flammarion, a figure on the margins, was less concerned with being respected as an “official” savant and more interested in boosting his “status as a scientific journalist,” which is why he had few qualms about inserting himself into the narratives he produced.<sup>57</sup> My argument here is that the SFNA aeronauts worked in even more nuanced ways, borrowing from both strategies and tailoring their narratives depending on the audience. When presenting its case to a scientific institution like the Academy of Sciences (or in its own journal, since it fashioned itself as a

serious scientific society), the SFNA offered a bare-bones account focusing on data. Tissandier and Fonvielle, however, were aware that their less specialized readers wanted picturesque details of the ascent, since for them it was just as much an intrepid adventure as it was a scientific enterprise. In the pages of *La Nature* and *Le Monde illustré*, the effect the natural sublime had on the aeronauts' subjective experience as they worked in the flying laboratory was emphasized. Indeed, this was a central trope in exploration literature, and at this juncture, scientific ballooning in France occupied a liminal position—the rhetoric differentiating disciplined laboratory practices and adventurous field research was only starting to diverge.<sup>58</sup> Practitioners of scientific ballooning could self-fashion a fluid professional identity that encompassed the different virtues associated with the sober savant and the heroic explorer, emphasizing one or the other depending on the intended audience.

#### 4 THE ZÉNITH CAMPAIGN: THE ASCENT TOWARD DEATH

On 15 April 1875, three weeks after their long-distance ascent, Sivel, Crocé-Spinelli, and Tissandier met up again at La Villette to board the *Zénith*—this time for a high-altitude ascent. Sivel's daughter was there to bid her widowed father goodbye, and they shared a hug just before the “Lâchez tout!” sounded.<sup>59</sup> It was the last time that the two would embrace, for by the time the balloon had landed, only one of the aeronauts—Tissandier—was still alive. He related the story of the ascent to the best of his abilities, given that he had lost consciousness for two hours.<sup>60</sup>

According to Tissandier, the *Zénith* took off at 11:35 A.M., carrying in its gondola scientific instruments to study the atmosphere plus Bert's oxygen balloons. The aeronauts' heart rates rose just as fast as the balloon, and, at 7,000 meters, while Crocé-Spinelli was entranced by the beauty of cirrus clouds that surrounded the *Zénith* and the sky's “clear and limpid blueness,” Sivel showed visible signs of weariness, closing his eyes, nodding off, and growing paler. But he recomposed himself and asked Tissandier to go higher, for he wanted to beat his previous record and reach 8,000 meters. Tissandier, feeling lethargic due to the altitude and the freezing (−10° C) temperature, agreed to the proposal. Sivel proceeded to cut three bags of ballast, and the balloon shifted to a quick ascent. By the time they reached 7,500 meters, Tissandier could barely move. He described feeling no pain at all, but “an inner joy” and indifference to the dangerous situation. The lack of oxygen made

him delirious. Increasingly debilitated, Tissandier's memory of the events from hereon became hazy. He recalled trying to reach for the oxygen but being unable to lift his arm. Then, he looked at the barometer and tried to yell out that they had breached 8,000 meters. The words did not come out from his mouth, and he passed out at about 1:30 P.M.

At 2:08 P.M., Tissandier woke up and saw the balloon descending at a perilous speed. Gathering all the strength he could muster, he cut off a bag of ballast to reestablish equilibrium before passing out again. After a while, he was shaken awake by Crocé-Spinelli, who, still delirious, asked to throw out even more ballast. Fading in and out, Tissandier saw his colleague throw out the respirator, blankets, and more ballast, which caused the balloon to rise again. Tissandier regained consciousness at 3:30 P.M., the balloon once again plummeting toward the ground. His first reaction was to try to wake his friends. But Sivel's eyes were dull and Crocé-Spinelli's half closed. Both aeronauts had blood in their mouths. The *Zénith* finally landed at about 4:00 P.M. in the plains near Ciron, 250 kilometers from Paris. By that time, there was nothing Tissandier could do to save his friends. He had their bodies moved to a nearby barn and broke down sobbing.

Some conjectured that the expanding gas that escaped from the balloon's appendix as it ascended was responsible for the deaths, but, as Tissandier explained, Crocé-Spinelli and Sivel likely died of anoxia caused by two consecutive and lengthy atmospheric depressurizations (figure 3.6). At the Sorbonne, an analysis of the control barometers indicated that the *Zénith* had reached between 8,540 and 8,601 meters, and Bert wrote in *La Pression barométrique* that the two aeronauts must have lost half of the oxygen in their arterial blood. Tissandier regretted that his two friends might have survived if they had not suddenly lost their ability to move and reach for Bert's oxygen balloons. Bert stated that, even so, the balloons were of insufficient capacity, and that a letter he wrote warning Crocé-Spinelli of that fact must not have arrived in time.<sup>61</sup> The tragedy also touched a young doctor who, decades later, would cause quite a stir with his theories of crowd psychology. "Upon reading the account of the *Zénith* catastrophe I was deeply sorry that you did not want to let me join the aeronauts," Gustave Le Bon wrote to the SFNA. He argued that having a physiologist aboard would have prevented the deaths and requested to join the next ascent—a request that was not fulfilled.<sup>62</sup>

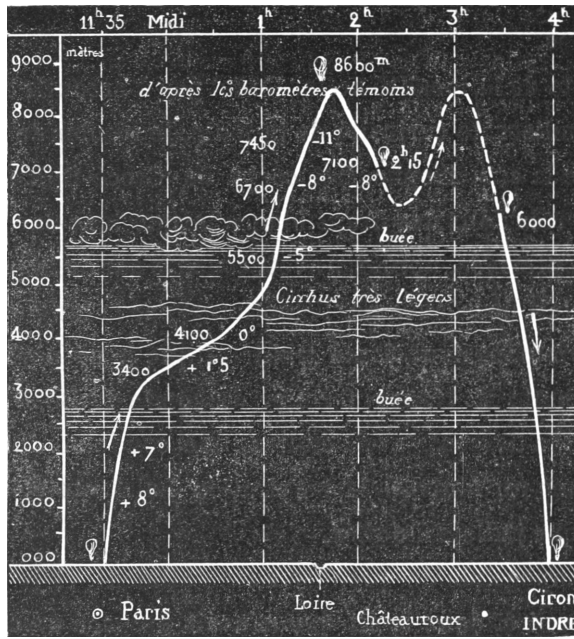


Figure 3.6  
 A diagram of the *Zénith*'s 15 April 1875 ascent. The dotted line is speculative, for it represents the period during which Tissandier passed out. Gaston Tissandier, *Histoire des mes ascensions: récit de quarante-cinq voyages aériennes (1868–1888)*, 9th ed. (Paris: Maurice Dreyfous, 1890). Source: gallica.bnf.fr / Bibliothèque nationale de France.

5 BURYING AERONAUTS, SHAPING REPUBLICANS:  
 COMMEMORATING THE THIRD REPUBLIC'S  
 FIRST SCIENTIFIC MARTYRS

The deaths of Crocé-Spinelli and Sivel had deep reverberations across French society. Tissandier's first dispatch about the accident only arrived in Paris the next day, 16 April. But news quickly spread on the boulevards, and throughout the day journalists, men of science, and family members went by the SFNA headquarters to express their sympathies and scope for more information. Aware that people were curious and shocked about what had happened, reporters boarded the first train to Ciron to collect a firsthand account from Tissandier.<sup>63</sup> In the following days, the accident was front-page news, with newspapers updating readers on every new detail that emerged, including

reports of a bloodstained information sheet that had supposedly been found, descriptions of Tissandier's emotional breakdowns, and a transcription of the last notes the aeronauts jotted down in their log.<sup>64</sup>

Formal expressions of collective mourning soon followed. On 19 April, the meeting at the Academy of Sciences drew a large crowd. Edmond Frémy, its president, struggled to hold back his tears during a speech that set the tone for how the French would make sense of the aeronauts' deaths. He referred to them as "martyrs of science" and said that they were "two courageous soldiers who fell in the battlefield."<sup>65</sup> However, the aeronauts' true apotheosis was to come the following day, with their funeral at Père-Lachaise.

When Crocé-Spinelli and Sivel died, France was in the process of developing a tradition of republican funerals. According to Avner Ben-Amos, state funerals—events that drew thousands of French men and women—did more than just reflect republican political culture; they were also central in shaping it.<sup>66</sup> Once the Third Republic consolidated itself in 1877, they became a recurring civic festival, with eighty-two state funerals taking place by 1940. The state funerals that happened between 1871 and 1877, during the Moral Order, were more understated and conservative, since authorities were hesitant about how the masses might react. Yet, large nonstate funerals of prominent republicans did occur during these years and served as teachable moments where the lives of the dead served to "illustrate political virtues."<sup>67</sup> Crocé-Spinelli and Sivel's funeral was not a state ceremony, but it allowed republicans to articulate the civic importance of science before they had consolidated enough power to officially celebrate men like Claude Bernard and Louis Pasteur.<sup>68</sup> And though the government did not sponsor the ceremonies, it did send representatives. The Paris Municipal Council—the country's republican stronghold—took an even more visible role by having its president, Henri Thulié, give a speech at the grave. As such, Crocé-Spinelli and Sivel's funeral was an important event that helped set the foundations for the celebration of deceased French men of science and explorers.

On 20 April, authorities aware that the funerary ceremonies would draw a sizeable crowd dispatched policemen to observe. According to their reports, by 10:30 A.M., five hundred people had gathered at the Gare d'Orléans (known today as Gare d'Austerlitz), where the two bodies rested. At 11:15 A.M., the liberal Protestant pastor Auguste-Scipion Dide gave a short oration to the crowd, which had grown five thousand to six thousand large.<sup>69</sup> Ten minutes later, the bodies were moved to their hearses, each featuring a large

wreath of yellow immortelle flowers—a tradition in civil funerals.<sup>70</sup> The police estimated that four thousand people began the procession to the Père-Lachaise, while *L'Aéronaute*, a biased party, claimed that the crowd had grown to twenty thousand by the time it reached the cemetery. Members of the scientific community and writers from all major newspapers participated in the cortege, as did esteemed republican names like Gambetta, Bert, and Colonel Denfert-Rochereau (who earned the nickname Lion de Belfort for his valiant resistance during the Franco-Prussian War).<sup>71</sup> A reporter observed that the funeral was atypical in that no one seemed indifferent to the dead aeronauts; even with the scorching sun, people kept their hats off on the way to Père-Lachaise.<sup>72</sup> A piece in *Le Petit Journal* explained that Parisians took the *Zénith* tragedy personally because it transported them back to “those painful weeks of the siege, and we remembered our harrowing shudders on the days when daring aeronauts boarded balloons to bring the rest of France news from the starving capital determined to fight to the last cartridge.”<sup>73</sup>

Processions articulate political narratives, and this case was no different.<sup>74</sup> Not a single religious site figured in the transport of the bodies. The route followed was Gare d'Orléans → Pont Austerlitz → Boulevard Contrescarpe (today Boulevard de la Bastille) → Place de la Bastille → Rue de la Roquette → Père-Lachaise.<sup>75</sup> The Place de la Bastille stands out as an unmistakable republican space within this trajectory, although we must also keep in mind that this was one of the more direct routes. Less obvious is the reaction that the cortege triggered at Rue de la Roquette, where it was celebrated by workers who had just finished their shift. The memorialization of the aeronauts, and the accompanying commemoration of republican science, transcended class boundaries and was experienced as a moment of national unity (figure 3.7).<sup>76</sup>

The aeronauts' temporary grave was located near the buildings that housed Père-Lachaise's workers, so only about one thousand people could gather around to watch the burial. Many others spread around the cemetery, standing on tombstones to better hear the orators.<sup>77</sup> Following his own political proclivities, Dide gave a long speech that abstained from religious commentary. Instead, he celebrated French science and placed the “civic courage” displayed by the aeronauts on the same level as those who had sacrificed themselves during the recent war.<sup>78</sup> At one point, a “Vive la République!” sounded from the crowd.<sup>79</sup> Dide concluded his speech on a revanchist note, stating that “France is recovering and is bound to take all its revenges: moral, literary, and scientific revenges. The memory of these two illustrious dead

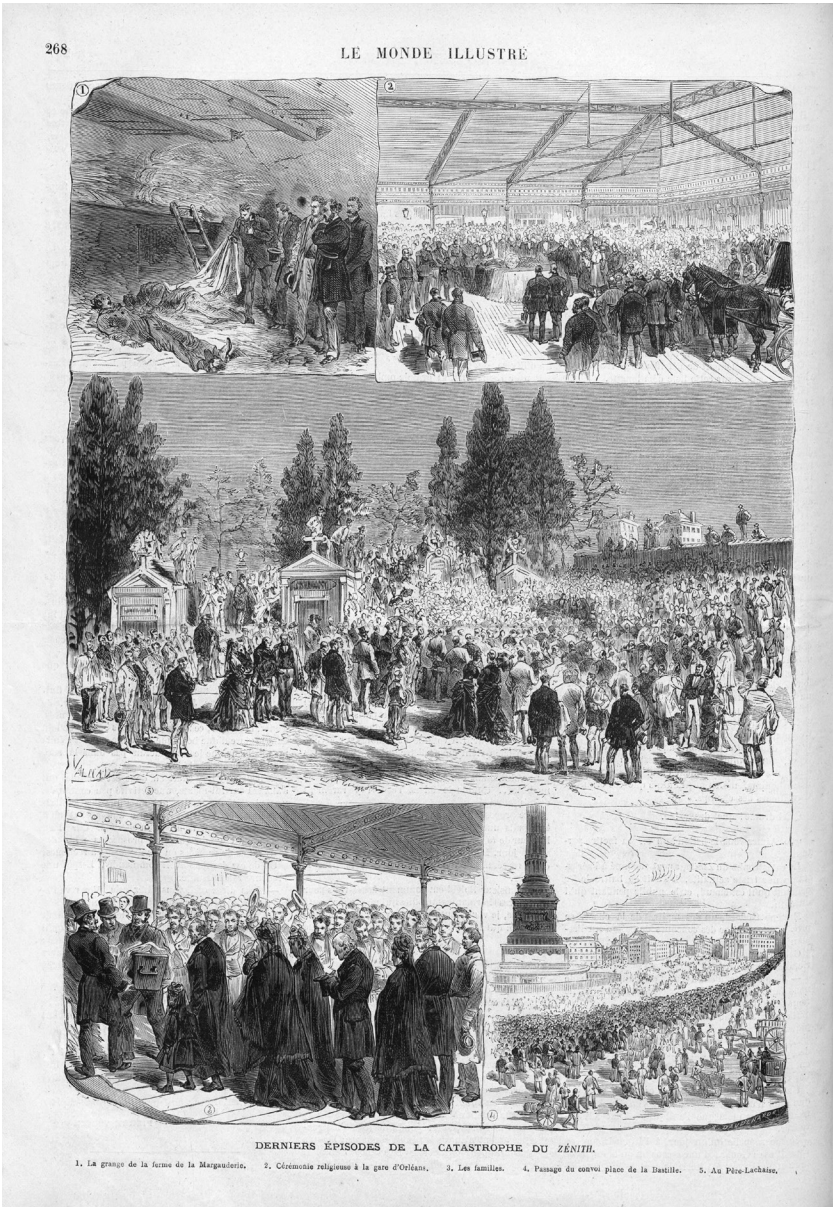


Figure 3.7

A set of illustrations depicting the events following the *Zénith* tragedy. The bottom right panel depicts the cortege as it passed through the Place de la Bastille, while the center panel depicts the crowd that assembled at Père-Lachaise for the burial.

“Derniers épisodes de la catastrophe du *Zénith*,” *Le Monde illustré*, 1 May 1875.

Source: gallica.bnf.fr / Bibliothèque nationale de France.

will follow us, will encourage us, and it is in following the example of those we mourn that we will contribute to the greatness of humanity by rebuilding the *patrie*.”<sup>80</sup>

Henri Thulié, president of the Conseil Municipal de la Ville de Paris, followed suit and, speaking in the city’s name, inscribed the aeronauts’ names in the “glorious annals” of Paris, “the heroic city.”<sup>81</sup> The last orator was Hureau de Villeneuve. Representing the SFNA, he gave a speech that assuaged the postwar crisis of confidence by drawing a self-assuring lesson from the *Zénith* tragedy. He concluded with a rhetorical tour de force that tied together the threads of patriotism, the cult of great men, and national regeneration through science in a knot of a republican tradition harkening back to the French Revolution:

Gentlemen, a nation that produces such men is not a nation beyond recovery, and its younger generation can once again repeat this stanza of its national anthem:

We shall enlist in the [military] career  
 When our elders are no longer there,  
 There we shall find their dust  
 And the trace of their virtue.<sup>82</sup>

The decision to quote from “La Marseillaise”—the edifying stanza known as the *couplet des enfants*—should not be taken for granted. The republican anthem had been banned under the Second Empire and was viewed with suspicion by the Moral Order until it was officially adopted in 1879.

The ceremony stuck to the tone of a republican catechism from beginning to end. Neither friends nor family members offered orations. Emotion got the best of Tissandier when the time came for his speech, and he was only able to let out a melancholic “adieu.” Crocé-Spinelli’s father cried out “My son! To you, immortality!” after which Dide closed the ceremony by reiterating that the French should “imitate the example set by the two victims.” As the crowd dispersed, a dozen “poorly dressed” people (workers who had joined the cortege as it went up the Rue de la Roquette?) tossed eleven bouquets of yellow and red immortelles into the graves.<sup>83</sup> *Le Petit Journal* pithily summed up the day’s events: “Science and patriotism . . . contributed to the magnificence of Sivel and Crocé-Spinelli’s funeral service.”<sup>84</sup>

Commemoration of the two aeronauts did not end with the funeral. The SFNA opened a subscription for the victims’ families, so responses extended beyond the rites that only those in Paris could experience. The commission in

charge of the subscription worked its connections with newspapers and influential people.<sup>85</sup> Efforts paid off, for publications from Paris to Algeria and across the political spectrum followed suit by opening their own subscription lists.<sup>86</sup> The radical *Le Rappel* donated 500 francs and collected another 2,461.75 from students, railroad workers, Positivists, and many who just signed “a republican” or “a worker.” Most contributions were in the 1- to 10-franc range, and some as low as 50 centimes. Working-class sentiment regarding the aeronauts can be gleaned from the letter that workers at a rolling stock factory included with their 63-franc donation. As it explained, while their resources were meager, “whenever the opportunity presented itself the workers tended to assert their deep sympathy for anything that is directly or remotely related to the endeavors of science.”<sup>87</sup> The more conservative *Le Temps* contributed 500 francs and collected significantly more from its elite readership (6,672 francs).<sup>88</sup> Even those in the German annexed territories of Alsace-Lorraine pitched in, with the Strasbourg-based *Journal d’Alsace* collecting 4,236 francs.<sup>89</sup> Individuals, learned societies, masonic lodges, private businesses, and the Ministry of Public Instruction sent contributions directly to the SFNA, and the committee proudly claimed that “all classes of Society wanted to take part in the subscription.”<sup>90</sup> Fundraising events were also organized in Parisian establishments, like the National Music Academy. In total, the SFNA raised 93,167.14 francs with accumulated interest. After subtracting expenses, which included the funeral, the deceased’s debts, and 3,000 francs allocated to a monument, the total came to 77,036.36 francs, which were distributed into life pensions between surviving family members. People across France felt the urge to contribute due to a mix of patriotic feelings, reverence for science, enthusiasm for ballooning, and admiration for the aeronauts’ bravery.

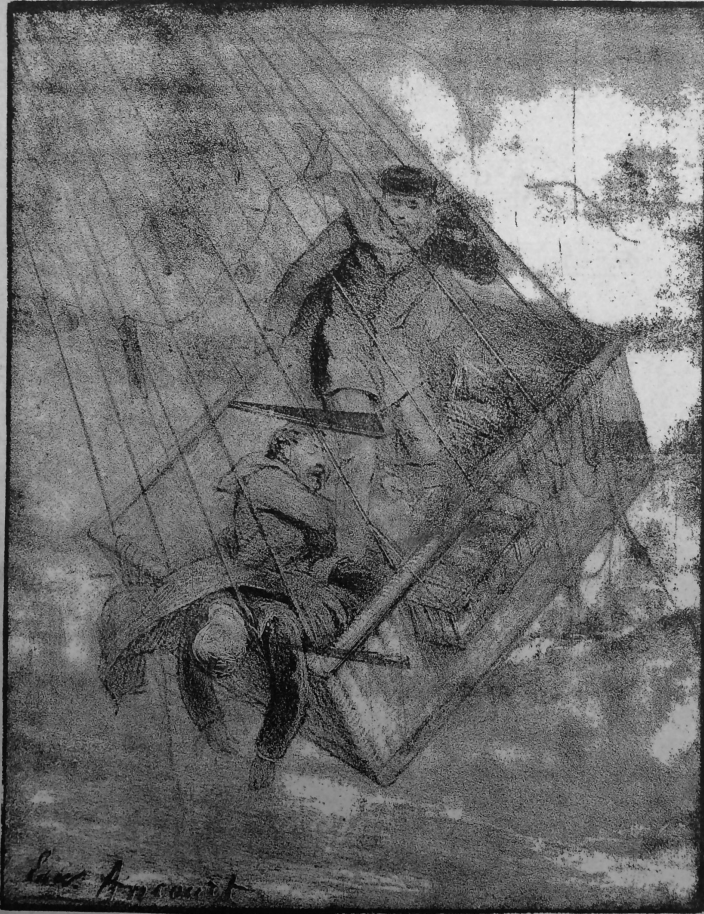
But the memorialization of Crocé-Spinelli and Sivel was not devoid of controversy. The boundaries between commemoration and exploitation were blurry, something that became evident early on when *Le XIXe siècle* accused people from the nearby communes of Le Blanc and Argenton of coming to Ciron to collect mementos, such as “a shred of silk, a piece of rope, blood-stained wicker”<sup>91</sup> While the Parisian press looked down at these rural collectors of macabre memorabilia, it was less self-aware (or chose to ignore) that many of its urbane readers were drawn to the story due to ghoulish curiosity. Commercialization of the tragedy also followed suit in Paris,

making its way onto the stages of the café-concerts. The chanteuse Amiati sang about the *Zénith* at the popular Eldorado, in the 10th arrondissement (figure 3.8). Amiati was making a name for herself with revanchist songs, so she did not miss the opportunity to associate the aeronauts' courage with military valor, celebrating them as "the other soldiers who fell in the battlefield!"<sup>92</sup> Another chanteuse, Murger, sang about the events at the Ambassadeurs, on the Champs-Élysées.<sup>93</sup> *Le Figaro* criticized her "doggerel" verses lamenting how one might risk his life for science only to have "a music-hall star, showing extra-cleavage, hiccup your death between a grotesque song and a hobo quadrille." A week later, an update claimed that authorities had the conductor remove the piece from the repertoire.<sup>94</sup>

The biggest source of controversy, though, was the politicization of the tragedy—in particular, the way radical republicans tried to claim the aeronauts as their own. In his graveside speech, Thulié described the deaths of Crocé-Spinelli and Sivel as a huge loss to republican France, since it had been shown that "under the Republic the savant does not think, produce and expose himself in order to slavishly satisfy the vanities of a man or to give luster to a kingdom, but to contribute to the *patrie's* greatness."<sup>95</sup> The conservative *Le Figaro* found the comments distasteful, stating that "the Republic, whatever [Thulié] says, had nothing to do with the *Zénith* catastrophe, which caused the same painful feeling on all parties. [At the funeral] we were in the presence of French mourning, not of republican mourning."<sup>96</sup> The legitimist *Gazette de France* claimed that Thulié's comments were "totally *foreign*, in tone and in substance, to the sadness of the place," to which *Le Rappel* countered by asking why the *Gazette* thought that "when we speak of patriotism, we speak of foreign things?"<sup>97</sup> Finally, a writer for the monarchist *Le Gaulois*, thought that Thulié "missed an opportunity to keep quiet," since he spoke "at the very gates of eternity that opened to these two chosen souls words that revealed the eternity of republican nonsense."<sup>98</sup>

But we should not lose sight of the forest for the trees in the brouhaha concerning the *Zénith* tragedy's political meaning. While radical republicans were adamant in claiming the victims as their own martyrs, those on the opposite side of the political spectrum did not disown Crocé-Spinelli and Sivel. On the contrary, the right depicted the aeronauts as national icons who stood above political divisions. Popular sympathy was so strong that not taking part in it was seen as a risky political move—a situation made evident by

M. GASTON TISSANDIER  
**LE ZÉNITH**  
AMIATI Eldorado



**ADOLPHE PERREAU ROBERT PLANQUETTE**

Musique pour les Eldorados  
Paris L. BATHLOT Successeur Editeur de Rue de l'Oratoire

Figure 3.8

The song-sheet for the *Zénith* number Amiati performed in the Eldorado featured a dramatic illustration of the tragic ascent. The song concludes with the following refrain: “Mariners of the azure, lying in the gondola, / Fall from the great blue sky! / Death waits for you above in the heavenly vault: / Heros! Martyrs, farewell!” Robert Planquette, “Le Zénith,” lyrics by Adolphe Perreau (Paris: L. Barthlot, 1875). Library of Congress, Tissandier Collection.

the government's eventual decision to support the installation of a monument for the victims. The Paris Municipal Council pushed strongly for the initiative but was met with resistance from Ferdinand Duval, the prefect of the Seine, who saw this as a case of "paying a public tribute" concerning the state and not the city. In response, councilor Luth argued that, in passing the measure, "the City of Paris would fulfill a duty of gratitude by honoring the memory of these two victims of ballooning science, which provided so many services during the siege," while councilor Taillander indicated that refusing the motion would have "a very bad effect on public opinion." The question was put to a vote and adopted by the Municipal Council.<sup>99</sup>

Duval, fearing that the Municipal Council was overstepping its prerogatives, raised the issue with Louis Buffet, the minister of interior, explaining that, according to an 1816 royal ordinance, public tribute was a privilege of the state and could only be offered to those who had shown exceptional service (which did not seem to be the case with the aeronauts). Indeed, Buffet did not think that the aeronauts had done enough to "justify a public tribute"—he saw them as "victims of their recklessness rather than their dedication."<sup>100</sup> Ultimately, though, he decided it would be better to issue the decree rather than risk public controversy. On 18 October 1875, President MacMahon signed the order approving the Municipal Council's resolution granting "by the way of public tribute the free and perpetual concession of a lot for the tomb of Crocé-Spinelli and Sivel."<sup>101</sup> And so it was that popular opinion, followed by pressure from a radical municipal government and acquiescence by a conservative executive branch, made two aeronauts into the Third Republic's first official scientific heroes.

Dumilatre's monument was inaugurated on 25 March 1881, with speeches reiterating the rhetoric of scientific and sacrificial patriotism. Bert, by then a few months shy from becoming minister of public instruction, thanked the Municipal Council for its work, which he saw as a sign that "maybe the death of these two aeronauts reminded [the Council] of those nefarious days when aeronauts were the only bonds linking Paris to the rest of armed France, when balloons breached, to the sound of 'La Marseillaise,' the iron circle imposed by our enemies upon the intrepid city." Bert concluded with an appeal for more of these funerary ceremonies, arguing that they encouraged the spirit of civic duty.<sup>102</sup> Befittingly, when he died of dysentery after arriving in Tonkin to take over as resident general in 1886, the government made his funeral into "a pro-colonial demonstration."<sup>103</sup>

Crocé-Spinelli and Sivel's tomb remained a popular spot in Père-Lachaise during the following years. From 1881 to 1883, and as late as 1896, the press reported that the monument was covered with flowers during All Saints Day.<sup>104</sup> Perhaps it is not too far-fetched to posit that when people came to honor the two aeronauts some would sympathetically rub Crocé-Spinelli's right thumb, which would explain why it has resisted oxidation after all these years.

#### 6 MAKING POETRY OUT OF AIR: FROM AMATEUR VERSIFIERS TO THE POET LAUREATE OF POSITIVISM

The *Zénith* tragedy had a visible impact on public life, but its effects also extended to more intimate spheres of commemorating and mourning. People were inspired to write poems and send them to Tissandier. Most of these were amateur attempts at versifying that were never published. One writer explained that he took to the pen to express the feelings that the tragedy awakened in his entire town. He asked Tissandier to "accept [his verses] with indulgence; they are not a poetry masterpiece but the simple and true expression of the emotions of a twenty-year-old heart in the face of such a deadly adventure."<sup>105</sup> Some versifiers were avid readers of *La Nature* and drew their inspiration from Tissandier's account in the publication.<sup>106</sup> One sender hastily penned his poem within two days of the accident, hoping to have it read during the burial.<sup>107</sup>

All of these poets celebrated the aeronauts as martyrs who imparted the importance of the courageous pursuit of science. T. Véron began his poem with a triumphant statement: "The legitimate, the true kings / Are the heroes of Science!"<sup>108</sup> Louis Baué placed Crocé-Spinelli and Sivel in the ranks of other "children of science who had fallen in the battlefield," such as David Livingstone (who succumbed to disease in the African interior), arguing that once the French became "aware that there are no limits to sacrifice," they would ascend "toward moral greatness and perfection."<sup>109</sup> An anonymous poem was especially adamant in highlighting the Frenchness of the enterprise, the final stanza indicating that even though "the savant must see progress everywhere," ultimately "only one homeland beats inside man's heart, / And those who died, oh France, were French!"<sup>110</sup> "Excelsior," a motto opening many poems, illustrated more than just the fearlessness the aeronauts

demonstrated in their scientific pursuit; it was a clarion call for the entire French nation.

The poems vary from those that offer a linear account of the facts in rhyming couplets to those that drank from the chalice of Romantic metaphors related to the heavens, flying, Promethean ambition, and Icarian fall. Victor Hugo's *La Légende des siècles*, which, as we saw in the first chapter, glorified lighter-than-air flight as a sublime and emancipatory technology, clearly served as inspiration. A lawyer described the *Zénith* as "a somber globe, a solitary soul / that seeks to climb up the route of the heavens" to "request a secret, even loftier to the creator." The poem revels on the idea of man facing the natural sublime and presents the aeronauts as tragic romantic heroes.<sup>111</sup> Meanwhile, Emile Moreau dwelled on the awesomeness of the *Zénith*'s transgression into divine territory—"A terrible silence singlehandedly permeates space; / The whole vastness indicates the nearing of God." In Moreau's poetic interpretation, the aeronauts "ascend, intoxicated with holy fury," shouting "Higher! Higher!" Suddenly, a new passenger joins them in the gondola to punish them for their audaciousness. It is Death herself, who declares her purpose: "I come to castigate a sacrilegious desire. / To punish your audacity, climber of heaven." Air changes into poison, and Death succeeds in claiming two of the aeronauts. Up to this point, the poem seems to convey an admonition of man's scientific hubris in trying to uncover secrets beyond his reach. In the second part, though, it reverses the moral lesson by celebrating what the *Zénith* tragedy wrought. As Moreau saw it, "Truth" would emerge from the martyrs' tombs, for they left the living with a "thirst to know" the mysteries in the sky.<sup>112</sup> Moreau's poem shows that while trying to make sense of aeronautical science, people drew on both the Romantic and the Positivist traditions. It was not enough to be moved by the mysteries of the natural world; they were scientific problems to be investigated and solved.

The poets of the *Zénith* tragedy also found it easy to associate the aeronauts' sacrifices with the casualties of the Franco-Prussian War. Since after the defeat scientific and technological progress was seen as a matter of national survival, the martyrization of the aeronauts acquired a militarized dimension. The post-Siege aeronauts were "soldiers of science" that "go to combat, counting on victory," hoping to "proudly hold high [France's] name."<sup>113</sup> It was no accident that Dumilatre's monument to the aeronauts was placed next to the monument to the fallen soldiers of the Franco-Prussian War.

Among the poems Tissandier received was Sully Prudhomme's "Le Zénith."<sup>114</sup> Far from an amateur poet, Prudhomme was one of the leaders of the Parnassians and went on to win the first Nobel Prize for Literature in 1901. Camille Hémon, an early interpreter of Prudhomme's philosophy, argued that his "scientific poetry perfectly symbolizes and synthesizes the spirit of the time," when, as religious faith decreased, belief in scientific progress stirred the passions of men.<sup>115</sup> Prudhomme had studied engineering, and his "ardent desire to introduce the marvelous achievements of science and the elevated syntheses of modern speculation into the domain of poetry" came from his scientific education.<sup>116</sup> The *Zénith* tragedy offered him ample inspiration to reflect on this ethos. According to the historian of science Robert Fox, the poem was an early articulation of the uplifting vision of modern science "uniting humanistic and scientific mentalities" that Prudhomme would develop more thoroughly in the 1890s.<sup>117</sup>

Forty-five stanzas in length, "Le Zénith" is an epic hymn to the modern scientific spirit. The first part discusses the secularization of nature, with "the expanded real world" pushing away "the heavens" as "the great whip of lightning brandished by Reason" chases away "the herd of crude idols." After a section describing the preparations for the ascent, Prudhomme presents the reader with a powerful portrayal of the scientific aeronaut as hero. The aeronauts feel no fear; they ascend inspired by the pursuit of truth. Yet courage is not enough to overcome the physical challenges posed by the lack of oxygen. As Prudhomme puts it, the aeronauts experience a struggle between the flesh (*la chair*) and the mind (*l'esprit*)—"The flesh, fated to the ground, begs for the descent, / The winged mind cries for an infinite *sursum*." Part three ends with a riveting dialogue between the two entities—the poem's climax:

Master, she [the flesh] says, enough! My anguish is oppressing me . . .  
 —Higher! he [the mind] replies. And unburdened of a long stream  
 of sand  
 The crew rushes up to the deep sky.  
 —Oh master, what torment your willpower inflicts me!  
 I succumb.—Higher!—Mercy!—Higher, I say.  
 And the poured sand prompts a new leap.  
 —Grace, my blood overflows and I have no more breath.  
 —Higher!—Stop us, master, I am barely alive . . .  
 —Ascend.—Oh! cruel one, still?—Ascend, slave!—Still?—Yes.

But finally exhausted the flesh folds and collapses,  
 And like a sacred fire where the priestess burns,  
 The abandoned spirit falls unconscious . . .

The dialogue dramatically stages the aeronauts' foolhardiness, but it does not condemn. Instead, the poem celebrates the triumph of the will at the limits of human life, and the making of scientific martyrs whose minds subdued the base needs of the flesh in search of a greater truth.

The poem's last section discusses the ascent's legacy, and Prudhomme argues that while the aeronauts suffered a physical death, in doing so they became immortal. They would spend the rest of days inspiring youth "whose thirst for honor is never quenched." The novelty of the aeronauts' courage, Prudhomme concludes, would have even earned the admiration of "the heroes of antiquity." In celebrating the aeronaut's dedication to science, Prudhomme put into practice the vision of Auguste Comte's Positivist Calendar, where each day and month named after a historical figure offered a kind of sacro-secular inspiration.<sup>118</sup> A new image of the aeronaut had come forth—not unscrupulous entertainer or utopian crank, but the self-sacrificial patriot.

#### CONCLUSION: THE PATRIOTIC BALLOON

The commemoration of the *Zénith* martyrs was a crucial piece in constructing a patriotic history of balloons in France. As noted by Marie Thébaud-Sorger, numerous books on the topic appeared between 1870 and 1890.<sup>119</sup> Their narratives usually culminated with the *Zénith* tragedy after passing through heroic moments like the Siege of Paris. A constant trope was the association of useful ballooning (scientific and military ascents) with the different Republics, and trivial ballooning (ascents for spectacle and speculation) with the Old Regime and the Napoleonic Empires. Wilfrid de Fonvielle's 1876 *Aventures aériennes* sidestepped the awkward fact that the balloon had been invented under the Old Regime by emphasizing how the Montgolfiers' first demonstration happened in front of the Vivarais's Estates. He explained:

It is worthy of notice that it was not royal princes and peers of the realm who enjoyed this beautiful spectacle. It was given for the first time, on the eve of 1789, to one of the few deliberative assemblies that despotism had not destroyed in that old France, where since the Gauls, our happy ancestors, there persisted an old leaven of freedom.<sup>120</sup>

Fonvielle also fostered the association between military ballooning and republicanism, discussing in detail the creation of the *Compagnie des aérosters militaires* under the First Republic and condemning Napoléon for dissolving the ballooning unit. Tellingly, thanks to the pressure of politicians like Gambetta and Bert, the Third Republic revived the initiative in 1877 by founding the *Établissement d'aérostation militaire* at Chalais-Meudon in the same location as its predecessor. The new institution featured both a laboratory to pursue flight technology and a training school for ballooning units that operated in mainland France and the colonial theater (see chapter 5).

Gaston Tissandier, the *Zénith's* sole survivor, also worked to embed aeronautical pursuits in the republican imaginary through books and articles in *La Nature*. His 1879 *Les Martyrs de la science* is a tableau of the personalities that crowded the nineteenth century's scientific imagination.<sup>121</sup> Tissandier presented the work as an edifying history that drew examples of scientific martyrs from all of humanity, yet, unsurprisingly, it had a nationalist bent—more than half of those mentioned were French (as one reviewer observed, the book's origins were obviously to be found in the *Zénith* disaster).<sup>122</sup> Others also framed the French relationship with ballooning in broader patriotic terms. A study on the ceramic ballooning plates that proliferated in the late eighteenth century faced a dilemma: How could these be patriotic (a sentiment associated with the Republic) if most of them were produced before 1789? The author conciliated these tensions by concluding that they were not patriotic in the revolutionary sense, but, given that they depicted “important and glorious events of our national history, then yes, the balloon plates deserve to be called patriotic, because the glory of the discovery that they celebrate is one of the greatest and purest that France can claim for itself.”<sup>123</sup>

In 1883, the invention's centennial offered another opportunity to celebrate the history of ballooning and cultivate its identification with republican France. Celebrations were held in Paris and Annonay, which, according to one journalist, saw the most patriotic and lively spectacle in its history with the inauguration of a monument in honor of the Montgolfier brothers.<sup>124</sup> Orations followed the usual pattern: reference to the siege balloons and the *Zénith*, praises to the aeronauts' patriotic self-sacrifice, and assertive calls for more research into aeronautics.<sup>125</sup>

This conflation of fortuitous events—the SFNA's effort to professionalize the ballooning community, the publicized martyrdom of two of its members, the revival of military ballooning, and the Montgolfier centenary—helped

construct a *lieu de mémoire* that inscribed technical knowledge of ballooning and a generalized aspiration for controlled flight in a patriotic discourse.<sup>126</sup> It crystallized the sense that the first flying machine had been a French invention, that finding a solution to flight was a French calling, and that pursuing that solution fostered republican values. The French encountered this message through conferences, newspapers, books, and myriad other sources. Images d'Épinal representing the *Zénith* ascent proliferated after the accident (figure 3.9), and, at the turn of the century, French schoolchildren could boast colorful notebook covers that inscribed the *Zénith*'s tragic ascent as one of the key moments in the French quest for flight (figure 3.10).

Although a hiatus in scientific ascents followed the *Zénith* tragedy, for the next two decades, the SFNA retained its position as the world's pre-eminent aeronautical society. *L'Aéronaute* continued publishing studies on both lighter-than-air and heavier-than-air flight, expressing pride in being the only constant publication of its kind. People from all over the world mailed in ideas for flying machines, with proposals sent from as far away as Papeete and Buenos Aires. Today, hundreds of these are housed at the Musée de l'Air et de l'Espace. While comments such as “uninteresting” and “no value” are written on their covers, their volume and range indicate the extent to which people perceived the SFNA as the focal point of aeronautical matters. Significantly, among those who corresponded with the SFNA were key figures in the early history of heavier-than-air flight—Louis-Pierre Mouillard in Egypt, Otto Lilienthal in Germany, and Samuel Langley and Octave Chanute in the United States. By collecting and disseminating aeronautical knowledge, the SFNA contributed to the birth of human flight, as bits and pieces of technical knowledge dispersed and coalesced in the hands of enthusiasts across the globe (as analyzed in chapter 7).

Popular responses to the deaths of Crocé-Spinelli and Sivel indicated a shift in how the French perceived those who involved themselves with the pursuit of flight. Indeed, there had been previous examples of aerial martyrdom, like the deaths of Pilâtre de Rozier and Pierre Romain when they tried to cross the English Channel in 1785. However, the seeds for the image of the aeronaut as a national hero were truly sown through the practical uses of balloons during the Franco-Prussian War and with the subsequent emergence of a patriotic rhetoric that alerted to the urgency of scientific and technological progress if France was to remain a global power. Placed within this context, the deaths of Crocé-Spinelli and Sivel were pregnant



Figure 3.9  
 Image d'épinal depicting numerous balloon accidents, with the *Zénith* tragedy at the center. The caption describes Crocé-Spinelli and Sivel as “unfortunate victims of their devotion to science.” *Les Accidents de l'aérostat*, Imagerie de P. Didion, undated. General Research Division, The New York Public Library, <https://digitalcollections.nypl.org/items/627f55fd-5cc5-2cae-e040-e00a18062420>.



Figure 3.10  
A school notebook cover depicting the deaths of Crocé-Spinelli and Sivel aboard the *Zénith*. *Les Moyens de locomotion de l'homme*, notebook cover, undated. Library of Congress, Tissandier Collection.

with potential meaning to be explored not only by republicans but by all who championed France's nascent aeronautical science. Transforming aeronauts into self-sacrificial national heroes granted a refreshing legitimacy to a practice that in the past century had become the butt of jokes. In that way, the SFNA and the *Zénith* campaign paved the way for a new golden age of ballooning—one that would include not only republican men of science but also aristocratic sportsmen.

## THE BELLE ÉPOQUE ALOFT

## Aristocratic Modernity and the Spectacle of Ballooning in the Press

In 1888, the Ministry of Interior conducted a census inquiring about the state of ballooning in French civil society.<sup>1</sup> Of eighty departments surveyed, seventy featured no signs of ballooning activity. Meanwhile the Seine concentrated about 60 percent of all the balloons reported in France—sixty gas balloons and three montgolfières, just about all of them within the limits of Paris.<sup>2</sup> Authorities also identified ninety-seven aeronauts in the city, who together had conducted more than 4,600 ascents during their lives.<sup>3</sup> These aeronauts were distributed among Paris's seven authorized aeronautical societies, the most prominent of which remained the Société Française de Navigation Aérienne. At the time of the survey, the SFNA had at least fifty-four active members and about fifty affiliates, and it continued to regularly publish *L'Aéronaute*. Writing for *La Nature* in 1883, Gaston Tissandier described France as living amid a “ballooning vogue,” speculating that the country averaged almost one ascent per day.<sup>4</sup>

The Ministry of Interior's survey showed that aeronautical culture in late nineteenth-century France was composed of multiple threads: self-identified scientific aeronauts coexisted with entertainers who specialized in making a profit from balloon ascents. Ballooning itself could be seen as both a useful patriotic enterprise and as an amusing distraction, with the distinction usually being one of gradation. Yet this diversity of associations and practices frustrated some. In 1893, Édouard Surcouf, a respected Parisian aeronaut and manufacturer who had trained under Eugène Godard, complained that ballooning had not yet been fully consecrated as a legitimate practice. He argued that while the number of ascents had increased, they were still mediocre due to the lack of a strong central organization that could regulate and encourage more ambitious practices.<sup>5</sup> Emmanuel Aimé, a ballooning enthusiast, echoed these sentiments. “Left to themselves, aeronauts attempt isolated experiments in what are often poor conditions that they are powerless to change,” he argued, which explained why the “Montgolfier's admirable invention [had

been] stuck in a rut for a century.”<sup>6</sup> Aimé proclaimed that yet another new organization, the Union Aérophile de France (which published *L’Aérophile*, the journal he was writing in), would rectify the situation. But the Union Aérophile, whose scientific orientation mirrored the SFNA’s, did not gain traction. Surcouf and Aimé’s ballooning ambitions would only be realized a few years later. Their eventual success had less to do with efforts to associate balloons with scientific pursuits and more to do with the culture of spectacle that took hold with the emergence of ballooning as an aristocratic sport.

Yet, the SFNA’s work during the previous decades had not been in vain, for it helped reframe aeronautical practices as legitimate. No longer mainly associated with marginalized acrobats, unscrupulous speculators, and radical utopians, the balloon was now free to be appropriated by the higher echelons of French society to foster distinction. These elite practitioners, who eventually came together to form the Aéro-Club de France, stepped into the limelight as the nation’s most active aeronauts. In doing so, aristocratic men signaled their class’s relevance in a period often assumed to mark the beginning of its decline. While the French government stopped granting titles of nobility in 1875, these remained transferable, and historians have made a convincing case for the persistence of the French aristocracy’s social and cultural power up until the Second World War. There was great dynamism to aristocratic life at the turn of the century, especially in Paris, which was a hub for real and aspiring elites from all over Europe and the Americas. Members of this cosmopolitan aristocracy engaged in active idleness by taking up positions in politics, learned societies, charities, and other associational groups—a frenetic dilettantism that, as one historian put it, “reflected the strength of a social group that saw itself as dominant.”<sup>7</sup>

Instead of yearning nostalgically for a return to the Old Regime, many members of the aristocracy actively shaped the French experience with modernity. Indeed, they continued to reproduce certain social practices from the past, for they wanted to perpetuate the aristocratic model. But, to perpetuate that model, they also needed to stay relevant, which required being open to innovation and outsiders. This transformation began in the 1830s, when aristocratic life moved away from the countryside and entrenched itself in Paris. By virtue of this shift, the aristocracy left the relative privacy of court life and entered the publicness of urban life, which meant that it had to adapt to continue projecting an aura of being both a class set apart from the rest and the standard-bearer of French civilization. *Le Tout-Paris*—the city’s

fashionable fast set—emerged from the fusion of old nobles, new elites, boulevard journalists, and witty dandies who congregated in lavish salons.<sup>8</sup> The cultural ferment of this hybrid social milieu became even more intense under the Second Empire and continued to thrive with the advent of the Third Republic.<sup>9</sup> Aristocratic distinction remained a powerful sociocultural marker even as Léon Gambetta heralded the era of the “nouvelles couches sociales” (new social strata). Paris, therefore, served as a laboratory and playground for a form of aristocratic modernity.

As such, the chapter that follows argues that the ballooning revival expanded beyond the scope of republican men of science because aeronautic pursuits became a fruitful avenue through which the men of *le Tout-Paris* could present themselves as rallying behind the vision of an intensely modern world while still cultivating their distinction from the rest of the population. As such, at the turn of the twentieth century, aristocratic modernity became a defining feature of French air-mindedness. By establishing institutions like the *Aéro-Club de France*, aristocrats created spaces of elite associational life that enabled the fusion of an old aristocracy and an emergent haute bourgeoisie. While men dominated these spaces, they also enlisted the aid of women to help nurture a new generation of aeronauts—an arrangement that women then saw as an opportunity to secure more independence and agency as aeronauts in their own right. All the while, the confluence of new forms of representation developed by the mass press and an elitist aeronautical culture transformed the balloon into a distinguished symbol of French modernity—one of the Belle Époque’s quintessential technological icons.

#### 1 THE RAREFIED AIRS OF DISTINCTION: LEISURELY SOCIABILITY AND MASCULINE BRIO

Despite the growing number of railroads that crisscrossed the country, *fin-de-siècle* France remained a world made up of distinct identities, with many traits—from language to clothing—still visible enough to differentiate a provincial from a Parisian.<sup>10</sup> But interpreting class signifiers in Paris was a vexing exercise, for the middle class found it easier and easier to emulate the taste of its social superiors thanks to the emergence of department store consumer culture and the democratization of urban entertainment.<sup>11</sup> Indeterminacy, then, did not put an end to efforts in producing class distinctions. In fact, it served as a catalyst for such efforts, with an aristocracy anxious about its place

in an increasingly democratic republic searching for new ways to differentiate itself. As Thorstein Veblen wrote in the contemporaneous *The Theory of the Leisure Class*, “In order to gain and to hold the esteem of men it is not sufficient merely to possess wealth or power. The wealth and power must be put in evidence, for esteem is awarded only on evidence.”<sup>12</sup>

The upper echelons of French society put this axiom into practice by developing increasingly elaborate and expensive forms of leisure, which had itself emerged as a more clearly defined sphere of social practices in the second half of the nineteenth century.<sup>13</sup> Sports became a prominent category under which leisure time was organized, and a burgeoning sporting culture bloomed in France, proving to be a fruitful venue to negotiate status anxieties. Members of the aristocracy and the haute bourgeoisie were enthralled with cultivating different sports like fencing, polo, and automobilism. These activities allowed them to practice distinction while simultaneously presenting themselves as working toward France’s edification, which they saw as needing an injection of *élan vital* if it were to keep pace with England and Germany. From this context emerged the work of people like Pierre de Coubertin, whose efforts would culminate in the reinvention of the Olympic Games.<sup>14</sup>

Aristocrats also practiced distinction through new forms of transportation, which revolutionized how bodies moved around the city. Christopher Thompson explains that as cycling moved from an elite sport to a popular form of transportation, upper-class practitioners “elaborated a discourse of social distinction that contrasted the elegant ideal of the bicycling gentleman with his uncouth, working-class opposite.”<sup>15</sup> In other words, although technological artifacts operated as signifiers, they were far from stable. Having the means to ride a bicycle was a necessary, but not sufficient, requirement to produce distinction; just as important was the way one engaged with and presented oneself in relation to the technological artifact. Similarly, when automobiles started speeding through the streets of Paris, it was not enough to be behind the wheel—one had to practice a kind of lifestyle. Hence the importance of the Automobile-Club de France. Established in 1895, it framed the social life autophiles with events like lavish dinners and meets in a chalet at the prestigious Bois de Boulogne.

Beginning in the 1880s, the politics of leisure and distinction also started to transform ballooning. During the ensuing decade, a new community of aeronauts coalesced that saw the practice as a fecund outlet in which to

show off their skills and audacity. Scholars have analyzed these new practices with deftness, even if they have placed too much emphasis on the idea that it represented a rupture with the “scientific” approach that characterized earlier ascents.<sup>16</sup> Indeed, descriptions of balloon ascents in the popular press by the likes of Guy de Maupassant bolstered the idea that ballooning could be a pleasurable form of leisure. But the aeronauts who operated the balloon Maupassant ascended in inscribed themselves in the tradition of scientific aeronauts, while his popular accounts included some simplified atmospheric science.<sup>17</sup>

At least discursively, then, ballooning continued to be associated with scientific pursuits. *L’Aérophile*, which was founded in 1893 and soon supplanted *L’Aéronaute* as France’s leading aeronautical journal, developed a more sports-oriented identity as the years went by, especially after it came under the reins of the Aéro-Club, but it continued to express a scientific ethos. Articles on Gustave Hermite and Georges Besançon’s use of small, unmanned balloons to collect data from high altitudes coexisted with discussions on the appropriate terminology to register new records. As we saw with the *Zénith*, these were valued as a way of measuring the limits to which science could be extended (it is telling that it was around this time that the French word *record* expanded its meaning to incorporate not just “public register, archive” but also “the greatest effect recorded in the archives that has been achieved under set conditions”).<sup>18</sup> The resilience of such a discourse indicates how difficult it was to assuage misgivings regarding the balloon’s utility. Science continued to be a legitimizing referent for those who felt that aeronautical practices were not taken seriously.

Yet, the emergence of a more idyllic and leisurely view of ballooning was undeniable. In 1887, *Le Monde illustré* featured an article about how the brothers Gaston and Albert Tissandier were offering people the pleasures of an “aerial promenade.” An illustrator named Adrien Marie joined Gaston and Pierre-Jules Hetzel (Jules Verne’s publisher) for a five-hour-long ascent, drafting scenes along the way.<sup>19</sup> The lighthearted drawings captured the character of such journeys, which featured little of the weighty seriousness of scientific ascents (figure 4.1).

Wilfrid de Fonvielle, an indefatigable champion of scientific ballooning, also embraced this new kind of practice, seeing it as an opportunity to proselytize about the connections between aeronautics and republicanism to wider audiences. In 1894, he joined Maurice Mallet on a balloon excursion

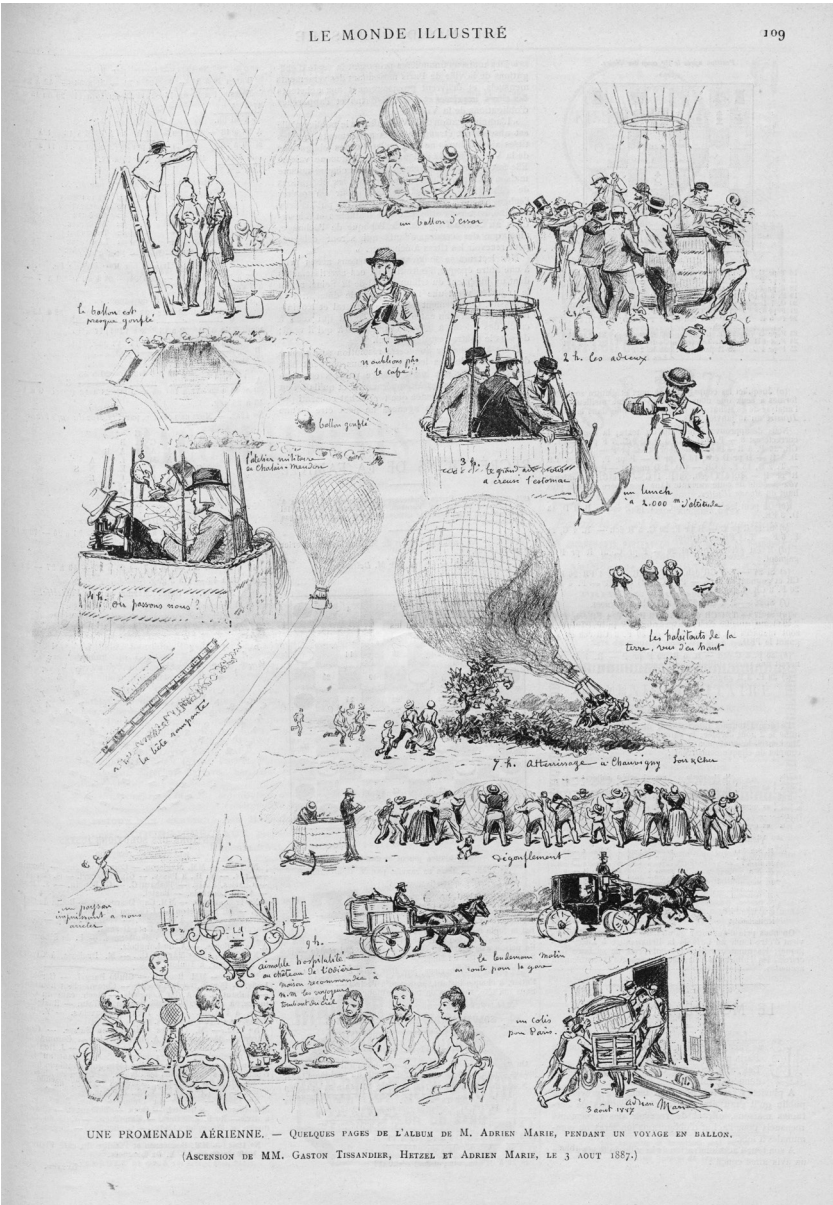


Figure 4.1  
 Adrien Marie's sketches depict the various stages of a leisurely balloon ascent. Rather than efforts at producing atmospheric science, it highlights picturesque views of the French countryside and various meals consumed during the adventure (including a feast at a chateau after the landing). Adrien Marie, *Une promenade aérienne*, *Le Monde illustré*, 14 August 1887. Source: gallica.bnf.fr / Bibliothèque nationale de France.

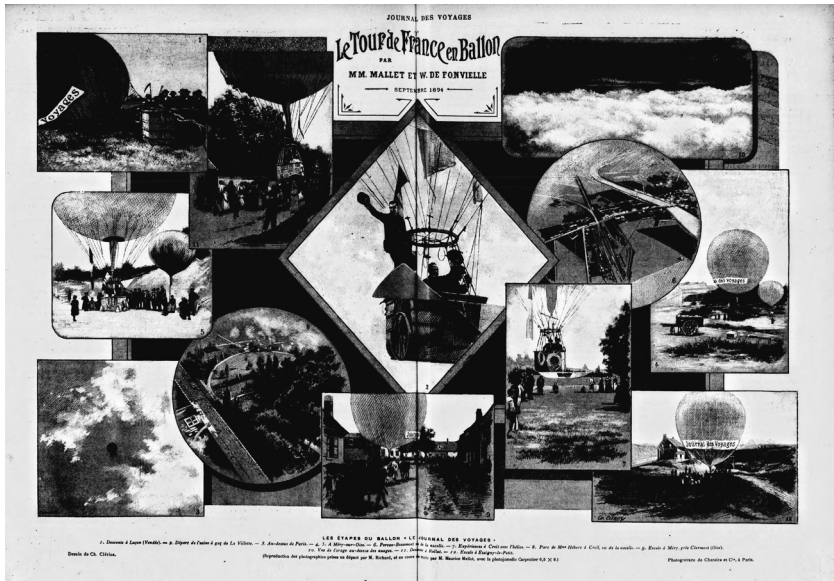


Figure 4.2

Sponsored by the *Journal des voyages*, Wilfrid de Fonvielle and Maurice Mallet traveled aboard a balloon of the same name, a sign of how the press was beginning to capitalize on sponsoring ascents. The illustrated montage that then appeared in the publication conveyed the balloon as a dynamic technology that granted access to different areas of the countryside while simultaneously uniting them around the artifact. “Les Étapes du ballon *Le Journal des voyages*,” *Journal des voyages et des aventures de terre et de mer*, 4 November 1894. Source: gallica.bnf.fr / Bibliothèque nationale de France.

sponsored by the magazine *Journal des voyages*.<sup>20</sup> They traveled aboard a balloon for six days, stopping in small towns where enthusiastic audiences listened to Fonvielle’s patriotic lectures. On the first leg of their journey, from Paris to Méry-sur-Oise, they brought along a member of the prominent Hentsch banking family. According to Fonvielle, they wanted to show social and cultural elites “that balloons could be used to make fashionable trips in the most civilized and best-known regions” (figure 4.2).

Thus, the balloon began to be marketed to and appropriated by aristocrats and captains of industry—individuals as varied as Henry de La Vaulx (who descended from an old noble family) and Henri Deutsch de la Meurthe (a wealthy Jewish industrialist). These men were introduced to ballooning by professionals who made a living off the practice—manufacturers like Édouard Surcouf, Maurice Mallet, and Henri Lachambre. Once the elite

practitioners learned the ropes, their ascents were defined less by a scientific or profit motive and more by a performance that emphasized their skill and self-control, or what other historians have characterized as “panache.”<sup>21</sup>

An oil canvas by Émile Friant evocatively depicts the infusion of brio into ballooning practices. Completed in 1899, *Voyage à l’infini* features a man throwing out ballast as his balloon ascends past the canvas’s upper edge. Friant resorted to Symbolist tropes to represent nature, transforming the stormy clouds in the lower three-quarters of the canvas into nude women who erotically reach out in the balloon’s direction. Aeronaut and nature engage in a relationship of ambiguous tension and dangerous seduction. One does not have to be a Freudian to infer the sexual connotation of the aeronaut pouring down his ballast over the sensual nudes. But the aeronaut’s masculinity is also defined by stoic mastery over his virility, for he maintains his composure by standing tall, his steadfast gaze directed toward the horizon (figure 4.3). The ideal of an aeronaut’s fin-de-siècle masculinity was also expressed in the “Portraits d’aéronautes contemporains” series that illustrated the cover of almost every new *L’Aérophile* issue beginning in May 1894.<sup>22</sup> Descriptors that defined the modern aeronaut included “a man of action” (Maurice Farman), “a gentlemen rider [*sic*; original in English] of the atmospheric turf” (Jacques Faure), “an accomplished sportsman” who “always acts bravely and speaks with frankness” (Etienne Giraud), and a man of “bonheur,” “energy,” and “chivalrous spirit” (Georges de Castillon de Saint-Victor).<sup>23</sup>

An aeronaut’s practices were supposed to strike a healthy medium in which carefully cultivated skills (endurance for long hours in a gondola, a good sense of wind currents, careful management of ballast) mitigated the risks that came with the quest for adventure and breaking limits. In discussing the avid sportsman André Legrand, an article in *L’Aérophile* argued that one “might fear that his adventurous character sometimes pushes him toward pointless recklessness. But it is not so; once inside the gondola, [he] becomes the calmest and most methodical of aeronauts, economical with his ballast and gas, not leaving anything to chance.”<sup>24</sup> A number of historians have made the persuasive case that a “crisis of masculinity” troubled Third Republic society, stemming from anxieties about growing German power following the Franco-Prussian War.<sup>25</sup> In his new fin-de-siècle form, the aeronaut emerged as a figure who practiced an aristocratic manliness that countered France’s decadence—a masculinity that was both virile and in control of itself, one that was shaped by



Figure 4.3

Although the aeronaut in Friant's painting is clearly an aristocrat sportsman, one can make a parallel with Bayla Singer's description of western science, which "has a distinct tinge of masculine gender. Nature is seen as female, and the scientist sets about to wrest her secrets from her, to open her innermost parts to his gaze and manipulation." *Like Sex with Gods: An Unorthodox History of Flying* (College Station: Texas A&M University Press, 2003), 90. Émile Friant, *Voyage à l'infini*, 1899. Wikimedia Commons.

the understanding that the combination of sports and adventure offered by ballooning promoted a refined and disciplined form of *élan vital*.

## 2 ARISTOCRATIC ASSOCIATIONAL LIFE: THE BIRTH OF THE AÉRO-CLUB DE FRANCE

Members of Parisian high society interested in facilitating and encouraging this new approach to ballooning came together in 1898 to form the *Aéro-Club de France*. It might seem paradoxical that elites would appropriate the balloon—an awkward means of transportation vulnerable to the whims of the wind—in an era marked by its obsession with speed. After all, the “invention of speed” in the nineteenth century also functioned as a crucible of social differentiation, since in the early modern period rich and poor people alike tended to move at a similar pace.<sup>26</sup> But speed also went through a process of democratization. Trains transported people from various classes (albeit in different compartments), while a growing bicycle industry supplied workers with an efficient means to get to work during the week and the countryside during the weekend.<sup>27</sup> All of this enabled the growth of tourism, and the balloon became an elitist retreat from the changes ushered forth by this transport revolution. As Aimé explained, ballooning offered access to “a corner of the world unknown to locomotives, inaccessible to cog railways, safe from the insults of the pickaxe and the violations of the trowel.”<sup>28</sup>

The very “inefficiency” of the balloon operated as a powerful mark of distinction. Few could afford to spend cherished leisure time drifting through the winds without certainty of where they would land and how they would return to Paris with bulky and expensive gear. If in the 1870s and 1880s long-distance voyages served to differentiate and legitimize scientific ascents from moneymaking spectacles, in the 1890s and 1900s they also signaled that one had the means to dispose of time. In a book narrating some of his most celebrated ascents, Henry de La Vaulx finished each account by describing how he and his crew would have to find locals to help pack up and transport the balloon to the nearest town, spend one or more nights in a hotel, and then take a train (preferably in a first-class carriage) back to Paris.<sup>29</sup> Leisure, as Veblen put it, “does not connote indolence or quiescence” but the “non-productive consumption of time.”<sup>30</sup> In that sense, embarking on a balloon ascent was near the acme of the leisure scale.

The Aéro-Club's birth should also be placed within the broader phenomenon of the rise of the *cercle* in nineteenth-century France. The general outlines of Maurice Agulhon's interpretation of the *cercle* as a bourgeois intermediary body between the state and the individual that marked the decline of less democratic forms of aristocratic sociability like the salon is compelling.<sup>31</sup> But recent research has rendered this interpretation even more complex, showing that aristocratic associations thrived and coexisted alongside Agulhon's more egalitarian ideal type. The membership rolls of the Aéro-Club were filled with aristocratic names, members of the financial and political elites, and wealthy industrialists. The club's vigorous activity and renown are indicative of the extent to which the French aristocracy endured and exerted its influence well after the century's many revolutions. Although not as closed off as more exclusive bastions like the Jockey Club, the Aéro-Club maintained a strong core of members from the families that could trace their noble roots back to the Old Regime (about 50 percent). The remaining members could be divided equally among individuals whose families had been given noble titles during the nineteenth century, those who came from foreign nobilities, and those who qualified as squarely bourgeois.<sup>32</sup>

Like the Automobile-Club, the Aéro-Club fostered the socialization between an older, more "traditional" titled aristocracy and a newer, more "modern" moneyed elite. The fusion of title and money was of great benefit to the Aéro-Club, for if the former granted the club an aura of exclusivity and distinction, the latter brought in the funds to finance its operations and encourage innovation through competition for prizes. The Aéro-Club's active synthesis of elite sectors helped the club overcome one of the main challenges that plagued previous aeronautical societies: finances. In 1900, the Aéro-Club's revenue reached 61,520.50 francs (more than half of that coming from membership fees), while its equity stood at 35,456.35 francs. In comparison, during the same period, the SFNA had 3,775.75 francs in revenues (with less than a third coming from membership fees) and only 2,843.45 in equity.<sup>33</sup> The synthesis also allowed the aristocracy to remain relevant in a republican regime by presenting itself as a promoter of modern pursuits.

By modeling itself after the Automobile-Club, the Aéro-Club also fostered an elitist culture that went far beyond making balloon ascents. Being an active and respected member was contingent on partaking in elite forms of sociability, such as attending dinners at Maxim's, one of the favorite spots for

le Tout-Paris.<sup>34</sup> In environments such as these, aeronautical knowledge intermingled with high-society gossip. Formal membership was based on the notion of *parrainage*—one had to receive the support of two club members before being considered for admission, which in turn required more than 75 percent of the vote. The criteria took into consideration not just scientific and practical aeronautical knowledge but also titles of nobility and financial means.<sup>35</sup>

The Aéro-Club worked hard to infuse ballooning with all the semblances of a glamorous pursuit. Before the club was founded, most ascents departed from the La Villette gas works. The industrial setting did not bother the SFNA's more scientific-minded aeronauts (even if they did complain about longwinded negotiations regarding gas pricing). But it would not do for the Aéro-Club's aristocrats, who purchased a fifteen thousand-square meter lot in Saint-Cloud, a park west of Paris, to conduct ascents that operated simultaneously as high-society parties. Saint-Cloud had the distinct privilege of being one of the most exclusive sites in all of France (it had served as summer residence for Napoléon III and other imperial and royal families), and the Aéro-Club kept it that way. Access to its grounds was for members only, who in turn could bring up to two guests.<sup>36</sup> The scenery at Saint-Cloud was the opposite of La Villette's. Located on the banks of the Seine, the park was "a delightful garden . . . with lawn terraces covered in flowerbeds, overlooked by a chalet where morning glories made their climb" (figure 4.4).<sup>37</sup> If in the past making an ascent required aeronauts to spend time fastidiously coordinating with the city's gasworks, Aéro-Club members had it much easier. They could either bring their own balloon (and in 1905 there were plenty in Paris, for forty-one Aéro-Club members owned a total of eighty-two balloons), or they could rent one for 50 francs, as long as they had a Brevet de Pilote-Aéronaute.<sup>38</sup> As the Paris-raised American aeronaut Frank P. Lahm explained:

Almost any fair day, one has only to go to the club grounds outside the city to see at least one ascension. Many of the club members have their own balloons. The club always has several at the disposition of its members. It is only necessary to telephone to the one in charge and he prepares the balloon, fills it with gas from the city gas works and attaches the car. The aéronaut goes out, steps into his balloon and is off.<sup>39</sup>

The Aéro-Club's infrastructural work paid off. From the beginning of the century until the First World War, ascents from Saint-Cloud increased dramatically, and the park became the world's most active ballooning site.



Figure 4.4

The mondain grounds of the Aéro-Club de France's private park in Saint-Cloud. Jules Beau, untitled photograph, in *Collection Jules Beau. Photographie sportive: T. 27*, 1904. Source: gallica.bnf.fr / Bibliothèque nationale de France.

Aéro-Club members were indefatigable in their aerial activities, and their obsession with competition became the defining characteristic of turn-of-the-century ballooning. From 1889 to 1914, there were no fewer than 145 competitions organized to commemorate all kinds of anniversaries, like the 1904 centenary of Philippe Lebon's assassination (he had been a pioneer of gas lighting, the substance then used to inflate most balloons).<sup>40</sup> During the 1900 Universal Exposition, ballooning had its own section, and thanks to the Aéro-Club's support, no fewer than fourteen competitions were held in Vincennes, totaling 156 balloon ascents.<sup>41</sup>

The 1900 Exposition was not an isolated incident. The growth in the Aéro-Club's activities during the early twentieth century was significant (figures 4.5 and 4.6). The club's chief event was the Grand Prix, which first brought 25,000 people to the Jardin des Tuileries in 1905 and continued annually until the First World War (figure 4.7).<sup>42</sup> Organizing these large public events was only possible thanks to the Aéro-Club's financial, social, and political capital, for the police were concerned about the risk posed

Total Number of Ascents by Aéro-Club de France Members, 1899-1911

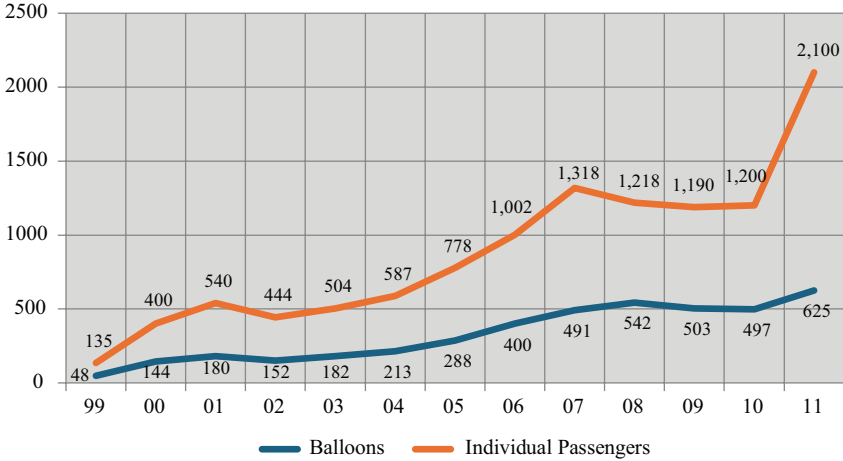


Figure 4.5 Data from L'Aérophile; Aéro-Club de France: Annuaire pour 1910 (Paris: 1910).

Time and Distance Traveled during Ascents by Aéro-Club de France Members, 1899-1911

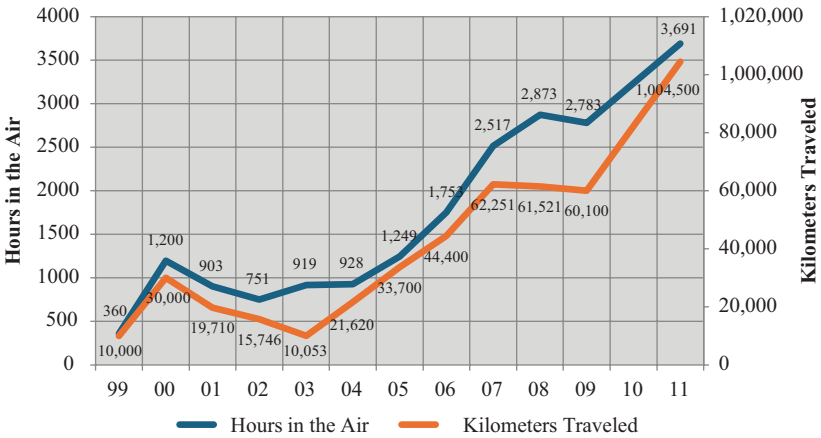


Figure 4.6 Data from L'Aérophile; Aéro-Club de France: Annuaire pour 1910 (Paris: 1910). No data available for 1910.

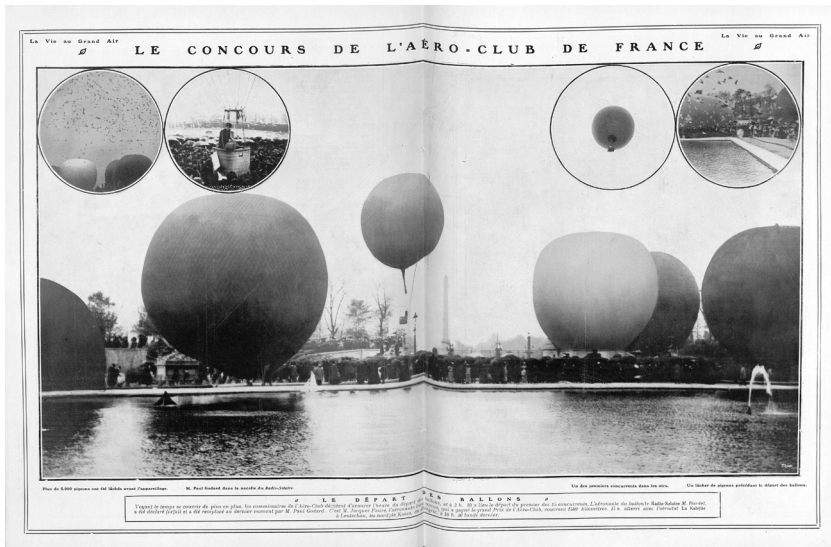


Figure 4.7

“Le Concours de l’Aéro-Club de France,” *La Vie au grand air*, 20 October 1905.

Source: gallica.bnf.fr / Bibliothèque nationale de France.

by dozens of balloons departing from a high-density location.<sup>43</sup> And even though the airplane took center stage once it was a viable technology, ballooning practices remained prominent. While there was a brief plateau during the feverish years of the airplane’s introduction in France (1909–1910), the number of balloon ascents increased once again in 1911. In fact, despite some rivalries between partisans of lighter-than-air and heavier-than-air flight, the two approaches coexisted within a wider aeronautical imaginary. Many early aviators were also aeronauts, and the press covered balloons and airplanes under the same rubric, presenting them as complementary technologies that signaled France’s global leadership in aerial matters.<sup>44</sup>

There was certainly more to this golden age of ballooning than a rehearsed performance of distinction. More than twenty years had passed since the Franco-Prussian War, but concern about how France measured up to other European nations was still very much alive. Nationalist sentiment, therefore, also played its role. There was a generalized perception that the French were playing catch-up with the British when it came to growing a sporting culture, and it did not help that many of the sports that were taking hold of France, like association football and tennis, had their origins in Albion. As we saw in

the previous chapter, in the years following the Franco-Prussian War, a lot of energy was put into crafting a history of ballooning that infused into the practice an unquestionable sense of Frenchness. The men who came together to form the Aéro-Club had internalized that sentiment. La Vault made the case for the cultivation of ballooning by arguing that “our national pride should push us to develop this entirely French sport.”<sup>45</sup> But who got to partake in it?

### 3 A GENDERED ATMOSPHERE: FEMALE AERONAUTS FROM TRANSGRESSION TO COLLABORATION

By 1904, *The Century Magazine*, an American illustrated monthly, was reporting on how ballooning had acquired a new identity in France. The author, George de Geofroy, claimed that “in Paris particularly, an astonishingly large number of people have taken it up, and even ladies are known to have one or more trips to their credit.” According to Geofroy, the view in France that aeronauts could be as respectable as figures like yachtsmen or automobilists contrasted with the situation in the United States, where they were still perceived “as absolutely reckless and foolhardy.”<sup>46</sup> He also made much ado about the practice being less expensive than one would expect, although his example that a flight from Paris to Luxembourg with return by train cost “about thirty dollars” per person betrayed his privileged position. In 1901, the annual income for an average American family—5.31 members—was \$827.19, so if that average American family were to splurge on a balloon trip for all its members, it would end up costing about half of the amount spent on food for the entire year.<sup>47</sup> Owning a balloon was even more unfathomable. The estimated prices were about \$5,000 for an average-sized silk balloon and no more than \$600 for a lower-quality cotton one.

But the participation of women in French aeronautical culture, as reported by Geofroy, indicated a new kind of reach for ballooning during the period. As we saw in chapter 1, there had been an active and influential cohort of female entertainment aeronauts in the first half of the nineteenth century—women like Sophie Blanchard, Éliisa Garnerin, and Louise de Poitevin. But with the rise of scientific ballooning after the Franco-Prussian War, women were systematically excluded from ascents. Even so, they remained critical in shaping ballooning culture from the labor side, since they were the ones who sewed together the large silk and canvas envelopes. By 1905, the engineer Georges Espitallier, who wanted to see more female ascents, could explain their

absence from aeronautical practices only through innate differences between the sexes. Women did not make ascents because of “their physiological state, in which a nervous system easily excited when confronted with the unknown predominates,” and due to their “native timidity,” which prevented them from taking bold actions.<sup>48</sup>

But it was gendered constructions, and not some inherent difference between men and women, that made the most prominent female ascent in the years between 1870 and 1900 the source of controversy. In the summer of 1878, Sarah Bernhardt was already one of Europe’s most prominent celebrities. As such, the Parisian press worked itself into a frenzy when she started visiting Henry Giffard’s tethered balloon, which was the 1878 Universal Exposition’s centerpiece and the object of much fanfare around the city. As one publication put it, “The popularity of this balloon is such that we talk about it at every intersection without bothering to name it. A simple pronoun is enough to make it clear that it is it we are talking about: ‘Hey, it’s coming down!’—‘It’ is it, only it.”<sup>49</sup> A self-proclaimed balloon fanatic, Bernhardt stated in her memoirs that during that summer she made an ascent aboard Giffard’s balloon every day. She was indeed a frequent flyer, as confirmed by repeated instances of her name in police reports concerning Giffard’s balloon.<sup>50</sup>

Delighted by these tethered ascents, Bernhardt decided to take the next step. On 21 August she made an untethered ascent with Louis Godard and her friend, the painter Georges Clairin. According to *Le Gaulois*, the feat was evidence of Bernhardt’s “dysfunctional affection for balloon ascents.”<sup>51</sup> The episode also caused controversy within the Comédie-Française. Emile Perrin, the theater’s administrator, became furious after learning about Bernhardt’s adventure. “Another one of her antics!” he is said to have ranted to one of her friends. Upon Bernhardt’s return to Paris, Perrin berated the actress for her eccentricities and imposed a one thousand-franc fine on her for traveling without permission. In response, the self-assured *comédienne* asserted that outside of the Théâtre she could do whatever she pleased and threatened to resign. The ordeal was only settled after the Minister of Beaux-Arts intervened.<sup>52</sup>

The press’s reaction reveals how gender was a structuring category in defining legitimate ballooning practices. None of the commentary came close to framing Bernhardt’s ascent as a courageous, let alone patriotic, enterprise. Instead, it was portrayed as the caprice of a frivolous woman. Her svelte

physique lent itself to easy puns about how her body could be taken up in the air. Bernhardt's celebrity status certainly contributed to the flurry of commentary, but other caricatures concerning Giffard's balloon reveal that the gendering of ascents was a broader phenomenon. One gets the sense that Parisians were anxious about ascents becoming opportunities for sexual transgressions, since they placed men and women from varying backgrounds together in close quarters and offered an exhilarating experience that excited the senses, with women ostensibly being especially vulnerable to the sublime (figure 4.8).

But Bernhardt refused to follow the script of how women were supposed to engage with technology. She was neither ill at ease nor apologetic about her ascents. Exceptionally savvy, she found a way to take advantage of the attention, and by the end of the year she had published a curious novella. Bernhardt's first publication, *Dans les nuages: Impressions d'une chaise* narrates her untethered flight with Louis Godard from the perspective of the chair that she sat on during the trip (Bernhardt herself is presented as Doña Sol, the role she was starring in Victor Hugo's *Hernani*).<sup>53</sup> The illustrations and tone are disarmingly lighthearted—Godard scares onlookers by making it seem like the balloon is going to fall into the Seine, Doña Sol throws ballast over an English family that is getting some air at the Bastille column, and passengers enjoy a sumptuous meal of foie gras, champagne, and oranges (figure 4.9). Several passages, though, tackle the criticisms Bernhardt had received in the past months. In ironic prose, she acknowledged her caricatured traits by describing Doña Sol as a pale and skinny woman who spoke terribly fast. Nevertheless, Bernhardt struck back at those who attacked her for being an untalented dilettante by having the chair knock off a fat man who refers to Doña Sol as a “poseuse” with little talent. She also personified objects with her characteristics. Like Bernhardt, the fragile chair comes from a humble background and dreams of a life of luxury and travel. Meanwhile, a champagne bottle that is tossed from the balloon embodies some of her anxieties, for it recalled the fate of an old actress: “Sparkling and heady, she has given us everything; and, ungrateful and satiated, we toss her without remorse into eternal oblivion.”<sup>54</sup>

The scientific-minded *L'Aéronaute*, ever-concerned with how seriously people perceived balloon ascents, was dismissive of her book, calling it “a fantasy without scientific ambitions.”<sup>55</sup> Yet, Bernhardt managed to put a positive spin on her adventures by presenting them as highly publicized “disruptive



Figure 4.8

One of a series of caricatures by Draner (pseudonym of Jules Renard) commenting on the opportunities for sexual transgression aboard Giffard's balloon. The caption makes a double pun. "Me faire enlever" can mean both "to ascend" or "to be snatched," while "Je vais donc pouvoir réaliser mes rêves de jeune fille" can be in reference either to the young woman being excited to realize a childhood dream or to the leering older man being excited at the opportunity to sexually engage with a younger woman. *Le Charivari*, 15 August 1878. Library of Congress, Tissandier Collection.

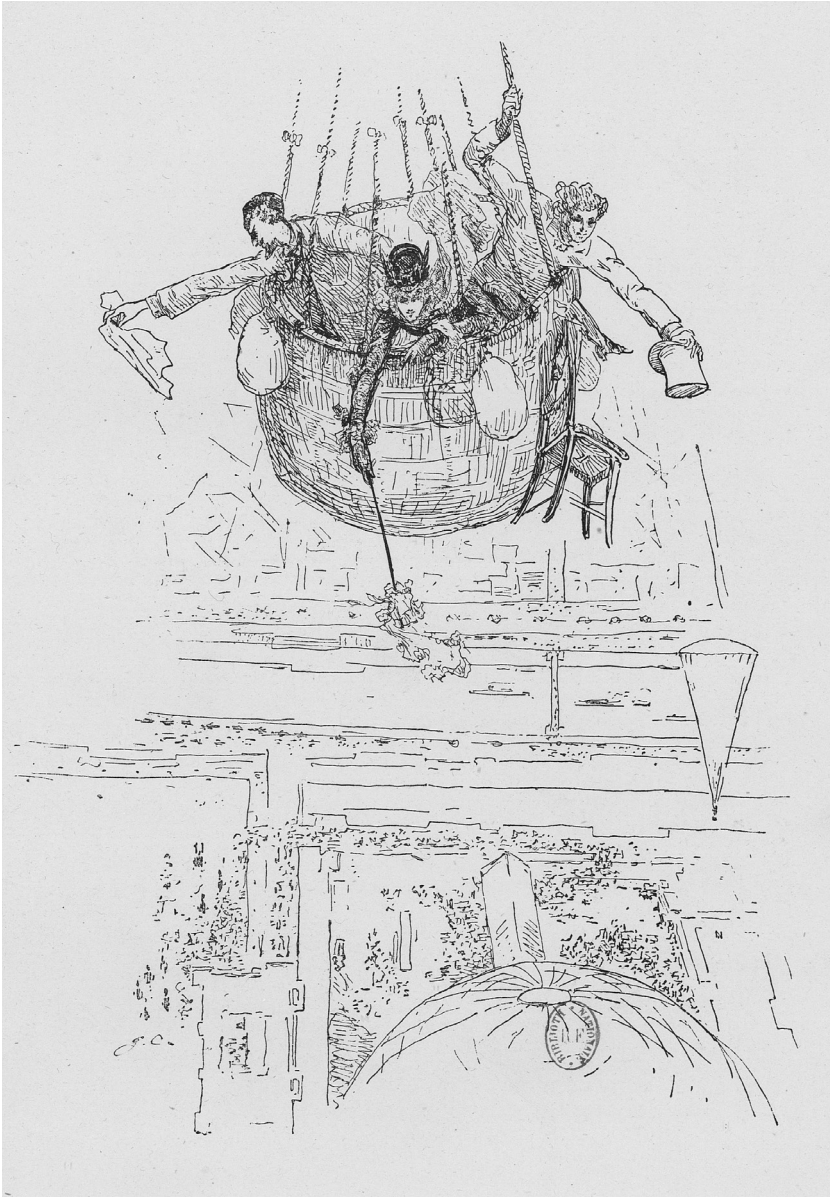


Figure 4.9  
 One of Georges Clairin's playful illustrations depicting Doña Sol/Sarah Bernhardt's controversial balloon trip. Sarah Bernhardt, *Dans les nuages: Impressions d'une chaise* (Paris: Charpentier, 1975). Source: gallica.bnf.fr / Bibliothèque nationale de France.

acts” that made her into a prominent forerunner of the “New Woman” that would cause such a stir in turn-of-the-century France.<sup>56</sup> Bernhardt’s controversial ascents were another act in her theater of life, a deft use of a spectacular technology to bolster her eccentric celebrity.<sup>57</sup> But at the same time, her celebrity made people curious about ascents, and the depiction presented in *Dans les nuages* infused ballooning with a degree of leisure and glamour that had not been present in publications like *L’Aéronaute*.

If reactions to Bernhardt’s ascents showed how transgressive it was for women to go up in a balloon in the 1870s, the new culture of leisure that had coalesced by the turn of the century opened a legitimate path for them to reascend into the air—even if in significantly different ways from their male counterparts. At first, these were the wives or daughters of male aeronauts who boarded balloons as passengers (less as a sign of individual bravery than as an “act of marital faith,” was how Espitallier dismissively interpreted it), and it is telling that during the first major female ballooning competition in 1902 not a single one of the fifteen participants captained her own balloon.<sup>58</sup> But women started conquering spaces, with Marie Surcouf (married to the manufacturer Édouard Surcouf) taking the initiative.<sup>59</sup>

Surcouf and her colleagues made their way into aeronautical institutions from the peripheries. They first engaged in a year-long ordeal to secure acceptance into the less prominent Aéronautique Club.<sup>60</sup> Although their participation came with restrictions (they could not, for instance, be members of the executive committee), women progressively carved out a more active role for themselves by establishing the Comité des Dames in 1906. With Surcouf as its first president, the Comité des Dames held its own meetings and organized ascent fêtes featuring the release of small balloons by children and the distribution of flowers to women.<sup>61</sup> Meanwhile, Surcouf tread the path for more female ascents by asking to qualify for a brevet, which she acquired on 23 August 1906 by captaining her first ascent (another woman was her passenger).<sup>62</sup> After one year, the Comité des Dames had grown from four founding members to fifty, and Surcouf was awarded a diploma from the Ligue de l’Enseignement in recognition for her services to the “aeronautical cause.”<sup>63</sup> But the Comité des Dames was always conceived as a supplement to the main organization—a hierarchy rendered visible by how during its first plenary meeting Surcouf gave Jules Saunière, the Aéronautique-Club’s president, the fauteuil to preside over the event.<sup>64</sup>

The more prestigious Aéro-Club resisted active female participation even longer. It did, however, encourage men to take their wives and other relatives as passengers by allowing them free entry to Saint-Cloud and by offering discounted gas prices for family ascents. Women were only formally incorporated into the club with the founding of the Aéro-Club Feminin Stella in 1909. By then, there was a growing consensus that the “feminization” of a practice was a signal of its greater popularization—the idea being that just as women had been crucial in bringing bicycles into vogue, they would also be a powerful vector “to help spread the aerial idea.”<sup>65</sup>

The practices of female aeronauts were defined against the ideal of disciplined masculinity that circumscribed men’s ascents after the Franco-Prussian War. Commentators tended to associate women’s ascents with a charming poetics—a gendering that circumvented too radical a disruption of the established normative roles for men and women. This was made visible in the elaborate, impractical attires donned by women during events like the Fête des Ballons Fleuris, held once a year to great fanfare (figure 4.10). Some women leaned into this framing, perhaps as a tactic to legitimize their own ascents. For instance, Marie de Serpigny argued in an ascent description penned for *La Vie au grand air*, “Isn’t it delicious and very feminine to abandon oneself to the wind, which changes every minute just as our frivolous ideas also change according to the weather?”<sup>66</sup> Yet it is important to note that as time passed, women aeronauts became more vocal about their independence vis-à-vis their male counterparts and more ambitious in their goals. As Marie Surcouf stated during the 1912 Stella banquet, “The empire of the air belongs to all, and who would dare deny that women have no right to conquer the stars. What men are able to acquire through their muscular strength and physical endurance, women can also conquer through their will, tenacity, and courage.”<sup>67</sup> Some Stella members were serious sportswomen, like the Duchesse d’Uzès, who was a pioneer automobilist and practitioner of various sports, albeit “without abdicating anything of her high social position and the grace of her sex.”<sup>68</sup> Even more impressive was Marie Goldschmidt, who in 1913 broke the distance record with a forty-one-hour-long flight that traveled 2,420 kilometers from Trosly-Breuil to Kharkiv (in present-day Ukraine).<sup>69</sup>

The growing activity of women aeronauts in the early twentieth century drew the interest of the popular press, which helped legitimize the practice. François Peyrey, the most important writer on ballooning at the time, penned



Figure 4.10  
Mathilde Airault ready for departure during the Fête des Ballons Fleuris. Agence Rol,  
*Fêtes de la Stella*, 30 June 1910. Source: gallica.bnf.fr / Bibliothèque nationale de France.

a richly illustrated series for *La Vie au grand air* connecting the feats of contemporary sportswomen to the longer history of female involvement in ballooning.<sup>70</sup> Women aeronauts were also covered widely by *Femina*, a popular illustrated women's interest magazine in the years leading up to the First World War.<sup>71</sup> A 1901 article by Berthe de Fontenelles recalled the longer history of female ascents in more favorable terms than had been the case in previous decades, claiming that they became the subject of caricatures between the 1810s and 1830s because they had been "so brilliant and so numerous." Fontenelles argued that "nowadays many women devote themselves to the sport of ballooning and show a courage that could very well cause envy many men."<sup>72</sup> *Femina* also opened its pages to personal accounts of ballooning journeys by the likes of Surcouf, who pushed back against the press's surprise that she was captaining ascents by highlighting her vast experience.<sup>73</sup> At the surface level, *Femina* seemed to be little more than a commercial fashion magazine. But the magazine also produced images that allowed women to transcend stereotypes of domesticity, and its coverage presented ballooning as an activity where the modern woman could embrace both her femininity and her desire for adventure. These changes help explain why Colette, the scandalous writer who became the archetypal New Woman, featured an account of her own balloon ascent in *Dans la foule*, a collection of short articles previously published in *Le Matin* that reasserted her independent persona.<sup>74</sup>

Nevertheless, for the Aéro-Club's male leadership, the incorporation of women into aeronautical culture was not so much a project of female emancipation as it was a mechanism to help produce a new generation of male aeronauts. Although there were palpable tensions between aristocratic and republican cultures, the two shared a similar view of women—their value rested in their position as mothers of the country.<sup>75</sup> Even with increased female participation in ballooning, the atmosphere remained deeply gendered, a phenomenon also prominent in other realms of athleticism, like mountaineering.<sup>76</sup> We get a sense of this idealized vision of female ballooning in a 1911 pamphlet published by the Stella. In the same mold as Bernhardt's book, the pamphlet's narrative viewpoint comes from an anthropomorphized object: a postcard that travels aboard a balloon. But the Stella's account featured none of Bernhardt's self-aware irony. Instead, "*En ballon*": *Impressions de voyage d'une carte postale* offered readers a patriarchal message of how women could serve the aeronautical cause. Upon landing, the postcard informs the reader that "the 'Stelliennes' had thrown a party for the little ones, who they hoped

would become future aeronauts for the greatness of our country.”<sup>77</sup> Women’s freedom and ability to go up in a balloon was not intrinsically important. As articulated by a Stella recruitment letter, what mattered was their position as mothers “to spread the taste for aerial excursions in a definitive manner through the dazzling demonstration of their safety.”<sup>78</sup>

By 1914, the Stella had grown from nineteen founding members to more than 350, but it only had thirteen active aeronauts (including seven airplane pilots).<sup>79</sup> The club encouraged women to go up in the air independently, but it remained chiefly a recruitment agency for the aeronautical cause. It organized soirées, tea parties, and fêtes, which in turn were lapped up by the press (the famed exotic dancer Mata Hari performed at one of its annual banquets).<sup>80</sup> Women who recruited the most people to join the Aéro-Club earned rewards, while the military offered a prize to the woman who took the youngest male neophyte on a flight (Surcouf won by ascending with a four-and-a-half-year-old boy who wanted the trip to be longer and did not understand why he could not see the gas used for inflation).<sup>81</sup> The culture of leisure opened spaces for female participation in the construction of aeronautical culture, but these spaces remained shaped by gendered expectations. One male author, encouraging women to accompany their husbands in ascents, compared the gondola to a home, arguing that they should serve their natural function as “housekeepers” and oversee meals during flights.<sup>82</sup> With the outbreak of the First World War, the gendered spaces of aeronautical culture became even more rigid. While men soared over the trenches, the Stelliennes remained on the home front, meeting every Wednesday to make clothing for aeronauts who took to the skies in airplanes, airships, and observation balloons.<sup>83</sup>

#### 4 CAPTURING AN ELITE SPORT ALOFT: THE BALLOONING SPECTACLE IN THE PRESS

A real tension existed between the Aéro-Club’s self-proclaimed mission to popularize aeronautical practices and its elitist sociocultural foundations. But by placing an elitist frame around ballooning, the Aéro-Club also drew a great degree of attention from a press that had made an industry of keeping up to date with *le Tout-Paris*. The club’s core was made up of men of action and of means—aristocrats like Henry de La Vaulx, who articulated their class and masculinity through extreme competition, and industrialists like Henri Deutsch de la Meurthe, who fashioned themselves as enlightened patrons

of progress by sponsoring prizes and competitions.<sup>84</sup> The press on both sides of the Atlantic discovered in the dynamic combination of capital (social and financial) and sporting values (style and competition) a fruitful subject to sell copy, and popular interest in ballooning grew accordingly.

Throughout the nineteenth century, the Parisian media landscape underwent profound transformations, from the adoption of advertising as the main source of revenue to the 1881 Press Law that loosened restrictions on publications. These changes culminated with turn-of-the-century Paris becoming a veritable “newspaper civilization,” with France’s four largest newspapers—*Le Petit Journal*, *Le Petit Parisien*, *Le Matin*, and *Le Journal*—printing more than one million daily copies each.<sup>85</sup> And as the press grew in volume, sporting coverage grew in prominence.

The first signs of sports stories sprouting from the pages of the French press date back to the early years of the Second Empire, when Eugène Chapus began publishing the elitist *Le Sport*, which focused almost exclusively on horseracing. Sports coverage started gaining more traction in the 1870s, with *Le Figaro* becoming the first large-circulation newspaper to feature a regular section. In both of these newspapers, sports coverage was presented as a diptych, with reporting on the social life in the stands being just as important as reporting on racetrack results. But it was toward the end of the century that the popular press truly started covering sports, in large part in response to the popularization of cycling. In fin-de-siècle France, with its thriving mass culture, sports and media engaged in a mutually beneficial relationship. The 1891 Bordeaux-Paris race marked a turning point in how the press and associations engaged with one another to foster an interest in sports.<sup>86</sup> The race was organized by the Bordeaux Vélo Club and the *Vélocé Sport* periodical. Newspapermen quickly realized that colorful coverage could both galvanize and satiate a public demand for regular updates on scores, records, match summaries, and accidents. Associations jumped on the increased press coverage as an opportunity to promote their practice to a broader audience. The most famous example of this kind of stunt was *L’Auto-Vélo*’s ingenious creation of the Tour de France. But the development of sports coverage in France was not an autochthonous phenomenon; it took form in relation to developments on the other side of the Atlantic. The tone and format of fin-de-siècle sports coverage was shaped in important ways by James Gordon Bennett Jr. Heir to the *New York Herald*, later in his life Bennett became an expat in Paris

and started a European edition of his newspaper, quickly becoming one of the major media champions of aeronautical pursuits.

Not much scholarship has tackled Bennett's role in shaping the press in the modern Atlantic world, so it would be useful to contextualize his influence with some biographical information.<sup>87</sup> Bennett's father (James Gordon Bennett Sr.) started the *New York Herald* in 1835, revolutionizing the press by turning away from the partisan political commentary or trade coverage that defined earlier newspapers and specializing in sensationalist topics.<sup>88</sup> Bennett Sr. also found creative ways to make use of technological innovations, using the telegraph to offer readers across the country up-to-date sports reporting, thus contributing to the development of a national sports culture.<sup>89</sup> While his father transformed the American press, Bennett lived a luxurious youth between New York City and Paris, where his mother, estranged from her husband because of his tempestuous temperament, had relocated. During his years in Paris, Bennett became versed in aristocratic cosmopolitan culture. He learned French and horseback riding, and, just as important, he acquired the social skills to navigate the intimate circles of an increasingly self-aware transatlantic elite. Elected to the New York Yacht Club in his teens (the youngest member ever admitted), Bennett flaunted an air of sophistication and culture that his father lacked. The elder Bennett had always been a rough-edged, irascible outsider, but his son felt at ease socializing with America's gilded youth. A leading figure in the East Coast "fast set," Bennett was obsessed with speed and competition, with yachting being his biggest passion.

Bennett took over the *Herald* following his father's death in 1872.<sup>90</sup> He did not have a talent for writing, but he had an instinct for news. If the father revolutionized the American media landscape, the son internationalized these changes and introduced innovations of his own, becoming adept at producing sensationalist news stories on a global scale. A certain mythology surrounds the *Herald's* involvement with Henry Morton Stanley's expedition to find David Livingstone in 1871. Bennett did not order Stanley to go searching for the Scottish explorer in Africa (the reporter took the initiative), but he still "invented" the news that Livingstone was lost. And, ever the shrewd publicist, after Stanley "found" Livingstone on the shores of Lake Tanganyika, Bennett spared no expenses to make the two of them into international celebrities.<sup>91</sup>

Like his father, Bennett was quick to take advantage of technological innovations in producing the news. The *Herald* was the first American newspaper

to employ the transatlantic cable, with Bennett dedicating more and more inches to news from abroad. When he got tired of paying the rates charged by Western Union, Bennett joined other entrepreneurs to establish the Commercial Cable Company, which laid the second transatlantic cable and drove down prices.<sup>92</sup> Through these initiatives, the *Herald* became an important medium through which Americans made sense of France and Europe. It specialized in up-to-date reporting on the Parisian scene and presented to Americans a positive and glamorous image of the city.

One of the most iconic scenes in Jean-Luc Godard's 1960 film *À bout de souffle* features a young blonde American (an archetypal Nouvelle Vague belle played by Jean Seberg) hawking the *International Herald Tribune* on the streets of Paris—an image that epitomized the allure that the cosmopolitan publication held for much of the twentieth century. The origins of that publication, though, can be traced back to a much less glamorous scene. The story goes that on New Year's Day, 1877, a very drunk Bennett urinated in front of the guests at party hosted by his fiancée's father.<sup>93</sup> Bennett's faux pas (to put it lightly) not only put an end to the engagement but also made him persona non grata in the tight-knit circles of New York polite society. So, he relocated to Paris, quickly becoming an attraction in himself by amusing Parisians with his antics. Though he did not return to the United States often, Bennett ran the *New York Herald* from a distance, keeping a tight publisher's grip on its operation and making it even more European in its coverage. Then, in 1887, he decided to start a European edition of the paper, which came to be known as the *Paris Herald* (the publication that, following a series of mergers and acquisitions, became the paper hawked by Seberg).

The *Paris Herald* was different than its American counterpart in the sense that it marketed itself as a newspaper for tourists and expatriates. It covered the movements of Parisian high society (including the foreigners who came and went), shocking and amusing faits divers, and vivid and up-to-date sports reportage. As Hugh Dauncey and Geoff Hare explain, in doing so, the *Paris Herald* became a matrix of fin-de-siècle internationalism, helping the cosmopolitan sect imagine itself as a community.<sup>94</sup> But the influence of Bennett's initiatives in Paris extended beyond this limited readership, for the *Paris Herald* also served its American counterpart with much of its coverage. The *New York Herald* often featured full pages with "Stories Grave and Gay from Paris Boulevards," as an 1899 headline touted.<sup>95</sup> As Bennett wrote in an 1890 editorial, "There are those who see in the international character of the *Herald*,

with its three centres in the great capitals of the world [there was briefly a London *Herald*], all united by electricity and working together as a common system, the beginnings of that cosmopolitanism which has been prophesied as the ultimate destiny of men.”<sup>96</sup>

Richard O’Connor writes in his colorful biography of Bennett that the Paris *Herald*’s “society columns gave European royalty and its hangers-on a new sense of importance in a world which was increasingly repelled by aristocratic pretensions.”<sup>97</sup> But one would be mistaken to think that the *Herald* presented readers exclusively with an “Old World” view of Europe. After all, Bennett was a sportsman, and he headed a newspaper that had made its name in the United States through sports coverage. Once in Paris, he used his wealth and position as a major newspaper publisher to encourage international competition in sport, firmly believing that as competitors strove to go faster and farther, they would help drive technological progress.<sup>98</sup> His opening act was to sponsor the Gordon Bennett International Automobile Cup, first held in 1900. He followed this with the creation of the Gordon Bennett International Balloon Race in 1906.

In choosing Paris as the site for his first ballooning race, which took off from the Tuileries on 30 September 1906, Bennett both recognized the city’s status as the aeronautical center of the world and reified that image in the mind of his readership—from European aristocrats who picked up a copy of the Paris *Herald* in their club’s reading room to Americans who read the *New York Herald* on their way to their shift. There were also the wires that made it to the pages of countless other publications. A reader who picked up a copy of the *Philadelphia Inquirer* on the morning of 1 October 1906 would have read about a “brilliant spectacle,” where “[a] quarter of a million [people] had gathered inside the [Tuileries] Gardens, while the Place de la Concord, the bridges over the Seine, the embankments of the river, housetops and every other coign of vantage for miles around were black with people.”<sup>99</sup> Participants were chosen by each country’s Aéro-Club, and the diverse cast evoked the vision of an international ballooning community driven by a healthy national rivalry.<sup>100</sup> France selected its most accomplished aeronauts—Georges de Castillon de Saint-Victor, Henry de La Vaulx, and Jacques Balsan—but the trophy was taken home by Frank P. Lahm, an American raised in Paris (he traveled 647 kilometers and landed near Yorkshire, England).

Other developments in the press fostered intense public interest in aeronautical pursuits. New photographic and printing technologies enabled

editorial teams to envision innovative ways of presenting content. Under the artistic direction of Lucien Faure, *La Vie au grand air* effectively set the model for what we today understand as the modern magazine, with double-page spreads merging form and content, and intricate sequences of images presenting a narrative montage formalistically close to the cinematic structure. The visual culture historian Thierry Gervais argues that these transformations in the presentation of visual content “encouraged the reader to ‘flip through’ the magazine rather than read.”<sup>101</sup> As Pierre Lafitte, *La Vie au grand air*’s founder, wrote in the inaugural issue, “We want to make this periodical—this album—the organ of all those who are passionate about outdoor life, who are interested in the active existence that has given rise to the popularity of sports.”<sup>102</sup>

*La Vie au grand air* covered ballooning closely, beginning as early as its third issue with an article by Emmanuel Aimé that promoted the leisurely ascents that were then being organized by the Touring-Club, another association central to the promotion of leisure, sports, and travel.<sup>103</sup> The article featured a photographic montage that tried to capture the movement of the balloon’s ascent, rendering visible to the reader “the highest expression of the sporting idea” (figure 4.11). Aimé continued writing for the publication, and his embellished sentences promoting ballooning as an elite sport found a vivid visual counterpart in the photographs that illustrated its pages. The periodical also featured accounts by aeronauts of their memorable ascents, such as Jacques Faure’s 1,400-kilometer trip from Paris to Kirchdrauf (present-day Slovakia) during the 1905 Grand Prix.<sup>104</sup>

By the turn of the century, then, the transatlantic press had found in the Aéro-Club events a compelling topic to cover. Newspapers amused readers with descriptions of crowded ascents and updates on new ballooning records; magazines caught their eyes with a vast repertoire of representations. Readers visually consumed portraits of aristocrats next to their balloons, images of gawking crowds looking up, and picturesque views from above, which together composed the image of balloons as a vector of glamour, spectacle, adventure, and modernity (figure 4.12). They also encountered the balloon paired with other technologies representative of turn-of-the-century modernity. The Aéro-Club organized races between automobiles and balloons, while *Le Journal* promoted a competition to see if bicycles and balloons could be mutually beneficial if there were another war.<sup>105</sup> The challenge featured a balloon that departed from La Villette carrying two aeronauts and a bicycle

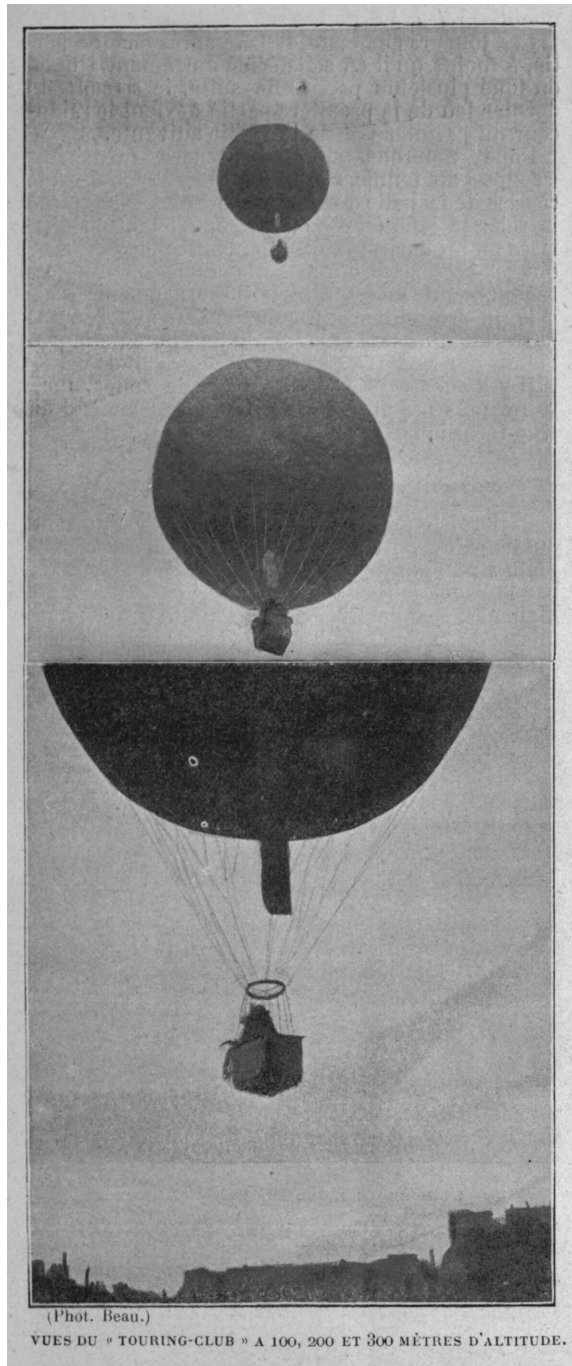


Figure 4.11  
This photographic montage published in the third issue of *La Vie au grand air* conveys a balloon's ascending movement through an artifice resembling the frames of a film. *La Vie au grand air*, 1 May 1898. Source: gallica.bnf.fr / Bibliothèque nationale de France.

# LA VIE AU GRAND AIR

<b>ABONNEMENTS :</b> PARIS... Un an. 14 fr. Six mois 7 fr. 50 PROVINCE. — 12 fr. — 6 fr. — ÉTRANGER. — 20 fr. — 10 fr. —	<b>PARAISSENT LE SAMEDI</b> Rédaction et Administration, 11, rue Hautefeuille, PARIS	18 Mars 1899 — N° 27
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**LE BALLON L' « AÉRO-CLUB »**  
PLANANT AU-DESSUS DE DIJON, A 100 MÈTRES D'ALTITUDE.  
Ce ballon, de 850 mètres cubes, figurera dans les ascensions qui seront organisées, cette année, au Jardin des Tuileries, pendant l'Exposition d'Automobiles.

Figure 4.12

The *Aéro-Club* balloon above Dijon. By juxtaposing the medieval city center with the balloon ascending out of the frame, the photograph conveyed the distinctly French form of turn-of-the-century modernity generated by combining the “old” and the “new.” *La Vie au grand air*, 18 March 1899. Source: gallica.bnf.fr / Bibliothèque nationale de France.

while forty-six other cyclists spread around the northeast banlieue played the role of a sieging army. Once the balloon landed behind “enemy lines,” one of the aeronauts would hop on the bicycle and speed to Meaux to deliver a message. Unfortunately for the aeronauts, the day’s weak winds did not get them very far, and upon landing they were easily captured by one of the “enemy” cyclists.<sup>106</sup> One only had to lightly scratch the surface of this entertaining competition to uncover the lingering trauma from the Siege of Paris.

Aeronauts also avidly photographed their own journeys. Ambitions to capture the view from above date back at least as far as 1858, when Nadar registered a patent for aerial photography hoping that he would be able to do topographical surveys. But for decades aerial photography remained little more than an aspiration, for technology at the time made it very difficult to take decent pictures aboard a balloon (as explained in Nadar’s patent, the gondola had to be made into a kind of dark room to develop the image).<sup>107</sup> After spending too much money on numerous failed attempts, Nadar finally produced a positive on glass that was “very feeble in this so hazy atmosphere, all stained after so many adventures” (the plate is lost to history).<sup>108</sup> According to the flamboyant Parisian photographer, developing a plate aboard a balloon through the processes available at the time was made nearly impossible by the sulfured hydrogen that escaped from the balloon’s envelope and contaminated his silver iodide bath. While Nadar took some aerial shots in the years that followed, he was unable to make the enterprise commercially viable, achieving incomplete results after spending 15,000 francs.<sup>109</sup>

By the 1880s, though, the method for taking photographs aboard a balloon had improved significantly, and it had even become possible to capture clear images from non-tethered balloons, as shown by a series of experiments conducted by the Tissandier brothers that relied on faster shutter times and the instantaneous procedures offered by gelatin dry plates.<sup>110</sup> Toward the end of the century, portable rollfilm cameras had become reliable enough to be marketed to bourgeois amateurs, and by the 1900s aerial photography was no longer the province of avant-garde tinkerers (figure 4.13). In 1905, the Aéro-Club organized an aeronautical photography competition, an event that continued throughout the prewar years with support from people like Gustave Eiffel.<sup>111</sup> Periodicals like *L’Illustration* celebrated the aerial views of Paris captured by aeronauts, claiming that they gave readers “the illusion of a real aerial voyage over Paris and instilled in more than one the taste for ballooning.”<sup>112</sup> Just as important, the combination of ballooning and photography

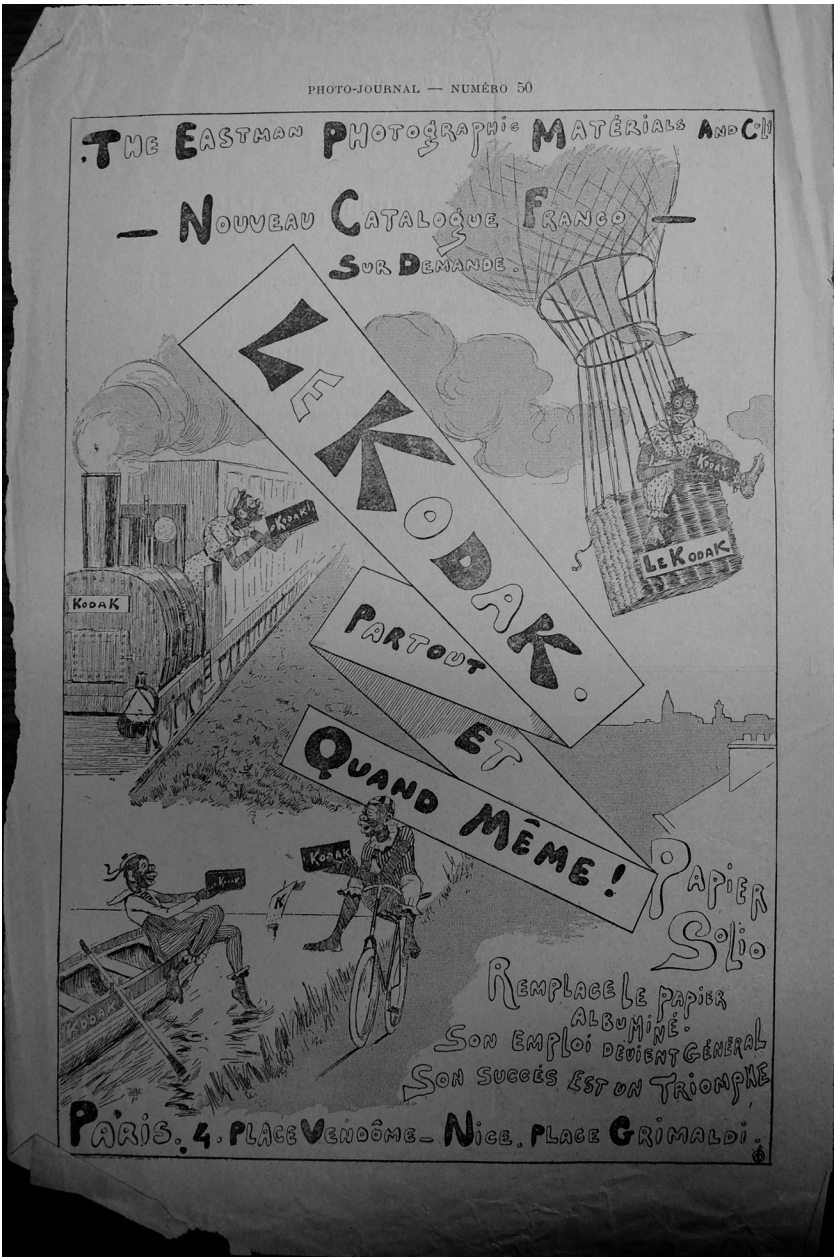


Figure 4.13

An early French advertisement for Kodak, which had introduced the first rollfilm camera to the consumer market in 1888. The advertisement, which features unfortunate racist imagery from the period, associates photography with other technologies of nineteenth-century modernity, like the bicycle, the railroad, and the balloon.

*Le Photo-Journal*, no. 50, 1894. Library of Congress, Tissandier Collection.



Figure 4.14

The cover of André Schelcher and Albert Omer-Decugis's *Paris vu en ballon* (Paris: Hachette et Cie., 1909), a book of aerial photographs of Paris and its neighboring regions. The Huntington Library.

allowed the masses to see from above the vast urban changes the city went through with Haussmannization, thus contributing to the consolidation of the city's now-classic iconography of wide boulevards flowing into impressive monuments (figures 4.14 and 4.15).

This new visual iconography of ballooning also circulated through postcards, with exchanges between collectors happening well beyond France's national borders.<sup>113</sup> French aeronauts were impressed by how popular postcards were becoming in Germany and saw in them a means to spread ballooning enthusiasm. The so-called "carte postale aéronautique" originated with the operators of Giffard-style tethered balloons, like Louis Godard, who offered the souvenir to passengers who visited the balloon he installed for the 1897 Munich Exposition (the French dominated the exposition balloon business across Europe).<sup>114</sup> As Guillaume de Syon explains, postcards played a critical role in introducing balloons, airships, and airplanes to the mass public because



Figure 4.15

A photograph taken three hundred meters above the Arc de Triomphe highlighting the busy traffic around the monument. Images like these, enabled by the balloon, allowed people to see the transformations unleashed by Haussmannization from new perspectives, thus reinforcing the association of Paris with urban modernity. *Paris vue en ballon* (Paris: Hachette et Cie., 1909). The Huntington Library.

they offered a peculiar type of spectacle in which consumers engaged with two temporalities: that of the event, captured in its brevity by the camera, and that of the *longue durée*, sustained by the postcard's status as a souvenir and collector's item.<sup>115</sup> Or, as one contemporary enthusiast of the medium put it, "The post card is both memory/memento [*souvenir*] and witness."<sup>116</sup>

Besides some minor improvements in manufacturing, the technology behind the balloon had remained largely unchanged for more than a century. The overarching principle remained the same: an impermeable envelope inflated with gas that was lighter than air. As did the overarching issue plaguing the technology: it remained unsteerable. However, with the Aéro-Club adopting it for sport and the press capitalizing on its visual potential, the balloon was incorporated into the community of artifacts that were seen to

embody fin-de-siècle modernity—a community populated by much more recent inventions, like the bicycle and the automobile.

#### CONCLUSION: THE ARISTOCRATIC BALLOON

The culture fostered by the aristocrats who dominated the Aéro-Club made it so that turn-of-the-century ballooning in France and abroad was marked by an avid desire to break records. From their invention in 1783 to 1908, 108 balloon ascents broke the five hundred-kilometer mark, but 102 of those took place in 1895 or after. The French conducted at least sixty-eight of them, and sixty-one departed from the Paris region. The period was also marked by long-duration ascents. Thirty-two ascents lasting more than 24 hours took place between 1886 and 1908. The French conducted at least half of them, and eight departed from Paris.<sup>117</sup> To make long-distance ascents more convenient, the Aéro-Club lobbied the Ministry of Finances to exempt balloons that were reimported into France following an ascent from the usual customs procedures.<sup>118</sup> For observers, the men who pursued these records cultivated bravery and *élan vital*—traits deemed necessary in a country anxiously seizing itself up against Britain and Germany. In that sense, ballooning enabled the aristocracy to continue presenting itself as the nation's exemplary class, a position it was arguably able to cling to throughout the First World War until the advent of the Popular Front in the 1930s. The final blow for aristocratic culture only came with the assimilation of old elites by the Vichy Regime, which ended up stained by the dark mark of collaboration with the Nazis.<sup>119</sup>

On an institutional level, the Aéro-Club's success stimulated emulation in France and around the world. By 1910, thirty-two other French societies had become affiliated with the Paris-based club, signaling the extent to which the Aéro-Club and its sports-based aeronautical culture had become dominant.<sup>120</sup> The club's first foreign emulators sprouted up in Belgium and Switzerland in 1901, with the Aero Club of America following suit in 1905. All of these foreign clubs modeled themselves after the one in France. In the United States, adventurous capitalists who saw themselves as harbingers of progress embraced ballooning and made it the "sport of kings." When the Aero Club of America held its first exposition to elicit public support, it imported balloons from Paris and displayed photographs of French ascents.

The club's leader, Albert Leo Stevens, also developed an ongoing relationship with La Vaulx to supply high-quality French balloons to the United States.<sup>121</sup>

On a global level, the Aéro-Club helped project a more positive image of France across the Atlantic. As Edward Berenson points out, while Americans expressed deep interest in France during the French Revolution, the decades that followed were marked by an unenthusiastic attitude. The Franco-Prussian War and the Commune revived the fascination shown a century earlier, but if in the 1790s Americans observed the events unfolding in France in favorable terms (at least until the Terror), the same could not be said regarding 1871. The United States was still licking its wounds from a brutal Civil War and dealing with the social tensions that followed the abolition of slavery, so the Commune's tint of class warfare was not well received in a country that was growing richer and more unequal under Gilded Age capitalism. By the end of the nineteenth century, then, Franco-American relationships were no longer defined by the feeling of political sisterhood that had bound together the two nascent republics.<sup>122</sup>

However, when turn-of-the-century Americans looked at Paris they did see something to admire, even if it was not necessarily its political regime. The city projected a new kind of modernity—one that was not political, but spectacular and technological, and infused with an aura of glamour. This image was constructed through local practices, such as the organization of the Universal Expositions, and by transnational representations, like those found in the pages of the *New York Herald*. The nature of turn-of-the-century French ballooning culture also contributed toward producing that image. Introducing the Aéro-Club to the American readers of *Ainslee's Magazine*, George Henry Payne explained that when one thought of Paris one usually associated “the bizarre, the odd, the rococo in painting in the arts generally,” and not science or technology. “Yet,” he argued, “who but a Frenchman, except an American, would have thought of a Balloon Club? Not a Balloon Society, mind you, which means dry-as-dust papers and serious-looking men, with interminable technical terms . . . But a club, with luxurious apartments, liveried footmen, a fine selection of wines and billiard tables.”<sup>123</sup>

Turn-of-the-century Parisian culture and society, then, was the crucible for the ballooning revival. As elites appropriated the balloon, and as the media frenetically represented their practices, people started imagining aeronautics as a kind of lifestyle. The new engines emerging in the automobile industry also offered hope that the elusive dream of steerability might finally

materialize. The proliferation of balloon ascents allied with the technological advances that were being made in engine technology encouraged the engagement of patrons (*mécènes*) who promoted aeronautical technology as a way to both encourage their own industries and garner cultural capital.<sup>124</sup> Although during its early years the Aéro-Club was dominated by a culture of the *ballon libre*—that is, the spherical balloons that offered little in terms of steering through the air—the club also worked to encourage innovation in the field of aerial navigation, which seemed to acquire a new urgency with the failed attempts to use spherical balloons for exploration. The Aéro-Club did so mainly through the work of wealthy businessmen like Henri Deutsch de la Meurthe and the Michelin brothers, industrialists who created prizes hoping to draw attention to aeronautics and stimulate innovation. All of this culminated with Alberto Santos-Dumont's spectacular airship flights above Paris—feats that further entrenched the perception that the French capital was the undisputable global center for aeronautical pursuits.

But before turning to the story of this wealthy Brazilian and the glossy technological cosmopolitanism he projected, we must first investigate the absence of cosmopolitan sentiment when the French thought about flight in colonial settings. In North Africa and Indochina, the balloon served a less lofty function—it became a technology to placate colonial anxiety. Although practically useless, the balloon was imagined by novelists as a tool to help France control its expanding territorial possessions, embraced by aristocrats as a vehicle for colonial adventure, and promoted by the press as a symbol of French superiority over indigenous populations.



## IMPERIAL SKIES

## Colonial Anxiety and Territorial Overstretch in Africa and Indochina

In the summer of 1862, an ambitious writer who had been making ends meet as a broker reached out to the publisher Pierre-Jules Hetzel with a manuscript titled “Voyage en l’air”—a fictional account of three Englishmen who flew across central Africa aboard a balloon in search for the source of the Nile. Hetzel was a leading figure in the French literary scene, while the writer had but a few minor pieces across the Parisian press. But the editor decided to take a gamble and paid the writer 500 francs for the rights to print two thousand copies of the novel.<sup>1</sup> A savvy marketer, Hetzel retitled the novel *Cinq semaines en ballon: Voyage de découvertes en Afrique par trois Anglais* before publishing it in 1863—a move that blurred the boundary between fictional account and adventure reportage. His wager turned into one of history’s most successful publishing partnerships. Under Hetzel’s guidance, the writer would go on to publish scores of novels under an immensely popular series titled *Voyages extraordinaires*. By the end of the century, young readers all over the world would know the name Jules Verne.

Although published several years before the Third Republic’s founding, *Cinq semaines en ballon* serves as our starting point in this chapter because it remained immensely popular in the ensuing decades.<sup>2</sup> It is telling that Verne’s first novel, which sold 76,000 copies by the time he died in 1903, was a pseudo-realist aeronautical adventure set in Africa.<sup>3</sup> The crystallization of modern French airmindedness unfolded concurrently with the expansion of France’s empire and the consolidation of a denser colonial imaginary that was not merely representational but also productive.<sup>4</sup> Far from being indifferent to colonialism, a literate person in late nineteenth-century France would have been immersed in it. Parisians encountered tales of heroism in newspaper accounts of explorers like Pierre Savorgnan de Brazza. Catholics read about the supposed humanitarian virtues of missionaries in journals like *Missions Catholiques*. French children learned about the riches of colonial possessions in schoolbooks like Charles Jeannel’s *Petit-Jean*. And countless readers amused

themselves with novels like Verne's *Cinq semaines en ballon*.<sup>5</sup> Ideas of empire and images of colonial conquest saturated public life, especially popular media, reflecting and feeding French anxieties about their status as a civilizational power.<sup>6</sup>

The French started thinking about the significance of colonial airspace much earlier than historians have assumed. According to Daniel Headrick, European military officers started lobbying for the use of aircrafts in colonial settings only after Louis Blériot's 1909 flight across the English Channel.<sup>7</sup> However, by moving beyond official archives, this chapter traces how works of fiction and attempts to use balloons in Africa and Indochina contributed to the emergence of colonial airspace as an object of geopolitical interest for the French decades before Blériot's feat.<sup>8</sup> After all, any expansion of France's empire raised a fundamental dilemma: How would France manage these new territories given the small number of Frenchmen, lack of infrastructure, and presence of resistant indigenous populations? Among other strategies to assuage this anxiety, some people turned to the balloon as a technology that could open the skies as a realm from where they might study, rationalize, and manage France's growing overseas possessions. But did the view from above really produce legibility and provide mastery over these new possessions?<sup>9</sup>

While French expectations for ballooning to facilitate colonial conquest and governance made sense in theory, they were not met in practice. Attempts to use balloons to cross the Sahara and the Mediterranean were unsuccessful, and efforts to use balloons for military observation during the 1883 Tonkin Campaign produced lackluster results. Nevertheless, because the ballooning revival was underway at the very moment the Third Republic's overseas conquests began in earnest, the French conceived the balloon as one more symbol of their superiority over indigenous populations. My argument here is that in the colonial sphere, the balloon should be understood less as one of those "tools of empire" that facilitated European conquest of new lands and peoples and more as a machine for the "measure of men."<sup>10</sup> In that sense, balloons were more effective ideologically rather than in practice. While colonial ballooning bore little military fruit, it nevertheless helped justify France's "civilizing mission" and signified an adventurous practice that pushed back against the trope of national decline following France's defeat in the Franco-Prussian War.

1 THE BALLOON AS A TECHNOLOGY OF DISCOVERY:  
VERNE'S *CINQ SEMAINES EN BALLON*

When Verne wrote *Cinq semaines in ballon*, he was no stranger to balloon narratives. In August 1851, just as he was starting his career as a writer, he published a short story in the popular periodical *Musée des familles* titled “Un voyage en ballon.”<sup>11</sup> The story is told from the perspective of a professional aeronaut touring a fair in Frankfurt (much like the Blanchards, Poitevins, and Godards had done). When the ascent begins, a stranger leaps into the gondola and hijacks the balloon. He takes out a “voluminous notebook” that turns out to be a work on ballooning including a collection of engravings and caricatures that mocked the practice. As the story unfolds, the hijacker excitedly presents a cursory history of ballooning, all the while regretting how there had been no progress in “ballooning science” since the late eighteenth century and sporadically releasing ballast so the balloon could rise to ever greater heights. It is then revealed that the hijacker is an aspiring inventor gone mad by the mockery unleashed on ballooning enthusiasts like himself, and that he was now set on a suicidal mission. In the end, the hijacker disconnects the gondola from the balloon and falls to his death while the aeronaut clings to the balloon’s cords and survives the descent.

“Un voyage en ballon” lacks the imaginative depth of Verne’s later novels, but it features two elements that would come to define his style: the escalation of dramatic tension inside technologies of mobility and the aspiration to educate while entertaining. In this case, Verne hoped that readers of the *Musée des familles* would become familiar with the general outlines of the history of ballooning. It is no accident, then, that the story appeared under the heading “La Science en famille.” A future positive review of *Cinq semaines en ballon* offered readers an awkward analogy to elucidate Verne’s original approach. Just as an aeronaut kept a balloon in the air by carefully balancing the ascensive power of hydrogen and the counterweight offered by ballast, in Verne “the poet’s whim has as a necessary counterweight all of his scholarly baggage.”<sup>12</sup>

While Verne scholars have access to a vast archive that sheds light on the composition of his later novels, no such thing exists for *Cinq semaines en ballon*, for its writing predated his relationship with Hetzel.<sup>13</sup> That being said, concurrent developments in Verne’s life help us understand why he selected the balloon as the centerpiece technology for his first novel. Verne moved

from his hometown of Nantes to Paris in late 1848, bucking his conservative family's expectations to pursue a career in law and instead immersing himself into literary circles enamored with travel and science writing—genres that had recently gained traction in the French press.<sup>14</sup> While aeronautics was ignored at this time by official institutions like the Academy of Sciences, it was discussed with enthusiasm in marginal spaces like the Circle of the Scientific Press, which was founded by Louis Figuier in 1857 and joined by Verne soon after.<sup>15</sup> In this milieu, Verne also met people like Nadar, which explains why the author joined the photographer's Société d'Encouragement de la Locomotion Aérienne au Moyen Plus Lourd que l'Air (see chapter 1). In fact, Verne became a partisan of heavier-than-air flight soon after publishing *Cinq semaines en ballon*, a conversion narrative that shaped his other famous aeronautical novel, *Robur-le-Conquérant* (the 1886 novel culminates with a heavier-than-air flying machine triumphing over an airship, thus proving its technological superiority).

Imagined accounts of epic balloon flights occasionally slipped into the press as news items, thus revealing the porous boundary between fact and fiction in nineteenth-century science writing. The most famous was penned by Verne's biggest influence, Edgar Allan Poe, who in 1844 published a fictional account of a balloon flight across the Atlantic that fooled countless readers of the *New York Sun*.<sup>16</sup> Verne's only attempt at literary criticism was a study of Poe, where he claimed that the American author had established himself as a master in rendering the strange plausible. But Verne also argued that Poe fell short in his descriptions of technological artifacts, and the French author made it his duty to be as detail-oriented about the mechanical aspects of his machines as possible.<sup>17</sup> In a letter to his father in 1862, Verne explained that the balloon in Poe's story came off as a canard and that he wanted to avoid that in his own writing. The solution, he argued, was to present the balloon with some kind of "irreproachable mechanism"—a detailed and plausible explanation of how it worked.<sup>18</sup> And indeed, when the novel came out, critics praised the "singular verisimilitude" of Verne's descriptions. Given the general sense that steering balloons was a lost cause, reviewers were especially pleased that Verne had avoided that and instead described a system where it would ascend and descend in search of favorable wind currents.<sup>19</sup> As scholars have argued, Verne's originality did not lie solely in his ability to create fiction with a balloon (which others had done) but to do so in a way that effaced the utopian associations with ballooning and presented it as a plausible technology.<sup>20</sup>

Poe's influence on Verne was critical—their balloons even share the same name, *Victoria*—but *Cinq semaines en ballon*'s astounding success also set the framework for a new genre: the scientific romance, where an obsessive commander leads an adventurous mission aboard some technology of mobility within a hostile space.<sup>21</sup> This was a genre that thrived within the context of late nineteenth-century imperialism. The association of colonial expansion with a naïve European technological enthusiasm would come to define Verne's career and legacy (mainly because Hetzel saw in it a winning combination and blocked more overt critiques of technology).<sup>22</sup> Yet the Verne-Hertzel novels should not be dismissed as mere children's literature or uncritical tracts of imperial techno-optimism. In fact, that very popularity renders the works even more significant, given that they shaped the imaginary of contemporary youth in France and beyond (a recurring theme among aviation pioneers was a fond remembrance of encountering Verne's novels as children).<sup>23</sup> And if on the surface books like *Cinq semaines en ballon* seem to offer little else than adventurous stories of men conquering the world with their mighty machines, they also express deep-seated anxieties about how technology was shaping the world in a new age of empire.<sup>24</sup>

One point should be addressed before digging deeper into these anxieties in the French context. Why did Verne cast the protagonists in *Cinq semaines en ballon* as British rather than French? After all, his initial audience was in France, a country with a much richer ballooning tradition than its neighbor across the Channel. There are at least two plausible reasons that go beyond the author's admitted Anglophilia. First, in making the protagonists British, Verne avoided stirring any controversies within the literary and scientific communities he inhabited, since it discouraged people from seeing the characters as avatars of actual French figures. Second, before the establishment of the Third Republic the British were more invested in exploring and trading in Africa. Accounts of explorers like David Livingstone were prominent in the French popular press. By making his protagonists British, Verne added to the text's verisimilitude, for it could prompt people to wonder whether the British had attempted such a journey. Among Hetzel's papers in the Bibliothèque nationale de France, one can find a letter to the editor in 1868 that asked whether Dr. Samuel Fergusson, his assistant Joe, and the hunter Richard "Dick" Kennedy had indeed crossed Africa by balloon.<sup>25</sup>

Even though Verne's protagonists were British, traces of French empire are present throughout the novel. For instance, Fergusson and his crew rescue a

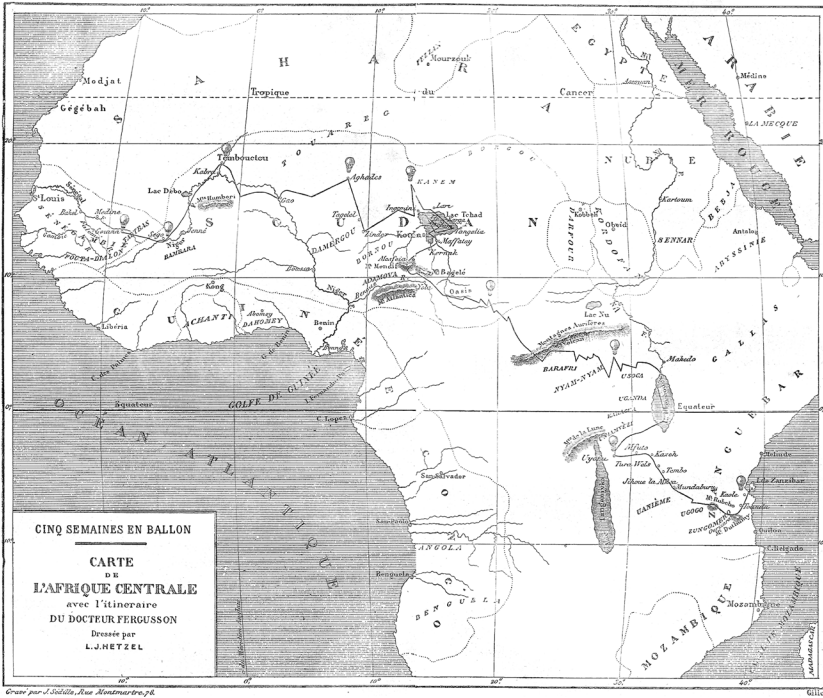


Figure 5.1

A map of Central Africa depicting the route taken by the *Victoria*. Jules Verne, *Cinq semaines en ballon: Voyage de découvertes en Afrique par trois Anglais* (Paris: J. Hetzel, 1863). Wikimedia Commons.

French missionary from cannibals and bury him in a gold mine after he dies from his injuries (a plotline that ties together the spiritual and material riches Europeans hoped to extract from Africa). The adventurers' flight from Zanzibar to Senegal, where after a dramatic escape from "ferocious marabouts" they are rescued by French troops at the Senegal River, is also telling (figure 5.1). The French began expanding their footprint inland from coastal West Africa in the decade preceding the book's publication, with troops traveling up the river from the French base in Saint-Louis and combating various Wolof kingdoms. The journey's endpoint thus highlighted the geopolitical importance of France's growing appetite for territorial possessions in Africa, a point further emphasized by how much of the novel takes place in Central African territories that were still uncharted by Europeans.

What was the significance of this “blank space” in European maps? As Rosalind Williams explains, Europeans were deeply aware that “lightly populated land was disappearing all around the globe” and became obsessed with mapping the last blank spaces left in their atlases.<sup>26</sup> Verne both reflected and informed these geographical ambitions (this was the golden age of geographical societies), inspiring his readers to see human flight as a necessary and inevitable step in the march toward European discovery and mastery of the world. The balloon in Verne’s first novel allowed this seductive void to be mapped and subsumed under the European scientific gaze (embodied by Fergusson). The man of science neatly expresses this idea in a paean to the *Victoria* before the journey begins:

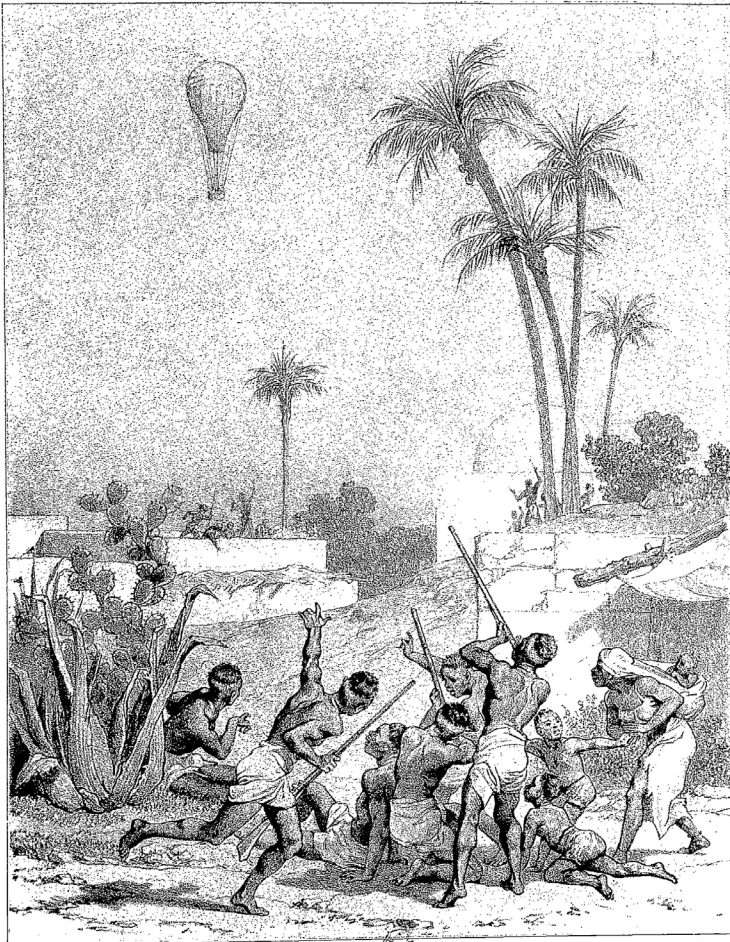
With [the balloon] all is possible; without it, I fall back into the dangers and natural obstacles of past expeditions. With it, I need not fear heat, torrents, storms, simoons, insalubrious climates, or wild animals! If I’m too hot, I ascend; if I’m cold, I descend. A mountain, I fly over it; a precipice, I clear it; a river, I cross it; a storm, I rise above it; a torrent, I skim over it like a bird! I travel without fatigue; I stop without needing to rest! I soar over the new cities! I fly with the speed of a hurricane, sometimes at the highest limits of the air, sometimes one hundred feet above the ground, while the map of Africa unfolds itself beneath my gaze in the greatest atlas of the world!<sup>27</sup>

Ultimately, the *Victoria* is a fictional device that renders Africa accessible not only to Fergusson and his crew but also to Verne’s readers. By enabling a safe, panoptic view of uncharted territories, the balloon becomes a technology that facilitates the European survey and appropriation of the world. The approach makes sense when we consider that Verne saw himself first and foremost as a geographical novelist. As he told a reporter in 1894, his ambition was to “paint a picture of the Earth, and not just the Earth, but the universe.”<sup>28</sup> The spatial logic of exploration, especially the verticalized hierarchy constructed by the balloon’s view from above, creates the necessary conditions for mastery—or, to be more precise, imagined mastery.<sup>29</sup> And just as exploration helped establish the foundations for colonialism, Verne’s novel also prompted other authors to pick up where he left off, expanding the balloon’s potential as a technology of discovery into one of imperial management.

2 BALLOONS AND THE MANAGEMENT OF EMPIRE:  
LÉO DEX'S "AEROSTATIC NOVELS"

The influence of Verne's first novel can be measured by the fact that the last third of the nineteenth century saw the emergence of a minor literary genre, the "aerostatic novel."<sup>30</sup> Authors who partook in this trend have been relegated to the dustbin of history, which is understandable given that there is little literary value in these largely derivative works. However, it is significant that this period saw a proliferation of novels that featured balloons being used in places like Africa. In 1875, Jean Vaucheret, writing under the pen name Jean Bruno, published a short children's book titled *Aventures de Paul enlevé par un ballon*.<sup>31</sup> The story, which is richly illustrated, follows a sixteen-year-old boy who is accidentally swept away by a distressed balloon in the Jura mountains. At first, the narrative presents an aerial survey of some French geographical landmarks along the Rhone River, educating young readers about the French territory in a way that foreshadows Augustine Fouillée's massively popular *Le Tour de la France par deux enfants* (published under the pen name G. Bruno in 1877). But the balloon crosses the Mediterranean and takes Paul to North Africa, where he flies over the source of the Nile and the mythical Mountains of the Moon, both of which had become staples in exploration books about Africa (including Verne's *Cinq semaines en ballon*). While in the balloon, Paul observes the aggressive "indigènes" from a distance. But eventually he crashes and is captured by the Mandara, a Muslim ethnic group in the mountains south of Lake Chad. Paul spends months as a prisoner and experiences the usual fare reserved for Europeans in colonial novels from this period. He witnesses strange rituals, encounters dangerous wildlife, and observes African "savagery" until he finally makes his way to Biskra, Algeria, where he reencounters "civilization" in the form of a French settlement. The message was not particularly subtle: Europeans in settlements near the coasts were safe, but the African interior was a dangerous region that needed to be "civilized." The balloon was a technology that could facilitate that process, for it offered even a child aerial supremacy over the indigènes (figure 5.2).

French anxieties concerning islands of European "civilization" surrounded by large stretches of African "barbarism" are most crudely expressed in Léo Dex's turn-of-the-century colonial adventure novels, where balloons are portrayed as key technologies for the management of France's growing empire.<sup>32</sup> The main character in these novels is, unimaginatively, called



Bocquin et Eug. Ciceri lith.

Imp. Bequet à Paris.

Paul devina par ce gracieux échantillon la nature de l'hospitalité qu'il pourrait recevoir dans un tel pays.

Figure 5.2

Jean Bruno, *Aventures de Paul enlevé par un ballon* (Paris: Bernardin-Béchet, 1875).  
Source: gallica.bnf.fr / Bibliothèque nationale de France.

Capitaine d'Ex, an adjutant-major in the Saint-Cloud aéroliers battalion. In the first novel, *À travers Madagascar insurgée* (1895), a rebellion breaks out in the island, and d'Ex and his crew use a balloon to come to the aid of French troops and European settlers in a fort besieged by the Hova.<sup>33</sup> In the following novel, *Vers le Tchad* (1895), d'Ex and his crew depart from the Tripolitan coast and fly a balloon filled with military supplies to French troops besieged by indigènes near Lake Chad.<sup>34</sup> Then, in the sequel, they fly from Chad to French Dahomey, with the balloon leading the French troops they had just rescued (figure 5.3).<sup>35</sup> Dex, like Verne, peppered the adventurous novel with real and fabricated geographical descriptions, and with stories of previous European expeditions and battles in the African continent.

Dex's novels expressed the idea that as French possessions expanded, colonial administrators would need to develop new forms of territorial management, especially given the distance between French settlements and the lack of road infrastructure. The novels also reflect national rivalries during the "scramble for Africa." Hénoch, a recurring villain, is a spy who takes on various disguises to sabotage d'Ex's missions so that Italy can expand its possessions. The choice for an Italian villain is not accidental. Not only did Italy vie for influence in Tunisia and act as the most vocal opponent to it becoming a French protectorate in 1881; the French also worried about how Italians immigrants overwhelmingly outnumbered their own in the territory.<sup>36</sup> The Jewish name Hénoch also indicates a lingering antisemitism, with the elision of Jewishness and espionage recalling the contemporary Dreyfus Affair.

Meanwhile, countries that did not appear to threaten France's imperial ambitions are presented as allies in a broader European effort to "civilize" Africa. At the end of *À travers Madagascar insurgée*, d'Ex and his crew are feted by the Portuguese in Mozambique, and he "raises a toast to the union of the two Latin sisters, Portugal and France, working side-by-side, without ever opposing each other, toward the magnificent colonization of Africa."<sup>37</sup> This benign view of Portugal is a reflection of the ideological work done by French elites during the Second Empire to position France as the rightful heiress to ancient Rome and at the head of a federation of Latin nations.<sup>38</sup> This framing also stemmed from the fact that both France and Portugal were in conflict with Britain over African territories. As the novel closes, d'Ex has trouble sleeping and imagines a series of maps with the shifting boundaries in Africa. First, he sees the maps up to 1889, which represented Portuguese sovereignty over a corridor stretching from the eastern shores of Mozambique to the western

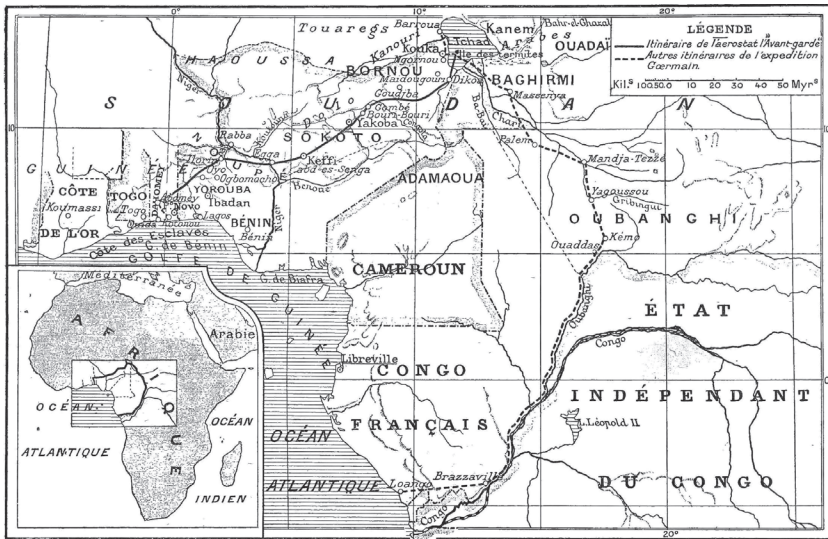


Figure 5.3

A map of Central-West Africa depicting the route taken by d'Ex's balloon. Léo Dex, *Du Tchad au Dahomey en ballon* (Paris: Hachette, 1903). Courtesy of HathiTrust.

shores of Angola. Then, he sees the maps following the 1890 British ultimatum, in which Britain laid claim to present-day Zimbabwe and Zambia, thus foiling Portugal's transcontinental aspirations. If the Portuguese had invested in ballooning, d'Ex speculates, then they might have retained control over their transcontinental corridor. Portuguese losses translated into French anxieties, with colonial airspace emerging as a critical zone of influence.

Dex's "aerostatic novels" also feature two tropes of colonial literature: hazardous environments and hostile populations. The balloon becomes a technology to overcome both. In *Vers le Tchad*, Dex describes the balloon as a haven in the Sirte desert, "a lugubrious kingdom that even the ghosts seemed to have fled as uninhabitable."<sup>39</sup> The environment remains a major threat once they reach the Sudanese savanna. As they rest overnight, the gondola is attacked by "about fifty black bodies which, under the moonlight, appear to be small human beings."<sup>40</sup> During the conflict, the adventurers cannot tell whether the attackers are "pigmies" or monkeys, but the following day they can discern that the bloody corpses are indeed primates. The racism here is obvious—in the eyes of "civilized" Europeans, Black Africans and primates were barely distinguishable.<sup>41</sup>

In his infamous *Essai sur l'inégalité des races humaines* (1853), Arthur de Gobineau characterized Arabs as a mongrel race inferior to European whites but superior to Blacks. This racist hierarchy permeated popular French visions of Africa and is also expressed in Dex's aerostatic novels. He paints the Tuareg in North Africa as hostile to the European mission, but they are clearly human. The balloon is useful in this case because it allows Europeans to fantasize about no longer having to rely on the local actors that were an inconvenient necessity to move across Africa by land. As nomads familiar with the desert, the Tuareg in Dex's novels are occasionally helpful but always cunning, meaning that French control across distant spaces was dependent on fragile alliances. Dex's conception of technology is, in that sense, fetishistic—as if the balloon could abstract the sociocultural human elements from the spaces of empire and render them blank spaces for seamless European mobility.

Ironically, though, the very genre Dex operated in precluded rendering the balloon as a silver bullet. After all, these were adventure novels, and it would not make much sense if d'Ex and his crew made it easily to their destination. In *À travers Madagascar insurgée*, they take off again after resupplying the besieged troops but are soon overcome by a cyclone that takes them all the way to Mozambique. In *Du Tchad au Dahomey en ballon* (1897), d'Ex and his crew face much greater difficulties arriving at their destination than the troops on the ground. But no matter the challenges, the balloon always fulfills its mission to rescue besieged French troops in isolated African outposts. French colonial experiences obviously shaped these novels, but so did the memory of the Franco-Prussian War and the Siege of Paris, which many believed could have turned out differently if salvation had come from the air.

Verne's *Cinq semaines en ballon* and Dex's novels indicate that as the colonial imaginary expanded, the French also started to view the skies as a way to make sense of and manage these vast territories. We see a shift in how Africa is portrayed between Verne's 1863 book and Dex's later novels—a shift also reflected in the broader adventure novel genre.<sup>42</sup> *Cinq semaines en ballon* certainly expressed European superiority, but it was, by and large, a novel of discovery. The *Victoria* functions as a technology to survey an uncharted region of the world. In Dex's novels, though, the balloon becomes a technology of colonial warfare and imperial management. This was an important transition that marked the emergence of colonial airspace as a strategic geopolitical consideration. But real-life efforts to master that space proved to be infinitely more difficult than in fiction.

### 3 THE FICKLE DESERT WIND: ÉDOUARD DEBURAUX'S SAHARAN MISADVENTURES

In the previous section, we encountered Léo Dex's "aerostatic novels." But who was this writer? Léo Dex was the pen name adopted by Édouard Deburaux, an officer in the French army who in the last decade of the nineteenth century published several studies on the possibilities of flying across Africa aboard a balloon. While Deburaux recognized that the technology was not yet advanced enough for there to be functional airships, he thought there was an alternative for lighter-than-air flight: relying on air currents to transport the balloon to its desired destination (just like Dr. Fergusson did with the *Victoria*). As Deburaux explained in his first work on the subject, which originally appeared in 1891 in the *Revue du génie militaire*:

Because of the nature of their climate, several regions present insurmountable obstacles to the progress of a traveler obliged to move on the surface of the earth: such are the poles with their ice floes, the Libyan desert with its sands. Some others, because of their expanse, their remoteness from civilized regions, and the character of their inhabitants, have only been imperfectly explored and only at great costs.<sup>43</sup>

The fact that this piece was published in a journal dedicated to military engineering under the patronage of the Ministry of War brings us back to the Siege of Paris. The reincorporation of ballooning into the French military happened with the 1876 founding of the *Établissement central de l'aérostation militaire* in Chalais-Meudon. This initiative fell under the purview of the Army's Engineering Corps because authorities saw military ballooning being used primarily for communications and observations during siege warfare.

Deburaux also published in other venues, the most important being the *Revue maritime et coloniale*. In 1892, he published an extensive study titled "Les Aérostats et l'exploration du continent Africain."<sup>44</sup> Spread throughout several volumes of that journal, the study explained that while there had been various proposals to use balloons to explore the Arctic, such an effort faced too many logistical challenges.<sup>45</sup> Instead, Deburaux and his coauthor Maurice Dibos (a naval engineer) argued that the locations most propitious for this kind of endeavor were in the tropics. In the study, they described a system that would allow a balloon to travel up to ten thousand kilometers. Drawing from geographic works that featured data on wind patterns, they

posited that by making use of trade winds their balloon could cross Australia, South America, or Africa from east to west in three to four weeks.<sup>46</sup> Out of the three continents, Deburaux and Dibos argued Africa should be the site for their proposed experiments, for the winds in Australia were less reliable, while South America was almost totally charted. But colonial politics also impacted their choice. As they explained, “France has an interest of the first order in showing its flag in the north-western regions of this continent, almost all of which was reserved as its zone of influence in the Treaty of Berlin.”<sup>47</sup> In fact, various passages express urgent anxiety to map the zone of influence allocated to France in the Berlin West Africa Conference of 1884–1885—an area that spanned from the Mediterranean coast to a line running from Say (Niger) to Maroua (Chad).

Deburaux and Dibos’s study featured five descriptions of potential departure points for a balloon ascent seeking to make use of trade winds to fly across Africa. The first would depart from a site in coastal Tunisia (somewhere between Gabès and Al Biban) and land near one of the French stations in Upper Senegal. The second itinerary would depart from the Tripolitan coast and land near Lake Tchad (the same itinerary that was then fictionalized in *Vers le Tchad*). The final three would depart from near Al Dabbah (on the banks of the Sudanese Nile), just north of Suakin (on the Sudanese coast), and Obyo (on the Somalian coast), and all land somewhere along the Slave Coast (itineraries whose last section were also then fictionalized in *Du Tchad au Dahomey en ballon*). To make their case, Deburaux and Dibos included a table demonstrating the scientific, commercial, and political interests for each of these itineraries. The first held the most potential. According to their analysis, this route would cross a region of the Sahara that was “little known, [a] caravan route, included in the zone of French influence but escaping that influence,” which meant that it had a “scientific, political, and commercial interest.” Toward the end, the route would also cross the northern regions of Niger and Senegal, which were “poorly known, fighting against French influence,” and therefore of “high political interest.”<sup>48</sup> While two of Deburaux’s studies were awarded minor prizes by the Academy of Sciences, his proposals were, by and large, ignored by a consistently conservative military. In 1898, he seemed to be on the verge of conducting his first experiments, with the popular and specialized press excitedly reporting that he, Dibos, and the Marine officer Émile Hourst were set to conduct preliminary experiments in North Africa. The men went as far as requesting a

15,000-franc subvention from the Paris Municipal Council, but the project did not materialize.<sup>49</sup>

Deburaux kept at it, and in 1902 he published another study explaining how unmanned sounding balloons could be used to explore aerial routes in Africa.<sup>50</sup> The following year, the opportunity arose to test his theoretical musings. Deburaux partnered with Georges de Castillon de Saint-Victor, an aristocrat who was also one of Paris's most celebrated aeronauts. In January 1904, the two transported two sounding balloons to Gabès to see whether the wind patterns would allow for manned flights across the Sahara. The *Éclaireur* and the *Léo Dex* were equipped with an elaborate system where water would serve as ballast and periodically be released to keep the balloon aloft throughout the journey, which Deburaux expected would cross the Sahara and end somewhere southwest of Timbuktu (figure 5.4).<sup>51</sup> The initiative was largely self-driven. The Ministry of War provided them with minimum aid (a hydrogen car to help inflate the balloons and support from the troops stationed at the Gabès garrison), while the Paris Municipal Council granted them a meager 100-franc subvention. In fact, one of the reasons Deburaux turned to fiction was to acquire funds for his experiments. He referenced his studies in the novels and directed their proceeds to finance the initiative.<sup>52</sup>

Deburaux and Castillon set up a makeshift "aerodrome" at a small oasis four kilometers south of Gabès, selecting the spot because it offered the water necessary to manufacture hydrogen (figure 5.5). Then they waited, for the next few days were marked by a sirocco—the powerful counterclockwise wind that blows from North Africa to southern Europe. On 14 January, the sirocco subsided, and the team identified the breeze they were expecting from the northeast. They hastily inflated the smaller balloon, the *Éclaireur*, which started to make its way to Senegal. But the breeze soon subsided, and the balloon became stranded just ten kilometers south of Gabès. Floating in the still air, the *Éclaireur* was like a sitting duck for "les Arabes," who captured it by the guide-rope and damaged it beyond repair.

The *Léo Dex*'s turn came on 16 January. At first, the experiment seemed on the road to success, with the balloon steadily heading southwest toward the path of the Saharan easterly trade winds and disappearing behind the Matmata Hills. But just as in the first attempt, French efforts were frustrated by nature and indigenous populations. The breeze that initially carried the *Léo Dex* was not strong enough to take it to the path of the Saharan trade winds. After the breeze subsided, the balloon was carried away by the

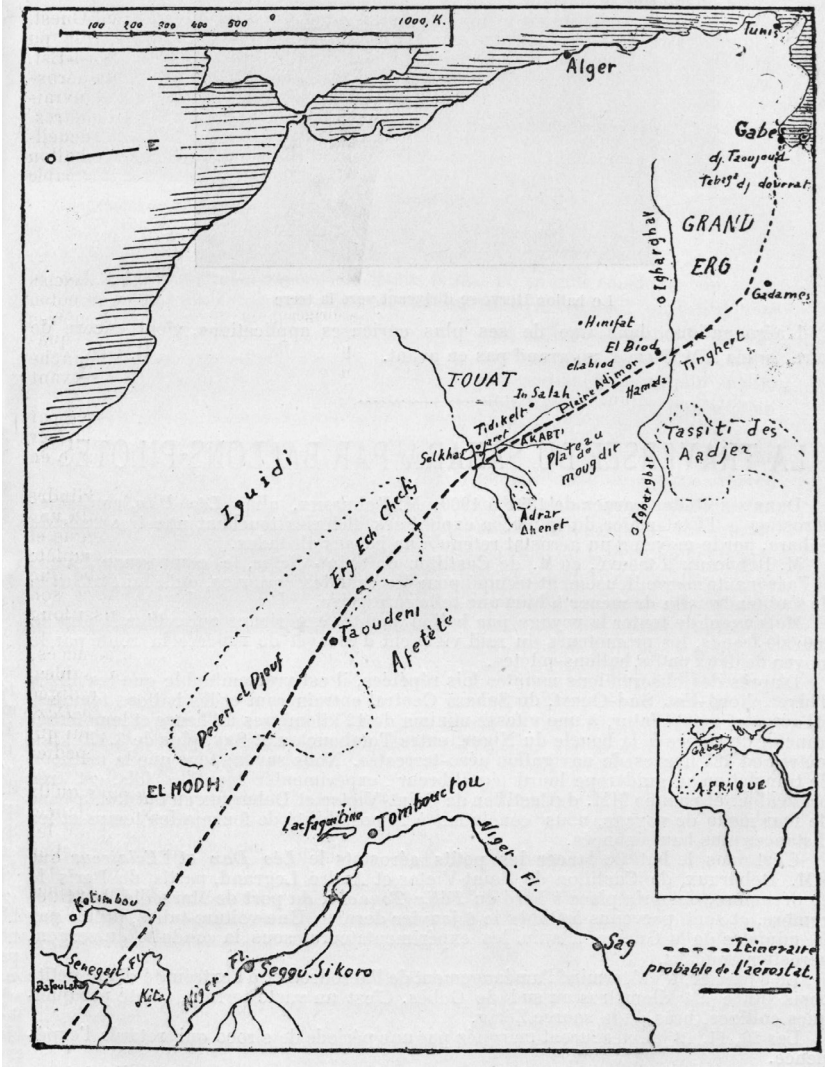


Figure 5.4  
Deburax's anticipated route for a balloon crossing of the Sahara. *L'Aéroophile*,  
January 1903. Source: gallica.bnf.fr / Bibliothèque nationale de France.



Figure 5.5  
 An idealized depiction of Édouard Deburax's balloons departing from the aerodrome he set up near Gabès, Tunisia. *Le Petit Journal*, 25 January 1903. Source: gallica.bnf.fr / Bibliothèque nationale de France.

sirocco and ended up in the Ouled Naïl mountain range south of Algiers, where it was also captured by “les Arabes.” Once again, the “undisciplined and recalcitrant subjects of French domination” who Deburaux hoped to evade by balloon disrupted his ambitions.<sup>53</sup> A safe route through the sky proved to be much more difficult than he had imagined.

Like many before him, Deburaux was confronted with the challenges of translating a theoretical ambition into practice. The project seemed to make sense on paper, but the experiment was thwarted by unaccounted material, environmental, and social contingencies. In an interview upon his return to France, Deburaux explained that he was confronted by challenges as soon as he arrived in Tunisia, for the car transporting the ballooning equipment could not make it all the way to Gabès. If it had not been for a general in Sfax who supplied them with mules, Deburaux’s adventure would have ended before the balloons were even inflated. Then were the issues with the atmospheric data he relied on. The meteorological office based at the *École d’Agriculture de Tunis* had not accounted for the fact that the north breeze Deburaux hoped would carry his balloons to the Saharan trade winds tended to last a short time and did not go farther than about thirty kilometers.<sup>54</sup> Castillon lamented that “the people who take the observations used to make the statistics that we had at our disposal have no barometers, no recording devices.”<sup>55</sup> Finally, although they did not address this in the interviews, indigenous populations proved to be a much larger obstacle than expected. While the balloons’ guide-ropes were not electrified, like some in the press speculated, Deburaux thought that their sharp metallic edges would severely injure any “malicious native” who tried to grab them.<sup>56</sup> They did not. The air was imagined as a safe space for empire but, in practice, it was far from insular.

Since neither balloon succeeded in its crossing, Deburaux and Castillon planned to conduct more experiments from a spot further south in 1904. The ideal site, they argued, would have been Ghadames, an oasis located in present-day Libya near the borders of Tunisia and Algeria. However, reaching this isolated site so far inland would have been too expensive for a cash-strapped initiative, so they planned instead to use Touggourt. This oasis in northeast Algeria had easier access to the railway line, which once again revealed how aerial enterprises were inexorably dependent on terrestrial infrastructure.<sup>57</sup> But Deburaux’s premature death at forty years of age in March 1904 put an end to the planning and any future experiments.<sup>58</sup>

Although unsuccessful, Deburaux's attempts to find a way to cross the Sahara by balloon were covered with enthusiasm by the French press, which saw in them a real-life Vernian endeavor. In January 1898, *Le Journal de la jeunesse* presented its young readership with an article titled "Dix semaines en ballon à travers le Sahara," claiming that "the novelist's quasi-chimeric idea" was "on the verge of becoming reality," while *La Science française* claimed in August of that same year that "three courageous men will soon try to turn one of Jules Verne's fictions into reality."<sup>59</sup> Meanwhile, enthusiasts like the geographer Émile-Félix Gautier complained that military and civilian authorities did not offer Deburaux enough support, arguing that it was a mistake to dismiss the benefits that balloon travel might provide France's colonial efforts in Africa. In a 1901 article for *La Science française*, Gautier made the case that the territory occupied by the Tuareg was the main roadblock to unite Senegal and Sudan to Algeria, a necessary step for the consolidation of "French civilization" in the region, and that ballooning offered an opportunity for the survey and preparation of on-the-ground expeditions.<sup>60</sup> But Gautier's plea fell on deaf ears, for the military did not buy into the fickle technology's aptness for transportation.

#### 4 HEROIC FAILURES IN THE "FRENCH LAKE": ARISTOCRATS ABOVE THE MEDITERRANEAN

Because they were portrayed in a popular press where fiction, science, and empire intermingled, enterprises to use balloons as a technology to facilitate mobility in far-flung territories were inscribed into the broader phenomenon of the adventure. As Sylvain Venayre explains, the "adventurer" became a respectable category only in the second half of the nineteenth century thanks to novels by the likes of Fenimore Cooper and Verne and the proliferation of illustrated travel publications.<sup>61</sup> These transformations opened new paths for the aristocrats we encountered in chapter 4 to distinguish themselves and perform their masculinity while simultaneously conveying that they were risking their lives for imperial France.

Henry de La Vaulx was an exemplary specimen of this phenomenon.<sup>62</sup> Born to an aristocratic family just before the Franco-Prussian War, he grew up with Verne novels that inspired a taste for adventure and developed a personality marked by the kind of virile panache that defined the ideal turn-of-the-century

aeronaut. Fresh out of military service and heir to a large fortune, the young La Vaulx decided to travel around the world, visiting India, Indochina, China, Japan, the Americas, and more. He followed those journeys with an ethnographic mission to Patagonia, where he collected material that would become part of the Musée d'Histoire Naturelle and the Musée Ethnographique du Trocadéro. Soon after his return in 1898, he was introduced to ballooning by way of tethered ascents in Paris. La Vaulx became so enamored by the practice that he decided to abandon his ethnographical aspirations.<sup>63</sup> From 1898 to 1903, he made eighty ascents, traveling more than 16,000 kilometers, spending more than 706 hours aloft, and carrying along 253 passengers.<sup>64</sup> The most impressive of these ascents was the one he and Castillon made during the 1900 Universal Exposition. Departing from Vincennes, the two men made a thirty-six-hour-long ascent aboard the *Centaure*, landing in Korostichef, near Kyiv.

Even though Eastern Europe was not unknown territory, long-distance ascents like this suggested that France was at the vanguard of exploration and that ballooning would not only help uncover “uncharted” territories but also bring the rest of the world closer to Paris. As La Vaulx wrote regarding his voyage to Korostichef, “Thanks to the balloon, the inaccessible vastness of continents has become a fiction. Where land routes are inaccessible, the airways are open.”<sup>65</sup> The voyage also had symbolic geopolitical implications, for France was working toward a rapprochement with Russia to counterbalance the formation of the Triple Alliance between Germany, the Austro-Hungarian Empire, and Italy. This was an anxiety Deburaux had expressed in an 1894 article. As he argued, France and Russia ran the risk of becoming isolated allies during a war, a situation that would render strategic cooperation difficult and severely impact morale. Once again, the Siege of Paris served as a memorable point of reference—“the two nations would find themselves blocked off like a besieged city,” Deburaux argued.<sup>66</sup> But soon after his epic flight east, La Vaulx turned his attentions south. In 1901 he partnered with Castillon to experiment with using balloons to cross the Mediterranean.

Given the construction of the Suez Canal, advances in steamship technology, and France’s investment in North Africa, the Mediterranean had acquired a more prominent position in the French colonial imaginary by the turn of the century.<sup>67</sup> Of particular importance was the French conquest of Algeria, which intensified under the Third Republic following the Second Empire’s failed experiment with informal empire (the so-called Arab Kingdom policy).<sup>68</sup> All of this led to growing concerns about the “Mediterranean



Figure 5.6  
The *Méditerranéen*'s hangar in Les Sablettes. *La Vie au grand air*, 20 October 1901.  
Source: gallica.bnf.fr / Bibliothèque nationale de France.

question.” For instance, on 14 July 1901 the deputy dandy Boni de Castellane published a piece in the nationalist *L'Écho de Paris* calling for a more aggressive foreign policy that accounted for France's weakness in the Eastern Mediterranean.<sup>69</sup> As La Vaulx put it in a 1901 article presenting his idea to cross the sea: “The Mediterranean is a French lake: as the days pass it tends to become more strictly ours. It is therefore interesting to seek to increase the means of communication and information of this great body of water by all possible means.”<sup>70</sup>

La Vaulx and Castillon's first attempt to cross the Mediterranean came only three months after de Castellane's article (other experiments took place in 1902 and 1904), and it was financed through a subscription publicized by the same *L'Écho de Paris*. The money helped finance a thirty-three-meter-high hangar in Les Sablettes, an isthmus to the south of Toulon (figure 5.6). Two other men were also aboard the balloon, baptized the *Méditerranéen*, when it departed on 12 October—the engineer Henri Hervé, who designed the underwater apparatus that would help stabilize and guide the balloon, and

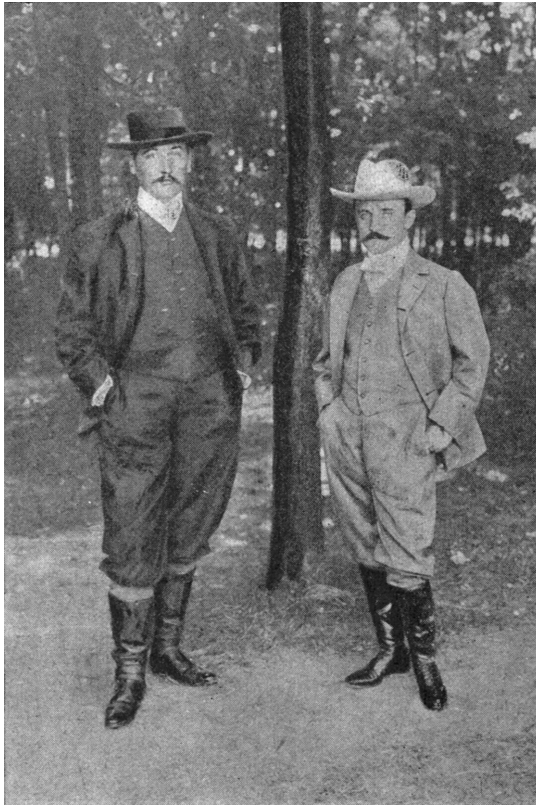


Figure 5.7

Henry de La Vaulx (left) and Georges de Castellon de Saint-Victor (right). *La Vie au grand air*, 20 October 1901. Source: gallica.bnf.fr / Bibliothèque nationale de France.

the Navy Lieutenant Jean Marie Tapissier, who oversaw the military's parc d'aérostation in Toulon. But newspapers were more interested in the aristocrats, who through their activities in the Aéro-Club had become familiar figures in the popular press. The physical contrast between the two—Castillon was significantly smaller than La Vaulx—added to the enterprise's novelistic flair, whose drama the press found creative ways to exploit (figure 5.7).<sup>71</sup> *Le Petit Journal*, for example, dispatched a reporter to Versailles to stay on top of reactions by La Vaulx's parents to any incoming news.<sup>72</sup> Winds did not cooperate with the *Méditerranéen*, and after more than forty-one hours aloft and nearly reaching Perpignan, the crew decided to bring the balloon down in the ocean to be salvaged by the *Du Chayla*, a cruiser the Navy assigned to follow

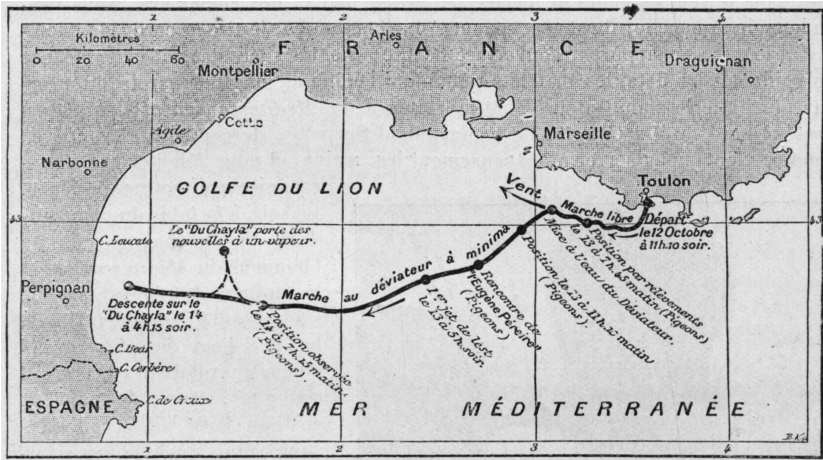


Figure 5.8

The route taken by the *Méditerranéen* during the 1901 ascent. *L'Aérophile*, March 1902. Source: gallica.bnf.fr / Bibliothèque nationale de France.

the balloon in Mediterranean waters (figure 5.8). The *Du Chayla* then docked in Toulon, where reporters waited to interview the adventurers.<sup>73</sup>

One of the novel aspects of La Vaulx and Castillon's Mediterranean adventures was that they took place over water—a milieu typically avoided by aeronauts nervous about getting lost at sea. Furthermore, by situating ballooning within France's geopolitical priorities in the Mediterranean, La Vaulx and Castillon presented the practice as more than an extravagant hobby that distinguished aristocratic men from the masses. While their efforts to cross the "French lake" failed, it reinforced the image of the heroic aeronaut willing to sacrifice himself for France's grandeur. As one periodical put it, "La Vaulx and Castillon confront the same risks as the doctor who runs toward an epidemic, as the soldier who runs toward bullets."<sup>74</sup> Just as men like Pierre Savorgnan de Brazza and Jean-Baptiste Marchand gave a charismatic human face to empire, La Vaulx and Castillon were portrayed as personifying the distinguished heroic spirit necessary to master the airspace that gave access to empire. It was as if an amalgam of the gentleman Dr. Fergusson and the patriotic d'Ex had emerged from the pages of fiction and taken up residency in the news section.<sup>75</sup> At the end of the day, La Vaulx and Castillon's attempts to cross the Mediterranean by balloon were construed as a heroic failure that signaled that even after the Franco-Prussian War debacle there were still men of

good stock willing to go to task for *la patrie*, especially as its interests increasingly lay beyond European borders.<sup>76</sup>

5 BALLOONS AS A MEASURE OF MEN:  
FRENCH *AÉROSTIERS* IN INDOCHINA

The initiatives by Deburaux, Castillon, and La Vaulx received widespread coverage by the French popular press, but they were also marginal to the French military establishment, which was less interested in using balloons as a means of transportation than it was in using them as technologies of observation. This brings us to the 1883–1886 Tonkin Campaign, the Third Republic's first application of aeronautical technology in colonial warfare.

North and Western Africa were not the only sites of nineteenth-century French imperialism. After establishing a protectorate in Cambodia in 1863, the French started making incursions into northern Vietnam—or, as they referred to it, Tonkin. Disputes between French traders, Catholic missionaries, Chinese merchants, and the Vietnamese escalated tensions, which were worsened by Francis Garnier's rogue expedition in 1873. Garnier, a naval lieutenant, had been sent to Tonkin on a diplomatic mission, but upon his arrival in Hanoi decided to capture the city. The Vietnamese then turned to the Black Flag Army, a group of brigands that had crossed the border from China to North Vietnam seeking to escape the Qing repression following the Taiping Rebellion. The Black Flags killed Garnier but were unable to capture Hanoi, which was only returned to the Vietnamese with the 1874 Treaty of Saigon. Tensions between French merchants and the Vietnamese continued, and in 1882 another small French expeditionary force made its way to Hanoi, sparking a new conflict that in 1883 escalated into the Tonkin Campaign—a violent assault that eventually led to the creation of French Indochina.<sup>77</sup>

The first year of the Tonkin Campaign turned out to be a larger-than-expected challenge for France, especially since China, wary of French encroachment in the region, offered matériel support to the Black Flags and dispatched its own troops—the Guangxi Army. Seeking to turn the tide, in late 1883 the French government handed command of the mission to Charles-Théodore Millot, a general who had distinguished himself in the Franco-Prussian War. Among the thousands of reinforcements that were dispatched to Tonkin alongside Millot was the 1st Engineer Regiment's *aérosters* section. The information we have about this section during the Tonkin

Campaign is sparse—most of it stems from the notes, regimental diary, and letters composed by one of its officers, Lieutenant Georges Louis Edmond Jullien.<sup>78</sup> Why did the Third Republic's first official mobilization of ballooning for warfare become an obscure footnote in the history of its colonial conquests? The technology's performance in the field provides an answer.

The enlistment of the *aérostiers* section caught Chalais-Meudon, the hub for military ballooning, unprepared. Time was of such essence that the *aérostiers* had to be hastily trained and there was no time to manufacture new balloons (the ones dispatched to Tonkin were part of Chalais-Meudon's training matériel). After arriving in Hanoi on 24 February 1884, the section spent a few days making trial ascents. Then, on 8 March, it joined the expedition to Bắc Ninh, where the Guangxi Army was based. The journey to Bắc Ninh revealed the logistical nightmare of mobilizing such technology for warfare. Due to a lack of infrastructure, the balloon, named *Le Vigie*, had to be partially inflated for the journey. Dragging it by land through uneven terrain, fording rivers, and getting across telegraph lines was a grueling exercise, and the section had to rely extensively on the scores of coolies it had been assigned. One is hard-pressed to believe that all the effort was worth it. A reconnaissance attempt as the expedition approached Bắc Ninh on 11 March was thwarted by mountains that blocked the view. The following day, French troops confronted the Guangxi Army near Bắc Ninh. *Le Vigie* floated 250 meters above the French general headquarters, offering some guidance of where French projectiles were landing. But the French routed the Guangxi Army with ease, and the intelligence provided by the observation balloon was superfluous to French success.

Millot's next goal was to squash the Black Flags who had retreated to Hưng Hóa. This task was assigned to the 2nd Brigade, headed by General François de Negrier, who also dragged along the *aérostiers* section. Once again, transporting the balloon proved to be a complex and draining process. The section had to cross a covered fifteen-meter bridge, which required having men scale its narrow roof holding on to the lines connected to the inflated balloon so that it could make it to the other side (figure 5.10). Powerful storms almost irremediably damaged *Le Vigie*. But the balloon survived the ordeal, and when French forces drew nearer to Hưng Hóa, Negrier decided to do the aerial reconnaissance himself. When the battle for Hưng Hóa began, the balloon repeated the performance from Bắc Ninh. While it provided some artillery intelligence, it did not have a major effect on the battle.

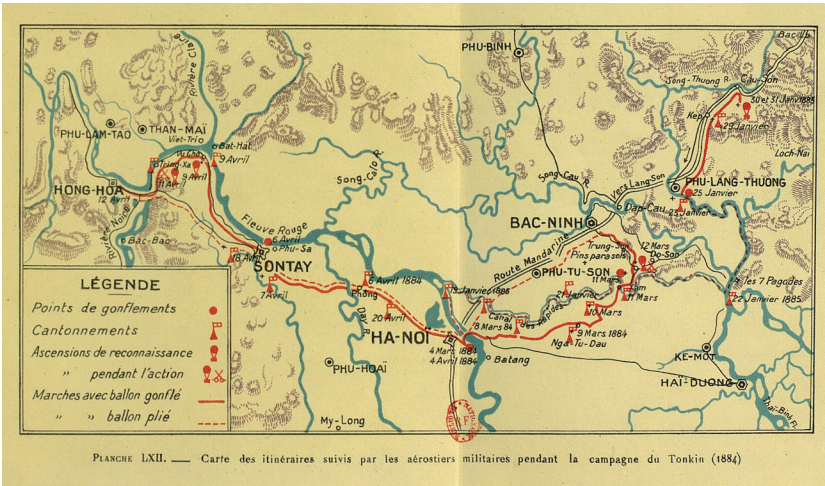


Figure 5.9  
 A map depicting the mobilization of the aéroliers section during the 1884–1885 Tonkin Campaign. Solid red lines indicate marches with the balloon inflated, dotted red lines indicate marches with the balloon folded up, red circles indicate inflating sites, and red balloon marks indicate reconnaissance ascents (if accompanied with crossed swords, then ascents during battle). *La Chefferie du génie de Hué à ses origines: Lettres du Général Jullien (Annam, Tonkin, 1884–1886)* (Hanoi: Imprimerie d’Extrême-Orient, n.d.). Source: gallica.bnf.fr / Bibliothèque nationale de France.

The experiences of the aéroliers section during the Tonkin Campaign reveal the challenges the French faced in adopting the balloon as a military technology, even if only for observational purposes. The war in Indochina demanded flexible mobility, something anathema to the balloon. The difficulties in maintaining and transporting the equipment also made evident how much the aerial theater depended on terrestrial infrastructure. But if the balloon had been disappointing in the realm of military strategy, there were still efforts to frame it as a success for morale, with the French presenting it as a sign of French superiority over the Vietnamese and Chinese.

In a now-classic examination of the relationship between technology and imperialism, Michael Adas argues that Europeans brought along an assumption of technological superiority when they encountered other populations overseas.<sup>79</sup> We can see this happening with French ballooning in both Indochina and North Africa, places where the balloon was re-signified as a powerful symbol of French “civilization.” While French narratives of the aéroliers section misadventures in Tonkin struggle to

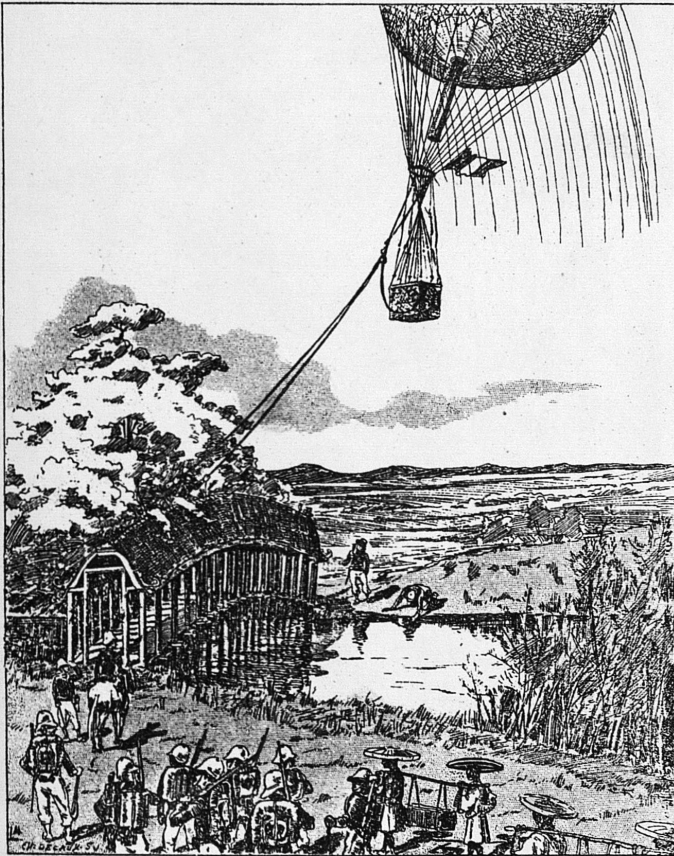


PLANCHE LX Le passage d'un pont par le ballon captif pendant les opérations au Tonkin  
(gravure extraite de *l'Historique du 1<sup>er</sup> Régiment du Génie*).

Figure 5.10

An illustration depicting the aérostiers section scrambling to cross a covered bridge while maneuvering their observation balloon. *La Chefferie du génie de Hué à ses origines: Lettres du Général Jullien (Annam, Tonkin, 1884–1886)* (Hanoi: Imprimerie d'Extrême-Orient, n.d.). Source: gallica.bnf.fr / Bibliothèque nationale de France.

justify its strategic utility, they make emphatic claims regarding the moral effect the balloon had on local populations. Georges Espitallier's 1889 book on military ballooning giddily describes how when *Le Vigie* was inflated in Hanoi, the locals ("this childlike people") threw their hands in the air and let out cries of exclamation (in his notes, Jullien mentions how the section attached the best French flag available so as to make a strong impression). Espitallier's book also features an account of when an Annamite diplomatic delegation came to see the balloon. "Their Excellencies did not think they should break their impassiveness," he wrote, "but they did not take their eyes off the balloon, and these fine scholars had to admit that they had never seen such a thing."<sup>80</sup> The internal contradictions in Espitallier's narratives are obvious: excitement and listlessness somehow reflect the same state of indigenous inferiority vis-à-vis the French.

Let us unpack both responses. First, it is not unreasonable that witnessing an ascent would cause surprise, and it is not as if people in France acted indifferently on these occasions. As we saw in previous chapters, Parisians eagerly joined a crowd to watch a balloon take off and gawked whenever they saw one crossing the sky. But that dynamic of spectacle was never framed as an inferior people being confused and impressed by superior technology, as it was in Tonkin. Meanwhile, if the Annamite delegation expressed a tense impassiveness, it might have been because the interpreter falsely claimed that explosives would be jettisoned from the balloon to exterminate French enemies. If the delegation knew what the balloon was capable of (that is to say, not much), then perhaps its tense impassiveness might have become apathetic impassiveness. The lesson to take from Espitallier's accounts are that we should be very cautious of European descriptions of how non-Europeans responded to technological displays. Narratives of emotional outbursts and impassiveness in and of themselves do not tell us much, for they can be framed in myriad self-serving ways.

An episode from Napoléon Bonaparte's Egyptian Campaign in the late eighteenth century can help us better understand the production of self-serving imperialist narratives when it comes to technology. As explained in chapter 1, up until the late nineteenth century the First Republic had been the only regime to incorporate ballooning into the military, and this included an effort to use them in Egypt. Alas, the unit arrived in North Africa in shambles, with much of its equipment disappearing following a shipwreck near Aboukir and the destruction of another ship by the British fleet. The best the unit managed to do was improvise the release of three

unmanned hot-air balloons in Cairo as a form of moral warfare.<sup>81</sup> According to a report published in Bonaparte's propaganda rag, *Le Courrier de l'Égypte*, "The sight of this experiment made the greatest impression on the locals," and "when the machine began its movement those who were in the vicinity of where it was set up fled with distressed faces."<sup>82</sup> But in his account of the French occupation, the Cairene savant 'Abd al-Rahman al-Jabarti claimed that Egyptians were not nearly as impressed as the French portrayed them to be, and he dismissed the ascents as a failed effort at propaganda.<sup>83</sup>

Whether the use of balloons in imperialist initiatives actually intimidated indigenous populations is beyond the scope of my argument. What matters are the stories the French produced regarding these encounters. Although the technology was of mediocre military use at best, it was still fashioned as a symbol of French civilizational genius—an artifact that proved to the French that they were indeed superior to those they tried to subjugate. This is evident in two visual sources depicting the capture of Bắc Ninh: a set of satirical chromolithographic collecting cards and an elaborate silk painting housed today at the Musée de l'Armée. The collecting cards depict French aeronauts surprising the Chinese governor of Bắc Ninh, and then making stew out of him and his rabbits (figure 5.11). The silk painting also depicts the capture of Bắc Ninh, but the register shifts from satirical offense to Orientalist self-praise (figure 5.12). Although unsigned and undated, the painting is clearly a piece of French propaganda, with the French expelling the Chinese as a stylized balloon and numerous tricolours fly high in the sky (tellingly, they all fly more prominently than the Royal Navy ensign on the neutral British ship observing the events). Perhaps it was commissioned to produce the impression that the Chinese and the Vietnamese were overwhelmed by the aeronautical achievements of French "civilization"—an appropriation of the "Oriental style" in the service of imperial ideology.

#### CONCLUSION: THE COLONIAL BALLOON

Books like *Cinq semaines en ballon* contributed to the consolidation of commonplace ideas that shaped both culture and politics. For instance, in 1896, Hetzel's son, Louis-Jules (who took over his father's business in 1886), wrote Jules Verne a letter recounting a dinner he had with several high-ranking politicians. During the dinner, Gabriel Hanotaux, the minister of foreign affairs, told a story from when he was an attaché to William Waddington, the French ambassador to Britain during the Berlin Conference. According to Hanotaux,



Figure 5.11  
Collecting cards satirizing the capture of Bắc Ninh and Chinese reactions to the French balloon. Associating the Chinese with rabbits conveyed them as deceitful rogues who were nevertheless easily vanquished with superior technology, ca. 1883–1900. Library of Congress, Prints & Photographs Division, LC-DIG-ppmsca-02563.



Figure 5.12

An anonymous and undated silk painting depicting the capture of Bắc Ninh on 12 March 1884. A stylized balloon flies one of the many French flags present in the painting high above the captured city as the Chinese flee in despair. A similar silk painting also featuring a balloon depicts the capture of Sơn Tây. Photo (C) Paris - Musée de l'Armée, Dist. RMN-Grand Palais / image musée de l'Armée.

Waddington did not care much about the limits of France's zone of influence in Africa and was not too keen on familiarizing himself with the geographical documents. That all changed when Hanotaux gave Waddington a copy of *Cinq semaines en ballon*. Apparently, after reading Verne's novel the ambassador committed himself to the idea of fixing France's zone of influence all the way down to Lake Chad.<sup>84</sup>

Hanotaux's story may well have been a fabrication to please the world's most famous writer. Nevertheless, it is indicative of how the colonial imaginary was shaped by the cross-pollination of politics and culture. As Edward Said explained, "The enterprise of empire depends upon the *idea of having an empire*."<sup>85</sup> Ballooning adventure novels and the failed attempts to use the balloon in imperial spaces all called attention to the importance of airspace in the colonial imaginary. This is especially true because of how the realms of fiction and reality fed off each other. Verne and Dex would infuse their novels with the latest scientific findings and references to contemporary research, while newspapers covering Debureau, Castillon, and La Vaulx's initiatives would compare them to characters from the novels. And although colonial aeronautical experiments never came close to replicating what the novels imagined, that did not prevent the narratives from framing them as French triumphs. La Vaulx and Castillon never made it far across the Mediterranean, but they were still celebrated as heroic figures. The use of observation balloons in Indochina had very little military value, but French accounts still presented *Le Vigie* as a technology that measured the value of men.

While utopians in the first half of the nineteenth century imagined human flight as having the potential to erase boundaries and promote equality around the world, by the late nineteenth century the French also envisioned the balloon as a hierarchical technology of control. In that sense, this drift in what the balloon represented mirrors how the ideals of the Republic took very different forms at home and abroad. While in mainland France the Third Republic supposedly embodied *liberté, égalité, and fraternité*, in the colonies those values were issued a promissory note—they would only be possible once "barbarism" gave way to "civilization." Essentially useless in a practical sense, the balloon still proved to be ideologically handy. This was evident even in cases that seemed anathema to oppressive colonial politics, as in the case of the Brazilian dandy Alberto Santos-Dumont. We now turn to his story to explore how the French embraced his celebrity to promote a Francocentric brand of technological cosmopolitanism.

MAKING *LE PETIT SANTOS*

## Technological Cosmopolitanism and Celebrity in the Atlantic World

On 19 November 1899, the *New York Herald* reported that a steerable balloon had circled the Eiffel Tower. According to the article, “While the great air ship of Count Zeppelin remain[ed] still on its stocks at the side of the Lake of Constance . . . the problem of guiding a vessel through the air seem[ed] to have been practically solved by a French aeronaut, M. De Santos Dumont.” The article’s subheading announced a new era of flight that “promise[d] great things in the future.”<sup>1</sup> That era seemed to materialize when, on 19 October 1901, Alberto Santos-Dumont ascended from the Aéro-Club’s park in Saint-Cloud aboard his airship *No. 6*, flew around the Eiffel Tower, and returned in less than thirty minutes, thus winning the 100,000-franc Deutsch de la Meurthe Prize, created by the oil magnate to stimulate progress in aeronautics. The feat set newspapers across the Atlantic into a frenzy for aeronautical matters that had not been seen since the early days of ballooning in the eighteenth century. But contrary to the *Herald’s* earlier claim, Santos-Dumont was not a “French aeronaut.” He was born in Brazil in 1873.

As we saw in chapter 4, Aéro-Club members enjoyed much prestige. But the title of most celebrated aeronaut in turn-of-the-century Paris belonged to the foreigner Santos-Dumont, whose aerial exploits and eccentric self-presentation became a golden ticket to selling newspapers across the Atlantic world. The transformation of Santos-Dumont into *le petit Santos*, as Parisians affectionately called the 153-centimeters-tall Brazilian, follows his metamorphosis from an immigrant dandy into the first global celebrity aeronaut. What is most intriguing about this process is how it was inscribed with notions of “Frenchness.” Newspapers like the *Herald* often referred to Santos-Dumont as a “French aeronaut,” despite his Brazilian origins, a confusion that reveals the intertwined relationship between aeronautics, cosmopolitanism, and French identity at the turn of the twentieth century.<sup>2</sup>

Now a thriving field, celebrity studies have moved beyond the harsh critiques of the 1960s. If Daniel Boorstin saw celebrities as the embodiment

of “the inauthenticity of contemporary culture,” recent approaches explore how they emerged and continue to operate within ever-changing popular cultures, with scholars analyzing celebrity through the lenses of power, discourse, representation, agency, class, gender, race, community building, and exclusion.<sup>3</sup> This chapter builds on that scholarship to analyze the rise of Santos-Dumont as the first global aeronautical celebrity—a phenomenon deserving of explanation since his global fame did much to encourage excitement about the future of flight and helped consolidate the image of Paris as the aeronautical capital of the world.<sup>4</sup>

The chapter also offers a new perspective on the history of cosmopolitanism at the turn of the twentieth century. As Margaret Jacob explains, treatises on cosmopolitanism argue for the virtues of cosmopolitan ethics but do little to help us understand the historical contingencies that shaped these visions.<sup>5</sup> Inspired by Judith Walkowitz’s work on “transnational forms of commercialized culture” and “transnational migrants” in Edwardian London,<sup>6</sup> the ensuing analysis explains how the production of Santos-Dumont’s transatlantic celebrity made him into a symbol of what I have termed “technological cosmopolitanism”—a worldview that promised that advances in communications and transportation could resolve rising national tensions and foster positive relationships between different peoples.

Technological cosmopolitanism seduced urban middle classes and elites who in the last decades of the nineteenth century experienced intense cultural exchange. The growing consumption of global commodities and of newspapers offering panoramic tours of world events fostered the sense of a simultaneously shared experience among urbanites.<sup>7</sup> These sectors saw air travel, which Santos-Dumont came to symbolize, as the highest stage of technological cosmopolitanism, believing it would render borders obsolete and establish faster routes between cities like Paris, London, New York, and Rio de Janeiro—a dream that seemed increasingly realizable as improvements in engine technology made it easier for lighter-than-air machines to steer against the wind.

In Paris, technological cosmopolitanism manifested itself in different forms, from iconic structures like the Eiffel Tower and the careful staging of the Universal Expositions to the public flights of Santos-Dumont. A more optimistic and worldly relative of the “technological sublime” (a concept developed to explain the religious-like awe with which Americans responded

to technology), technological cosmopolitanism cast the future in a positive mold, associating technology with an ascendant arc of human development.<sup>8</sup> Turn-of-the-century technological cosmopolitanism did not feature the kind of radical egalitarian politics expressed by the earlier romantic socialists. But it did frame technology as a uniting force, instead of something used to divide and conquer, therefore fitting snugly within the rubric of the Third Republic's aspiring universalism (which remained very unequalitarian at home and abroad).<sup>9</sup> The articulation of this vision had ideological implications across the Atlantic world. For the French, appropriating Santos-Dumont meant safeguarding France's leadership in aeronautics and assuaging their claims of universality. For Brazilians, though, the elision was marked by ambiguity. Established in 1889, Brazil's First Republic hungered for heroes, and authorities saw Santos-Dumont as a national symbol of modernity who could show that its place in world history was more than peripheral, even though that very vision was shaped by a Paris-centric worldview.<sup>10</sup> Meanwhile, marginalized Afro-Brazilians also found ways to appropriate a white "Frenchified" Brazilian and reimagine their place in the cosmopolitan order, a process that later on shaped the cosmopolitanism of avant-garde artists from Brazil's Modernist generation. It would be helpful, then, to understand Santos-Dumont's celebrity as a prism—while it crystallized transatlantic enthusiasm for flight, it refracted different meanings that reflected specific anxieties.

A global information network sustained by telegraphs and wire services connected these various communities. The mass culture that had acquired more defined contours by the nineteenth century's closing years was central to the production of celebrity.<sup>11</sup> Santos-Dumont's image was mediated by a popular press that had created an arsenal of representational techniques (caricatures, photographs, interviews), and that circulated in cities developing more integrated cultures.<sup>12</sup> Therefore, to fully explain Santos-Dumont's celebrity, we must shift the scale of analysis between the individual, the municipal, the national, and the transatlantic.<sup>13</sup> Operating at these different scales reveals that even if technological cosmopolitanism evoked a world united by transportation, communication, and exchange, imagining who got to construct and partake in that community was a process continuously marked by erasures and reinsertions. Nevertheless, the spectacular ways in which technological cosmopolitanism was articulated through Santos-Dumont's experiments with lighter-than-air technologies not only shaped

French airmindedness but were also crucial to the perpetuation of global enthusiasm for flight and the projection of Paris as the epicentre for aeronautical pursuits.

## 1 SANTOS + DUMONT: THE FRANCO-BRAZILIAN ATLANTIC

Given that ballooning was invested with a strong sense of French identity at the turn of the century, one wonders how a Brazilian could become the period's most well-known aeronaut. As discussed in previous chapters, Paris had developed a thriving ballooning culture since the Franco-Prussian War, harboring the world's most accomplished aeronauts, most renowned manufacturers, and most active associations. But tracing the outlines of French cultural influence across the nineteenth-century Atlantic is also crucial to understanding why Santos-Dumont was drawn to Paris and why the French found it easy to assimilate him.

In the Atlantic world into which Santos-Dumont was born in 1873, France did not enjoy the commercial dominance of the British in Latin America. After more than a century of military and commercial competition, Britain had emerged victorious over France upon Napoléon's fall in 1815.<sup>14</sup> The French had to search for alternatives to the unfavorable international circumstances they faced, and in doing so they developed a resilient informal empire based on "soft" cultural power and the export of luxury goods like silk and champagne.<sup>15</sup> Of particular importance to our story is how the French actively cultivated a sphere of influence in what we today call Latin America by championing the idea of a shared "Latinity" between France and the countries south of the United States.<sup>16</sup> Because French interactions in this region (Haiti, Mexico, and French Guiana excepted) were not as marked by the economic hegemony and gunboat diplomacy that defined British involvement, it was easier for Brazilian elites to develop a benign view of France.<sup>17</sup>

French immigrants who settled in Latin America's growing urban centers cultivated new forms of civility among local elites by furnishing their houses, styling their women, and educating their men, with France becoming a signifier for high-quality goods, technological refinement, and enlightened thinking.<sup>18</sup> Throughout the nineteenth century, the Brazilian government recruited Frenchmen trained in the *grandes écoles* to head public works around the country—men who served as vectors of French culture.<sup>19</sup> Scores of Brazilians were also sent to France with the expectation

that they would spearhead the modernization of post-independence Brazil and project its image as a “civilized” empire to the world.<sup>20</sup> Parallely, the French Artistic Mission that arrived in Rio after the first Napoléon’s fall shaped Brazilian art by planting the seeds for an academicist culture similar to France’s. Further, later in the century, Brazilian middle-class reformers, intellectuals, and sectors of the military found within Comtean Positivism a point of departure by which to develop their aspirations for an ordered progress that would transcend the country’s monarchical system.<sup>21</sup> By the turn of the century, the “Frenchification” of elite Brazilian society was such that one historian describes Rio as indulging in a “tropical *Belle Époque*.”<sup>22</sup> This process extended well beyond Brazil’s capital, with emulation of French architecture and fashion reaching deep into the Amazon (in 1906, Manaus built a wooden replica of the Eiffel Tower to celebrate a presidential visit).<sup>23</sup>

Paris had been a magnet for Latin American elites since the Age of Revolutions. But as transatlantic travel became more accessible, the size of its Latin American population increased from approximately five hundred in 1833 to nearly six thousand in 1901.<sup>24</sup> French authorities did not differentiate between nationalities, but sources suggest a Brazilian predominance. The 1867 *Paris-guide* stated that the “popularity [of the Hispano-American society] grows daily in the salons,” and that it was defined by a type: the Brazilian.<sup>25</sup> The presence of elite Brazilians in Paris was connected to the country’s participation in the world economy as a coffee exporter. As demand driven by European industrialization prompted coffee’s transition from luxury good to mass commodity, Brazilian plantations tapped into their enslaved labor force to expand. By the 1890s, coffee was responsible for 70 percent of Brazil’s exports, which represented more than half the world’s export market share. The expansion of coffee in the São Paulo Province prompted investments in railroads and ports, integrating the region into transatlantic circuits. The abolition of slavery in 1888 had little impact on plantations, which replaced enslaved labor with cheap immigrant labor—the colonos from Mediterranean Europe.<sup>26</sup> During these decades, coffee oligarchs in São Paulo acquired economic, cultural, social, and political capital. Although their fortune came from agriculture, they embraced urban life as the space to put that capital to work, and Paris was the place to do so.<sup>27</sup> Meanwhile, negative tropes developed within Parisian society in response to this arriviste transatlantic elite, such as the anti-cosmopolitan stereotype of the *rastaquouère* (addressed later in this chapter).

Moving from the macro level of transatlantic culture and economy to the micro level of biography, we find that Santos-Dumont had family connections to France. His father, Henrique Dumont, was born in Brazil in 1832 to French immigrants who came in a small wave that crossed the Atlantic after Brazil's independence. He received his higher education from the *École Centrale des Arts et Métiers*, a pedigree that placed him in a prime position to benefit from efforts to modernize Brazil during the reign of Pedro II, who saw France as a model for nation building.<sup>28</sup> After returning from France, Henrique secured a contract to build a stretch of the country's main railroad. Later in life he turned to coffee, becoming its largest producer just as prices were reaching new heights in the 1880s.<sup>29</sup> His plantation in Ribeirão Preto, São Paulo, was founded on enslaved labor (he owned eighty and rented an additional 150 enslaved people). Apparently, though, he was wary of revolts and began adopting immigrant labor even before 1888.<sup>30</sup>

Henrique's involvement with chattel slavery has been glossed over in accounts of Santos-Dumont's life—an erasure central to the aeronaut's mythmaking. In *Santos Dumont*, a 2019 HBO mini-series partly financed by Brazil's National Cinema Agency, Henrique is portrayed as an enlightened industrialist who rejects an offer to purchase slaves from an unscrupulous businessman, while a young Santos-Dumont tries to teach a Black servant to read. But it would be naïve to assume that Henrique's decision was driven by humanitarianism, for while planters reformed labor practices and benefited from state subsidies to attract immigrants, the early colonos could also be exploited.<sup>31</sup> An 1887 report pointed to mistreatment of immigrants in Henrique's plantation, including the suspicious deaths of a thirty-five-year-old man and a seven-year-old girl. The president of the São Paulo province dismissed it as fraudulent accusations by slave owners seeking to undermine a new economic system, but we should be skeptical since the president himself was a champion of the colono arrangement.<sup>32</sup>

Emancipation proved to be a boon for Henrique's business, for it shifted the center of coffee production from the Paraíba Valley, which was dependent on the economics of slavery, to developing areas near Ribeirão Preto, allowing him to expand his holdings.<sup>33</sup> By the late 1880s, his plantation had grown to about five million coffee trees, featuring steam tractors and a private railroad. In 1890, Henrique suffered a horse accident that left him paralyzed, and he sold his plantation for twelve million *réis* (\$5 million in 1895). Shortly before his death in 1892, Henrique advanced Santos-Dumont a

\$500,000 inheritance.<sup>34</sup> This fortune enabled Santos-Dumont to finance his own aeronautical experiments.

Educated in schools that embraced Positivism, Santos-Dumont seemed destined to follow in his father's footsteps and become an engineer. But he deviated from that path due to a lack of academic discipline and events following his father's accident. In 1891, Santos-Dumont visited Paris alongside Henrique, who was seeking medical treatment. According to memoirs he published thirteen years later, he visited the Eiffel Tower and the Palais des Machines, where he saw combustion engines for the first time. Enchanted by the city's technological marvels, Santos-Dumont purchased one of the first Peugeots manufactured, thus beginning a lifelong obsession with automobilism.<sup>35</sup> He returned to Paris after receiving his inheritance and integrated himself into the city's growing sporting community. Because he had some French heritage, spoke the language fluently, and came from a country with good relations with France, Santos-Dumont easily assimilated into le Tout-Paris, earning its good graces through lavish deeds, like renting the Parc de Princes for a motorized tricycle race.<sup>36</sup> His name featured in high-society directories, he joined prestigious clubs in Paris and the Riviera, and he was one of the Aéro-Club's founding members.<sup>37</sup>

The Brazilian's effort to self-fashion himself as a member of le Tout-Paris is evident from his memoirs, published in 1904. Titled *Dans l'air*, Santos-Dumont wrote it in French, indicating the extent to which he saw "Frenchness" as a constitutive part of his identity. While an English translation appeared that same year, one in Portuguese was published only in 1938—six years after his death.<sup>38</sup> The memoirs are primarily an account of his lighter-than-air experiments sprinkled with anecdotes about Parisian high society. But the first chapter chronicling his childhood on the plantation reveals someone working through his transatlantic identity. He tackles stereotypes the French had about Brazilian society, writing that while "Europeans have amusing images of Brazilian plantations being primitive settlements lost in the vastness of the pampas, as ignorant of the cart and the wheelbarrow as they are of the electric light and the telephone," that was not the case with those in São Paulo, for their locomotives and "scientific method" of operation could hardly be "a more stimulating milieu for the imagination of a boy dreaming about mechanical inventions." After several pages describing the engines used on his father's plantation and erasing any signs of enslaved Black labor, Santos-Dumont reminisces about how the "audacious conceptions" in

Jules Verne's novels allowed his childhood self to see clearly into the future. But he explains how he kept fantasies of flying to himself, since expressing such "unstable and visionary" opinions among the pragmatic Brazilian coffee oligarchy would have been a "social sin."<sup>39</sup> The narrative is tailored to ingratiate himself with the community he had joined. On the one hand, Santos-Dumont presents himself (and Brazil) as partaking in an industrial modernity cleansed of any signs of slavery—a technique that recalls how progressive figures in Brazil's First Republic tried to erase signs of that shameful past through French-inspired urban renewal, "racial whitening," and the destruction of evidence.<sup>40</sup> On the other hand, Santos-Dumont's horizon of possibilities only expanded thanks to stories by a French literary icon.

Remarkably, as his celebrity grew, Santos-Dumont eluded being associated with the *rastaquouère*, a stereotype that emerged in the 1880s and was part of the anti-cosmopolitan myth of Paris as "Modern Babylon." The *rastaquouère* was always a young wealthy foreign man in search of a luxurious life in Paris, and often one from Latin America. He came to Paris to partake in its pleasures and had little to offer to its edification.<sup>41</sup> Central in shaping this stereotype was the Brésilien from Jacques Offenbach's 1866 operetta *La Vie parisienne*, which satirized Paris's image as a cosmopolitan city and remained popular for decades. In the first act, the Brésilien dramatically arrives in the Gare de l'Ouest with two Black servants and sings about his excitement to spend his fortune on Paris's carnal pleasures.<sup>42</sup> Santos-Dumont, a prominent immigrant bachelor who enthusiastically displayed his wealth, had more than enough features for the *rastaquouère* stereotype to cling to, yet there are no surviving examples associating him with this type. For Parisians, *le petit Santos* represented an optimistic vision of cosmopolitanism, not its decadent counterpart. How did he avoid the negative associations? By deftly engaging with the press to cultivate his public image.

## 2 LE PETIT SANTOS: ECCENTRIC DISPLAYS AND THE MAKING OF A CELEBRITY AERONAUT

Santos-Dumont's rise to fame was largely due to his aptitude for conceiving attention-grabbing enterprises. After deciding to take up ballooning, he asked one of Paris's most reputable manufacturers, Henri Lachambre, to build him one. Whereas small balloons usually had a volume of five hundred to two thousand cubic meters, Santos-Dumont demanded his have only one hundred. The



Figure 6.1

As far as I have been able to trace, this photograph of Santos-Dumont ascending aboard the *Brazil* was the first of him to appear in the press. *La Vie au grand air*, 15 July 1898. Source: gallica.bnf.fr / Bibliothèque nationale de France.

aeronaut ended up with a 113-cubic-meter balloon that weighed about forty-eight kilograms and was only six meters in diameter. He baptized it *Brazil*, claiming it as the world's smallest flying apparatus. His first ascent happened on 4 July 1898, before a large crowd in the Jardin d'Acclimation. The press lapped it up, printing photographs of the departure and publishing accounts of the trip (figure 6.1).<sup>43</sup> The stunt promoted Santos-Dumont's skills (controlling such a small balloon demanded a meticulous care with ballast), and ingenuity (he highlighted how easy it would be to pack up the balloon and bring

it back to Paris upon landing). This kind of showmanship became a defining feature of the aeronaut's career, and his spectacles became rich fodder for a press that was experimenting with new ways to present content through photography, like *La Vie au grand air* (see chapter 4).

Public interest in Santos-Dumont grew even more once he started developing airships. The turn came at an auspicious moment. Engines had been the “reverse salient” that hindered the development of lighter-than-air flight.<sup>44</sup> Henri Giffard's 1852 airship used a 3 hp steam engine whose total weight, including coal and water, came to 458 kilograms (a power-to-weight ratio of about 0.005 kW/kg). Meanwhile, Charles Renard and Arthur Krebs's 1884 *La France* relied on an 8.5 hp electric engine powered by a 435-kilogram battery (a ratio just under 0.015 kW/kg). Engines became lighter and more powerful with advances in the automobile industry and the applied use of petrol, which is why Henri Deutsch de la Meurthe saw aeronautics as the next frontier for his black gold. When building his first airship in 1898, Santos-Dumont had the advantage of a 3.5 hp engine that weighed 30 kilograms (a ratio of 0.089 kW/kg, which was six times more efficient than what Renard and Krebs worked with and eighteen times more than Giffard's). Santos-Dumont built the engine by placing the cylinders of two tricycle engines in tandem and having them work on the same connecting rod fed by a single carburetor. His background as an automobilist proved useful since he had acquired experience in dealing with skittish combustion engines—a valuable skill when they were operated near balloons inflated with flammable gases.

Thanks to his wealth, Santos-Dumont conducted his aeronautical experiments at a relentless pace, upgrading his airships without relying on public subscriptions, which, as seen, had the stigma of being associated with hacks and swindlers. A 1903 police report stated that he spent 80,000 francs each year on his experiments (Paris's average yearly rent in 1900 was 290 francs).<sup>45</sup> From 1898 to 1909, Santos-Dumont built no fewer than eleven airships and seven airplanes, and the press was always eager to report on the “nouveau ‘Santos-Dumont’” (figure 6.2).<sup>46</sup> As with other inventors like Thomas Edison and Nikola Tesla, the press depicted him as a lone genius.<sup>47</sup> He would attribute his flying machines a number (*No. 1, No. 2, etc.*), and newspapers referred to them as the “*Santos-Dumont No. [X]*.” The metonymy collapsed together aeronaut and aircraft, transforming the two into a single iconic entity. This close identification between man and machine became common in aeronautical history, reaching its climax with Charles Lindbergh's description of his

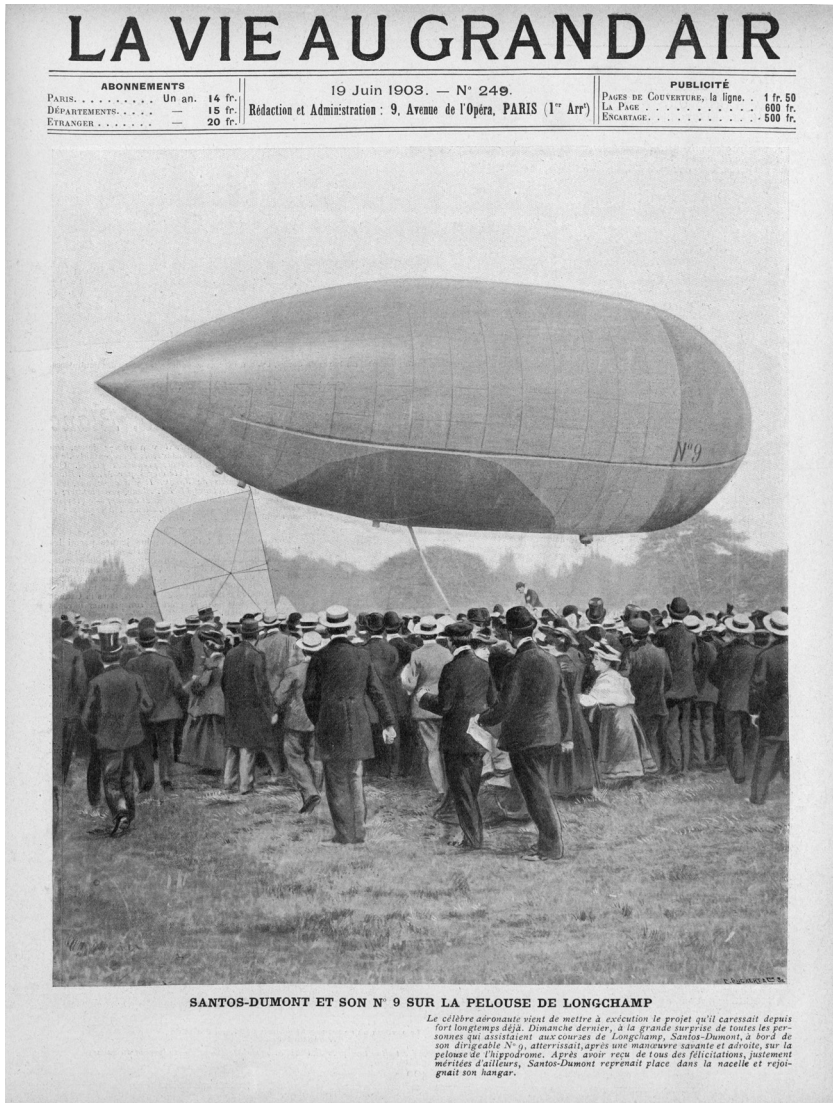
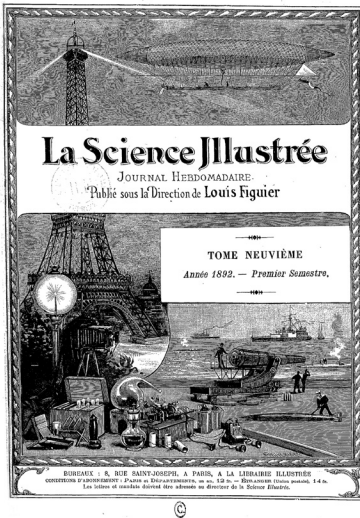


Figure 6.2  
 A depiction of a curious crowd at the Longchamp hippodrome gathering around the No. 9, also known as the *Baladeuse* and one of Santos-Dumont's most fashionable airships. *La Vie au grand air*, 19 June 1903. Source: gallica.bnf.fr / Bibliothèque nationale de France.

symbiotic relationship with the *Spirit of Saint-Louis* in his 1927 autobiography, *WE*.

But a rare article in *La Vie illustrée* shows that manufacturing airships was indeed a group effort. Most of the work happened in Lachambre's atelier in Vaugirard, where the manufacturer supervised more than a dozen workers. Skilled men painstakingly cut expensive silk into fusiform shapes, which were then seamed together by agile-handed women—spillover labor from Paris's clothing industry.<sup>48</sup> The article not only reveals the collaborative nature of Santos-Dumont's enterprise; it also indicates how it was only possible because of a world economy that now incorporated Japanese silk (which flooded the global market as Japan opened its ports and a silkworm plague devastated European production) and eagerly consumed Parisian fashion (which made fabric the city's largest manufacturing sector).<sup>49</sup> Santos-Dumont's airships were global objects in their very materiality.

The most significant element contributing to Santos-Dumont's fame was his decision to conduct his experiments with Paris as their backdrop. The Eiffel Tower seemed to await the dawn of the aerial age, as indicated by the cover *La Science illustrée* adopted in 1891 (figure 6.3). By the end of the century, not only had the tower become a synecdoche for the city—"a universal symbol of Paris," as Roland Barthes put it—but, because of its aerodynamic lines, height, and use as an atmospheric laboratory, it was also seen as a monument announcing the age of flight, further cementing the bond between that aspiration and Paris.<sup>50</sup> Initially criticized for its uselessness, the tower acquired oneiric qualities, as if it had been built for someone to fly around it, and Santos-Dumont convinced the world that he was the one to fulfill that prophecy. His fame was compounded by the fact that people everywhere recognized Parisian icons whenever newspapers reported on his exploits.<sup>51</sup> Photographs of him circling the Eiffel Tower proliferated globally, and one was used by Eiffel in a 1902 book defending the tower's utility—an image that also stamped the cover of the aeronaut's memoirs (figure 6.4).<sup>52</sup> The tower's importance was made evident when, after one of Santos-Dumont's crashes, a shaken Deutsch de la Meurthe considered changing his prize's itinerary so that aeronauts would not have to fly above the city. Other Aéro-Club members dismissed the idea, claiming that "if the obligation to round the Eiffel Tower no longer existed, the Deutsch Prize would no longer be itself and would lose its popularity."<sup>53</sup>



Figures 6.3 and 6.4

The illustration that appeared on the cover of *La Science illustrée* from 1891 until 1905 and the photograph that stamped the front page of the *New York Herald* (European Edition) on 1 August 1901. Source: gallica.bnf.fr / Bibliothèque nationale de France.

Given the extent of Santos-Dumont's mediatization, it is challenging to move past representations. Judging from what remains of his private papers, he was keenly aware of how to cultivate his public image through the press. The collection contains few letters and personal writings. Instead, it features thousands of press clippings from four different agencies that monitored newspapers in three continents—the bulk from his years experimenting with lighter-than-air flight in Paris (1899–1903).<sup>54</sup> An analysis of the clippings indicates that Santos-Dumont self-fashioned an image in which he was consumed by aeronautical matters, using eccentricity to manage his celebrity—a strategy that makes sense if we consider accounts of his crippling shyness.<sup>55</sup> The press was fascinated by how he would dine at a table that stood two meters high, evidence of how he was “accustomed to living between sky and earth” (figure 6.5)<sup>56</sup> As Mary Louise Roberts theorizes, “To be eccentric was to present a queer (in the sense of illegible) spectacle of oneself.”<sup>57</sup> Santos-Dumont's performative eccentricities contributed to the construction of his celebrity as a genius who stood apart and conveyed a sense of strangeness

# LA VIE AU GRAND AIR

<p><b>ABONNEMENTS</b></p> <p>PARIS... Un an 14 fr.   ÉDITION DE LUXE          DÉPARTEMENT... — 15 fr.   FRANCE. Un an. 30 fr.          ÉTRANGER... — 20 fr.   ÉTRANGER... — 40 fr.</p>	<p>4 Avril 1903. — N° 238</p> <p>Rédaction et Administration : 9, Avenue de l'Opéra, PARIS (1<sup>er</sup> Arr<sup>e</sup>)</p>	<p><b>PUBLICITÉ</b></p> <p>PAGES DE COUVERTURE, la ligne... 1 fr. 50          LA PAGE... 600 fr.          ENCARTAGE... 500 fr.</p>
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**SANTOS-DUMONT DÉJEUNE A DEUX MÈTRES AU-DESSUS DU NIVEAU... DU PARQUET!**

*M. Santos-Dumont est tellement accoutumé à vivre entre ciel et terre qu'il ne pourrait s'approuver un déjeuner servi à 70 centimètres au-dessus du parquet, comme pour le commun des mortels. Aussi, sa table à manger est-elle haute de 2 mètres et l'on ne peut y prendre place qu'en escadant les chaises — spécialité on le pense — au moyen d'une petite échelle qui sert également au domestique à présenter les plats. C'est à cette table originale, installée près de la fenêtre dans la salle de billard, que le célèbre aéronaute prend tous ses repas. Mais ses convives sont quelquefois embarrassés, au premier moment.*

Figure 6.5

Santos-Dumont's eccentric dining habits illustrating the cover of *La Vie au grand air* on 4 April 1903. Source: gallica.bnf.fr / Bibliothèque nationale de France.

without transgressing into the threatening figure of the dangerous inventor, a Romantic trope that still lingered in the *fin de siècle*.<sup>58</sup> Eccentric signifiers also helped constitute a type of personal brand. For example, he sported a Panama hat during his flights, and by 1903, lifestyle magazines reported that the “nouveau chapeau Santos” was popular with high-society women.<sup>59</sup>

In short, eccentricity helped Santos-Dumont stand out as the press mobilized its representational techniques. Consequently, people were curious about what he had to say about the future of flight. Reporters described in detail interviews from the aeronaut’s luxurious abode at 114 Avenue des Champs-Élysées, where Santos-Dumont was “surrounded by plans and drawings of air-ships, motors, propellers, and many cunning and mysterious devices,” as *The English and American Gazette* put it.<sup>60</sup> An article accompanying a “photographic interview” in the British weekly *The Sketch* is exemplary of how every detail in his life could be taken as a sign of genius. While describing Santos-Dumont’s studio, the reporter concluded that “everything in the room, indeed, betokens that the inventor is *sui generis*, not stamped out of a piece like most of the men of the world.”<sup>61</sup>

Material culture also played an important role in shaping Santos-Dumont’s celebrity. A 1901 fair organized to stimulate the Parisian artisanal industry featured so many toys based on the aeronaut that it had its own “Santos-Dumont corner” (figure 6.6)<sup>62</sup> Two different Santos-Dumont toys finished within the top ten and, according to the *Herald*, more than twenty thousand were manufactured for the Christmas season and sold all over Europe.<sup>63</sup> If Santos-Dumont’s image reached children in the form of toys, it was also sold to adults through the advertising techniques of consumer capitalism. His name was applied to myriad products: gingerbread in his shape sold in the streets of Paris; a rose named after him by the Congrès des Rosières; a “practical, speedy, powerful car” advertised in the United States; a brand of Brazilian cookies; and even a “Santos Dumont” soap.<sup>64</sup> His airships stamped trading cards that came with cigarettes, while advertisements from companies seeking to associate their products with a glamorous lifestyle featured his likeness (figure 6.7).

Caricatures were another mechanism through which Santos-Dumont’s celebrity grew around the world. Most conveyed him in a congenial fashion—like the chromolithograph that stamped the pages of the British weekly *Vanity Fair* in 1901, where he appears as a well-dressed dandy with sharp features happily making his way across the sky (figure 6.8). Meanwhile, racially charged

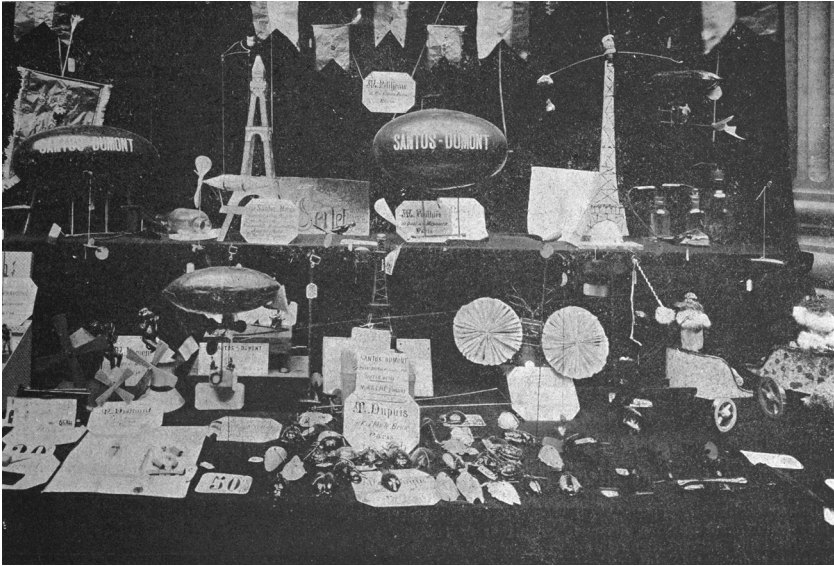


Figure 6.6

The Santos-Dumont corner at the 1901 Concours Lépine, featuring several toys themed after his flights around the Eiffel Tower. *La Vie au grand air*, 8 December 1901. Source: gallica.bnf.fr / Bibliothèque nationale de France.

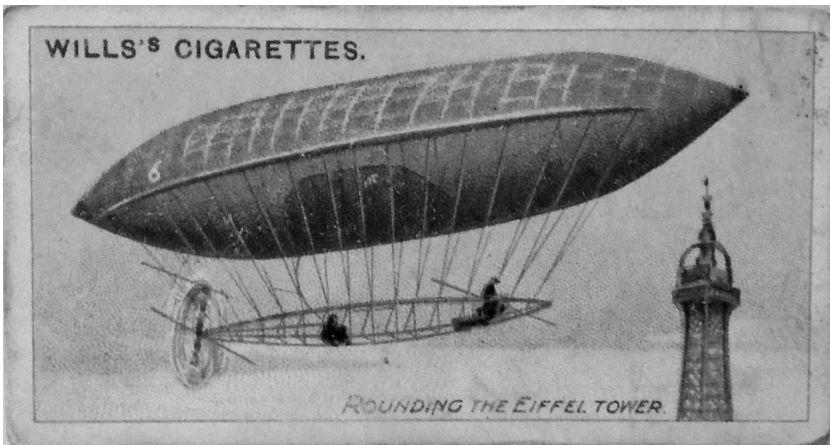


Figure 6.7

A trading card that came with Will's Cigarettes (a British brand) featuring Santos-Dumont's No. 6 rounding the Eiffel Tower. Author's collection.



Figure 6.8

In 1869, Thomas Gibson Bowles introduced full page color caricatures into *Vanity Fair* to drive interest in his fledgling magazine. Initially the caricatures targeted parliamentarians—sharp illustrations of Bowles political commentary. However, by the turn of the century, to be caricatured in *Vanity Fair* was more akin to a public honor. Geo Hun, “Santos-Dumont,” *Vanity Fair*, 14 November 1901. Courtesy of Luiz Carlos Sullivan De Oliveira.

caricatures are largely absent from the existing archives.<sup>65</sup> A satire published in the weekly *Le Bon Vivant* depicted Santos-Dumont having a nightmare where “a horde of little negroes from Brazil” moved the Eiffel Tower around his airship, which was firmly fixed to the ground.<sup>66</sup> But Santos-Dumont does not appear in the illustration, and the offensively stereotypical Black figures are his antagonists—a contrast reaffirming the aeronaut’s whiteness.

So undisputed was Santos-Dumont’s whiteness that publications in the north Atlantic never second-guessed his racial background. Not even *The Phrenological Journal of Science and Health* speculated about miscegenation in its profile of the aeronaut. The sole reference to his tropical origins reads: “Santos Dumont is a Brazilian of good family”—that is, rich and white.<sup>67</sup> Lyneise Williams’s argument that the French made sense of Latin Americans through a visual code of “Latinized blackness” that placed them below Europeans in a racial hierarchy is convincing, but Santos-Dumont largely eluded being pigeonholed in this visual matrix, for his Brazilian whiteness could easily pass as European.<sup>68</sup> Another explanation is that by successfully presenting himself as a master of a technology thought to be quintessentially French, Santos-Dumont benefited from the widespread idea that technology served as a “measure of men.”<sup>69</sup> Entertaining the notion that the world’s most skilled aeronaut was not white would have been inconceivable.

Decades before Lindbergh Fever, the objects of visual and material cultures were revealing themselves to be potent avenues for the making of celebrity aeronauts and the propagation of enthusiasm for flight. People everywhere got to do more than just read about Santos-Dumont flying above Parisian boulevards; their imaginations were stimulated by toys and images of the aeronaut gaily steering his airship, and they saw on the horizon the promise of a cosmopolitan world connected by aircrafts. Postcards depicting Santos-Dumont and his airships circulated around the Atlantic, further connecting his image to the dream of flight and to more fluid forms of cultural exchange.<sup>70</sup> Nevertheless, that dream remained anchored in imagined racial hierarchies that structured understandings of who could master advanced technologies.

### 3 THE MONARCHIST HARBINGER OF SOCIALISM: THE TECHNOLOGICAL SUBLIME AND THE TRANSCENDENCE OF POLITICS

During his years in Paris, Santos-Dumont was embedded in a technologically avant-garde yet politically reactionary environment.<sup>71</sup> Like the

Automobile-Club, the Aéro-Club had more than its fair share of anti-Dreyfusards. The archives also offer some evidence that the Brazilian aeronaut held reactionary sympathies, for the police observed him in royalist meetings where he possibly gave speeches.<sup>72</sup> From what we can glean from the archives, it seems that if Santos-Dumont was an anti-Dreyfusard he was so more because of the company that he kept than by the virtue of his convictions. His royalism, on the other hand, stemmed from him belonging to the Brazilian elite that had thrived under Pedro II. While in Paris, Santos-Dumont befriended the exiled emperor's daughter. He also rubbed shoulders with monarchical figures old and new during his sojourns in Monaco. *La Vie au grand air* dubbed him "the king of the shore," claiming that "all the notables in Monte Carlo and along the coast paraded in the hangar of Hercules Bay," including the deposed French empress Eugénie Napoléon.<sup>73</sup> Yet, if Santos-Dumont harbored personal sympathy for monarchical leaders, his technological feats were nevertheless associated with the Republic. After all, he won the Deutsch Prize by circling around the Eiffel Tower, a monument that celebrated the French Revolution's centennial.

Furthermore, while much ink was used to print Santos-Dumont's words in the popular press, he was reticent about political issues. Instead, he used his spotlight to prophesize about the future of human flight. He discussed his hopes for aeronautics in the 1905 inaugural issue of *Je sais tout*, a popular science monthly. In the essay, titled *Ce que je ferai, Ce que l'on fera* Santos-Dumont presented a vision of the future where airships transported people across continents and explored the North Pole. Although it briefly touched on some of the implications of aerial warfare, the essay's moral lesson was that people needed to enthusiastically embrace technological cosmopolitanism. Santos-Dumont anticipated an aerial age of greater freedom and fraternity, with airships facilitating individual travel and rendering borders obsolete.<sup>74</sup> The future he anticipated was one of connections and exchanges, not of equality, as the romantic socialists had dreamed.

That being said, by couching his works in vague political terms and focusing on abstract discussions of how his inventions would harness positive change for humankind, Santos-Dumont acquired a broad fandom. Jean Jaurès, for example, was present at one of Santos-Dumont's trials. While the socialist leader saw the experiments as "only the feeble beginning of an uncertain invention," he was still enthusiastic about them. For the first time, Jaurès wrote, it seemed evident that man could steer through the air, and he interpreted this single feat as having much larger implications than

a forthcoming transportation revolution; it was a sign of the eventual triumph of his own brand of humanist socialism.<sup>75</sup> For Jaurès, Santos-Dumont's subduing of nature to his harmonious aerial promenades foreshadowed the harmonization of human society, which in turn would bring an end to the endemic crises of capitalism and usher in an era of rational socialism. After a decade of intense intellectual growth (during which he set the foundations to a modern French strain of socialist thought) and on the eve of helping found the French Socialist Party, the symbolism of Santos-Dumont's accomplishment was particularly resonant to Jaurès. "In that frail balloon moving deliberately toward its goal," he wrote, "I see a part of the immense human problem. I might express it in this way: to make life, social life as well as natural life, a thing that can be steered, and to confide the management of it to humanity itself, a humanity that shall be free, self-conscious, and united. Thus the thoughts familiar to Socialists took on a fresh shape and meaning to me."<sup>76</sup> For Jaurès, Santos-Dumont's "frail balloon" was a sign that aerial navigation was possible, just as small political and social reforms signaled the possible triumph of socialism.<sup>77</sup>

The fact that Santos-Dumont emerged unscathed from the combative political fighting that marked turn-of-the-century Parisian life indicates how the pursuit of flight was one way through which the deep social and political divisions were sublimated and transformed into a common sense of purpose. As David Nye explains, "When experienced by large groups the sublime can weld society together. In moments of sublimity, human beings temporarily disregard divisions among elements of the community."<sup>78</sup> The mass culture of spectacle that thrived in Paris was central in forging public bonds that transcended economic and political divisions. This "public" was not a preexisting ontological reality, but was culturally produced through the rise of a mass press that was intensely engaged in representing everyday urban life.<sup>79</sup>

In Paris, the press made aeronautics part of the everyday. People flocked to the streets as soon as they heard news that Santos-Dumont would attempt a sortie aboard his airship, often waiting hours near his hangar in St. Cloud only to find out that the airship was not in working order (at least once the aeronaut felt pressured to make an ascent to please the crowd).<sup>80</sup> As *Le Figaro* reported a few days before Santos-Dumont's last attempt to win the Deutsch Prize, people were crowding the Champ-de-Mars, the Pont d'Iéna, and the Jardins du Trocadéro in a way that had not been seen since the 1900 Exposition. A couple of days later, the same newspaper reported that "the number

of curious people who [went] every day near the Eiffel Tower to wait for the famous airship” was such that tram employees were “now announcing the closest station to the Champ-de-Mars by yelling: ‘Santos-Dumont! Santos-Dumont!’” From what *Le Figaro* reported, the crowds were diverse, including “schoolchildren who had cut class, errand boys sneaking away from the shop, ladies and gentlemen, and workers with tools on their shoulders.”<sup>81</sup>

The mass illustrated press taught gawkers a common repertoire: from reacting with horror to disasters to expressing jubilant enthusiasm for certain kinds of achievements.<sup>82</sup> The crowds that gathered to watch Santos-Dumont fly above the boulevards rehearsed this repertoire repeatedly, each time basking in the glory of witnessing a sublime event that offered their city a certain technological transcendence that seemingly stood above the divisions of class and politics. Thus, Jaurès (the socialist) could express admiration for the feats of an aristocrat, while the polemicist Henri Rochefort (who viciously attacked the Second Empire) and Eugénie Napoléon (the deposed Empress) could find themselves together visiting the aeronaut’s hangar in Monaco.<sup>83</sup> Santos-Dumont’s self-fashioning, his audacious stunts, and the press’s sympathetic portrayal made *le petit Santos* into a technological hero whose image was capacious enough to seduce French people of all stripes who sought to reaffirm their country’s modernity.

#### 4 THE WORLD BEYOND PARIS: SANTOS-DUMONT’S POLYSEMIC CELEBRITY

No publication did more for Santos-Dumont’s international celebrity than the *New York Herald*. We were introduced to it and its publisher, James Gordon Bennett Jr., in the previous chapter. Bennett, a trailblazer of celebrity journalism and a sports and technology enthusiast, found in *le petit Santos* the ideal subject. His newspapers reported on all the aeronaut’s attempts for the Deutsch Prize. They also offered updates on sightings of him in hotels and Atlantic steamers in the “Personal Intelligence” section. Both *Heralds* presented their transatlantic readers with a man who was simultaneously a refined cosmopolitan, a savvy inventor, and a fearless sportsman—a sympathetic face for the ideology of elite technological cosmopolitanism that Bennett championed. A stream of Santos-Dumont articles delivered by a special cable dispatch and accompanied by the aeronaut’s bold predictions that in the future people would fly from “Paris to New York in a balloon in two days”



The laudatory articles on Santos-Dumont's aeronautical adventures reminded readers of the exciting technological work happening in Paris, helping balance the negative coverage of contentious French politics (marked especially by the bitter Dreyfus Affair) and projecting a more sanguine image of France to the Anglophone world.<sup>86</sup> Santos-Dumont's experiments were positive to the city's international image, which explains why *Le Monde illustré* labeled him "in one word, a Frenchman from Brazil."<sup>87</sup> The aeronaut's association with France was so effective that the American press also adopted it, with the *Baltimore Sun* announcing how a "Frenchman May Have Solved At Last The Balloon Problem."<sup>88</sup> Publications that correctly identified Santos-Dumont's nationality usually followed with qualifications. "Of all places, Latin America is the last that the world would expect to produce the man to solve a great mechanical and physical problem," W. L. McAlpin wrote in *Munsey's Magazine*, before highlighting that the aeronaut's family was of "French descent."<sup>89</sup> It was as if it were impossible to accept that the world's most celebrated aeronaut did not come from Europe or North America, his French lineage serving as the explanation for his success. As a result, Santos-Dumont became an informal French technological ambassador. In a 1902 visit to the United States, he met Thomas Edison, who "was much interested in the young man who had startled Paris and the world by steering an airship over the city, not once, but several times."<sup>90</sup> He also visited Theodore Roosevelt at The White House, where they "had a long chat . . . concerning his feats of aerial navigation."<sup>91</sup>

But limits to the French uses of Santos-Dumont as a symbol of their own technological cosmopolitanism became evident in how Brazilians made sense of his celebrity. As Richard Dyer explains, celebrities are polysemic semiotic systems.<sup>92</sup> If Santos-Dumont's cosmopolitan celebrity manifested itself in Europe and the United States as a kind of Frenchness that endowed him with special skills, in Brazil it was constructed differently.<sup>93</sup> Brazilian politicians and the urban press expressed both excitement that the aeronaut had made a name for himself abroad and resentment against the French for appropriating their countryman. The *Ilustração Brasileira* bitterly explained how "his paternal grandfather's French origin has served as the basis to a ridiculous claim by Parisians who want to endow their nation with the honor of possessing the inventor of steerable balloons." The periodical argued that the theory was absurd, for "the French blood globules that flow through Santos-Dumont's veins neither activated his inventive spirit nor warmed up the brave aeronaut's serene audaciousness. His effort is *hereditarily* Brazilian; it descends in

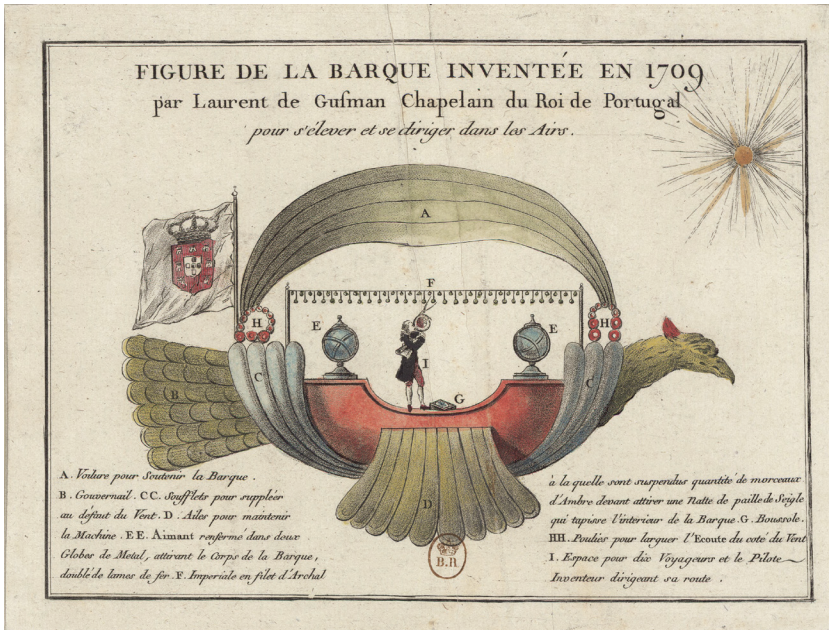


Figure 6.10

Figure de la Barque inventée en 1709 par Laurent de Gusman, 1784. Source: gallica.bnf.fr / Bibliothèque nationale de France.

a straight line from the adventurous spirit of the Lusitanian race, from the thirst for the unknown and the heroism that drove our ancestors to *explore uncharted lands and untraversed seas*.<sup>94</sup>

Brazilian authorities also claimed Santos-Dumont's accomplishments. Following a set of remarkable flights in July 1901, he received congratulatory telegrams from politicians, schools, and even Rio's Archbishop. The minister of industry wrote representing President Campos Salles, and commemorated Santos-Dumont's "brilliant experience" as having "add[ed] to Brazil's glory by completing the work of Bartholomeu de Gusmão, our illustrious countryman." The Archbishop traced this same lineage.<sup>95</sup>

Who was Gusmão? Born in 1685 in Colonial Brazil, he was a naturalist priest who sailed to Lisbon in 1708 and entered the Court of Dom João V. Once settled, he requested a patent for a flying machine that came to be known as the *Passarola* (figure 6.10). While Gusmão experimented with small balloons, he never built the larger machine and abandoned his research. The Inquisition sealed his fate. Plausibly, both his experiments and his relationship

with New Christians could have served as a pretext for his persecution. He fled Lisbon and, in 1724, died of unspecified causes in Toledo.<sup>96</sup>

The Gusmão to Santos-Dumont genealogy reversed the usual framing of Europe as a land of progress and Latin America as backward. This reversal found its way into congressional speeches when the government granted the aeronaut a 100,000-réis prize to encourage his research. One deputy jubilantly stated that “over the gothic cathedrals of Paris . . . the Brazilian flag waved,” indicating that the aeronaut’s feat had created a topsy-turvy world in which Brazil became modern and France returned to the Middle Ages.<sup>97</sup> Similar rhetoric marked Santos-Dumont’s induction into the Instituto Histórico e Geográfico Brasileiro, the bastion of official national history, where verbose orators also traced Santos-Dumont’s efforts back to Gusmão.<sup>98</sup>

Outside the distinguished halls of the IHGB, Eduardo das Neves, an Afro-Brazilian performer, wrote a song celebrating Santos-Dumont. Titled “A Conquista do Ar,” it became a popular tune, its lyrics describing how the aeronaut had made Europe bow before Brazil, which could now claim for itself the greatest glory of the new century.<sup>99</sup> According to Thomas Skidmore, “A Conquista do Ar” and reactions to Santos-Dumont’s accomplishments were expressive of the “ufanismo” (a type of ultra-patriotism) that pervaded Brazilian society in the early twentieth century.<sup>100</sup> For example, a Brazilian journalist wrote to the aeronaut explaining how his body started trembling when he read the news that Santos-Dumont had flown around the Eiffel Tower. “With tears my eyes and a smile on my face I pronounced the following words: ‘This land that was discovered by [Pedro Álvares] Cabral and whose language was taught by [Luís de] Camões is not, as many think, a land of ignoramus.’” The journalist wrote that he wished he were in Paris to watch him fly with the Brazilian flag above the boulevards, offered him a poem, and predicted that Santos-Dumont’s name would be taught by mothers and teachers as “a glorious name for the nation.”<sup>101</sup>

Indeed, a paroxysm of patriotism ensued when Santos-Dumont visited Brazil in 1903. Newspapers opened subscription lists to offer him gifts, and a large crowd waited for him at the docks in Rio for a parade.<sup>102</sup> He arrived on Independence Day, casting a potent patriotic hue on the proceedings. Masses greeted him on every stop of his multi-state tour, and he visited government representatives, civil associations, and educational establishments (students took the lead in organizing ceremonies).<sup>103</sup> Despite the more jingoistic tendencies that accompanied these ceremonies, we should also try to

understand how Brazilians in marginalized positions saw in Santos-Dumont an opportunity to inscribe themselves and their country into world history as more than just peripheral players: as central shapers of modernity. Neves, after all, was one of Rio's most successful Black performers. Born in 1874 (fourteen years before slavery was legally abolished), he became the first Black singer to record songs in Brazil's nascent phonographic industry.<sup>104</sup> Neves addressed various themes in his music, from commemorating official heroes promoted by the First Republic to celebrating the emancipation of Afro-Brazilians. He adopted the nickname "crioulo Dudu" ("crioulo" being a term used for Brazilian-born Blacks) and proudly advertised his identity as a performer drinking from the cultural streams that flowed through the "Black Atlantic."<sup>105</sup>

With that context in mind, Neves's "A Conquista do Ar" reveals itself to be more than just an expression of "ufanismo"; it was an effort to insert Afro-Brazilians into cosmopolitan visions of flight. While this was not explicitly expressed in the lyrics, it became evident in live performances. Although marred by racism, the journalist João do Rio's description of walking into a music hall and seeing "young soldiers, sailors, and patriotic young men" in apotheosis as a "tar-faced" Neves lost his voice singing "A Conquista do Ar" reveals how the Afro-Brazilian musician was able to fashion himself, and his difference, as central to this historic moment.<sup>106</sup> This was even more obvious in the song's sheet music, which displays a portrait of Neves crowning the Eiffel Tower as Santos-Dumont flies around it, thus affirming that the "crioulo Dudu" was intrinsic to aeronautical modernity (figure 6.11). When Santos-Dumont visited Brazil, Neves and a racially diverse group performed "A Conquista do Ar" in front of the aeronaut himself. In transforming Santos-Dumont's Parisian feat into a product of popular culture, Neves offered a major contribution to the Brazilian First Republic's symbolic repertoire. One of the *bestializados* (a pejorative that described the marginalized people who supposedly passively observed the unfolding of politics) could thus contribute to the construction of the republican imaginary by tapping into the transatlantic exchanges that produced Santos-Dumont's celebrity.<sup>107</sup> Paris projected a hegemonic vision of technological cosmopolitanism, but this could also be repurposed by marginalized groups within their local contexts.

A diverse cast of Brazilians—from republican authorities to Afro-Brazilian entertainers—sought different ways to appropriate the technological dreamscape that Paris imperiously projected, and Santos-Dumont became

A Conquistã do Ar!  
CANTICO AO ARROJADO AERONAUTA



**SANTOS DUMONT**

A GLORIA DO BRAZIL

Letra e muzica do Cantor

**Eduardo das Neves,**



Transcripção de.  
**MANOEL COLL**



RIO DE JANEIRO  
Livraria do Povo — QUARESMA & C. — Importação  
68 e 67, RUA DE S. JOSÉ, 65 e 67  
1909

Figure 6.11

The song-sheet for Eduardo das Neves's "A Conquista do Ar" (Rio de Janeiro: Quaresma, 1909). Courtesy of Smithsonian National Air and Space Museum (NASM 95-8342).

an important character in how they imagined their own modernity in relation to the broader world. There is no finer example of this than Tarsila do Amaral's 1924 painting *Carnaval em Madureira* (figure 6.12). Tarsila was part of Brazil's Modernist generation, which in the 1920s sought to develop Brazilian art in an autonomous and unabashedly modern direction that also cultivated "Brazilianness." As Styliane Philippou explains, the movement drew its



Figure 6.12

Tarsila do Amaral, *Carnaval em Madureira*, 1924. Acervo da Fundação José e Paulina Nemirovsky, em comodato com a Pinacoteca do Estado de São Paulo.

force through the “nationalisation of Modernist cosmopolitan artistic trends” and championed racial miscegenation and the hybridization of Brazilian and European cultures.<sup>108</sup> Contrary to academic painting, the Modernists rejected the civilizational narrative that Brazil followed a linear progression from pre-modern state of nature to European-guided enlightenment. Instead, they challenged the core-periphery binary and articulated an avant-garde vision of a “discrepant cosmopolitanism” shaped by the cultural exchanges (and violence) that produced an interconnected Atlantic world.<sup>109</sup>

Born in 1886, Tarsila, like Santos-Dumont, came from coffee money and spent her childhood in a household infused with products from France.<sup>110</sup> In the early 1920s, she moved to Paris, where she studied cubism with André Lhote, met Picasso, and befriended Fernand Léger and Sonia Delaunay. She was thrilled by Paris’s modernity, going as far as paying 60 francs to ride an airplane.<sup>111</sup> As she explained to a Brazilian journalist, she thought the state of the arts in Paris was “the best possible,” for “the twentieth century searches the arts for a form of expression that corresponds to the scientific discoveries and tumult of our large modern cities.”<sup>112</sup> Tarsila’s Parisian *séjour* illustrates how the city remained both a stage for technological spectacles and a matrix for transatlantic exchanges, including the African winds subsumed into the Primitivism that shaped the waves of influence she experienced from Léger, Picasso, and others.<sup>113</sup> Interwar Paris was a space for “transatlantic encounters” that stood in stark contrast to the conservatism that reigned in the arts in most Latin American cities, and Tarsila experienced a kind of “exhilarating exile” that fueled her creativity.<sup>114</sup>

The central element in *Carnaval em Madureira* recalls Robert Delaunay’s Eiffel Tower series (Tarsila owned one of the canvases), which in turn was inspired by a postcard depicting an airplane circling the tower in 1909—just as Santos-Dumont had done with his airship.<sup>115</sup> But the painting is also a product of Tarsila’s Pau-Brasil phase, which she developed after a transformative trip through the Brazilian countryside. There, in small colonial towns whose baroque architecture had been financed by the transatlantic colonial gold boom, Tarsila encountered “the colors that [she] loved as a child” but that she had been taught to hate for being too “country” (*caipira*)—“purest blue, violaceous rose, bright yellow, singing green.”<sup>116</sup> Tarsila combined her rediscovery of vivid colors and interest in vernacular subjects with Lhote’s emphasis on essential geometries and her own technological enthusiasm. *Carnaval em Madureira* synthesizes Frenchness and Brazilianness both

stylistically (through the technique and the colorful palette) and thematically (through the Eiffel Tower and airship inserted in the middle of one of Rio's peripheral neighborhoods). The tower's straight lines contrast with the human silhouettes and the natural background, both of which gesture back to the airship's ellipsoid shape—a complementariness of geometrical forms that draws directly from Léger while also evoking an idealized hybridity of national forms.

Even more intriguing is the cast of Afro-Brazilian women and children conveying a cosmopolitanism not bounded by race or gender. Of course, Tarsila was a white woman from the Brazilian elite, which means that the painting also faces issues concerning the politics of representation. Her fascination with Afro-Brazilians shares elective affinities with her Parisian colleagues' obsession with "primitive art."<sup>117</sup> Given the negrophilia that permeated 1920s Paris, representing the "exotic" was a promising way to draw attention, and Tarsila was urged to include paintings of Afro-Brazilians in her exhibits.<sup>118</sup> But associating Blackness with Paris also helped legitimize Afro-Brazilian culture with elites back in Brazil by incorporating it into the sphere of "respectable" cosmopolitanism.<sup>119</sup>

The juxtaposition in *Carnaval em Madureira* was not an imaginative act by Tarsila, for an Eiffel Tower replica featuring Santos-Dumont's airship was built in Madureira for the 1924 Carnaval.<sup>120</sup> Tarsila's modernity, inspired by Santos-Dumont's feat and its reimagining by marginalized Brazilians, is a syncretic modernity—it includes the North and the South, the technological avant-garde and the vernacular of everyday life. In the nineteenth century, the bounded labor of Afro-Brazilians helped constitute the fortune that allowed Santos-Dumont to go to Paris and become a celebrity aeronaut. In the twentieth century, Tarsila depicted descendants of the enslaved appropriating the vision of technological cosmopolitanism that Santos-Dumont's celebrity had helped nurture, just as Neves had done. If the "crioulo Dudu" represented the agency of Afro-Brazilians struggling to reinsert themselves into turn-of-the-century cosmopolitan visions, Tarsila represented the willingness of avant-garde elites to widen the boundaries of cosmopolitanism. The painting embodies the tensions of technological cosmopolitanism and signals that modernity was not simply an imperious projection from Europe but the very thread that connects and enables these variegated transatlantic exchanges and experiences.

## 5 ICARUS FALLEN: SANTOS-DUMONT'S MELANCHOLIC END

By late 1905, Santos-Dumont's attention had shifted to heavier-than-air flight. In October and November of 1906, he flew for sixty and 220 meters, respectively, aboard the *14-bis*, an awkward canard-style airplane. These "hops"—the first flights recorded and publicized around the world—briefly heightened Santos-Dumont's popularity. But others in Paris, like Henri Farman and Louis Blériot, made progress with their own airplanes, while the Lebaudy brothers and Count Zeppelin built airships much more impressive than Santos-Dumont's. Then, on 8 August 1908, following years of failed negotiations with the French and American governments and after coming to terms with a French syndicate, Wilbur Wright boarded his *Flyer* near Le Mans and mesmerized all, finally quelling any skepticism caused by the Wright brothers' secrecy (see chapter 7).<sup>121</sup>

Santos-Dumont's last spurt of technological glory was the *Demoiselle*, a light airplane that became a prestigious "toy" for sportsmen (Roland Garros learned to fly in one).<sup>122</sup> He did not patent it, and up to fifteen were built by third parties around the world. The first airplane built in Germany was modeled after the *Demoiselle*, another was constructed in Argentina, and *Popular Mechanics* printed instructions teaching Americans to build one at home, reflecting how in these early years people enthusiastically envisioned airplanes as a form of personal transportation.<sup>123</sup>

After his last recorded flight in November 1909, Santos-Dumont's celebrity began to wane. He left France before the First World War, and until the mid-1920s traveled to congresses across the Americas, articulating his dream of a continent united by aircrafts.<sup>124</sup> The Aero Club of America nominated him as the first president of the Pan-American Aeronautical Federation, and he supported the Monroe Doctrine. He argued that with the war in Europe, commerce between the Americas was more important than ever and that the airplane was the ideal mode of transportation to breach the continent's vast distances. "With time and distance annihilated," he wrote in a 1917 essay in *Flying*, "the commercial relations, so long deferred, will spontaneously develop. We shall have facilities for prompt communication. We shall get into closer contact. We shall become stronger in the bonds of understanding and friendship."<sup>125</sup> In 1919, he had the United States Minister to Brazil contact the assistant secretary of the navy, Franklin D. Roosevelt, to request a meeting and

lobby for greater aeronautical cooperation between the countries.<sup>126</sup> Years later, under FDR's Good Neighbor Policy, Pan American Airways would expand its air routes in Latin America, mobilizing a discourse of collaboration that in effect justified American hegemony in the region.<sup>127</sup> In other words, the production of connections and exchanges in very unequal terms.

If the First World War rendered Santos-Dumont's optimistic view of flight into the musings of a Pollyanna, it also made him a more committed pacifist. In 1926, he wrote a Brazilian senator and expressed exasperation that someone had proposed making him a general, explaining that he could not accept the honor since he was "repulsed by everything related to the military and war."<sup>128</sup> That same year he wrote Brazil's ambassador to the League of Nations requesting a ban on the use of aviation in war and offering to finance a 10,000-franc prize for the best article on interdicting the use of aircrafts as weapons.<sup>129</sup> In November 1930, while at a sanatorium in the Basse-Pyrénées, he wrote to Brazil's minister of foreign affairs and expressed the "terrible shock" that he felt on receiving news of the devastation caused by airplanes in recent conflicts. "Woe wretched me," he stated, "I never thought when I was making my old experiments that I was contributing to the most terrible weapon of War!" Santos-Dumont asked his friend to work on policy prohibiting the use of airplanes in wars and closed with an apology: "Excuse the bad writing because I am very, very weak."<sup>130</sup>

Ceremonial and informal diplomatic roles did not suit Santos-Dumont; he yearned for the recognition that he had earned during his flying years in Paris. As he wrote in an unpublished manuscript gloomily dedicated to posterity, "It was indeed—I can say it today—a somewhat painful experience for me to see, after my works on the airship and the heavier-than-air, the ingratitude of those who covered me with praises a few years before."<sup>131</sup> Concern regarding legacy is also found in a draft for his will, in which he requested that 20 percent of his capital (spread around banks in Rio de Janeiro, São Paulo, Buenos Aires, Paris, New York, and London) be used to build replicas of the monument the Aéro-Club had erected for him in Paris.<sup>132</sup>

Santos-Dumont's health quickly deteriorated, and his final years were melancholic. Biographers have attributed his health's decline to various causes—from depression triggered by an inability to cope with the use of airplanes as engines of war to multiple sclerosis (the first explanation is too convenient and the second too speculative). In 1925, he wrote his friend Georges Besançon to complain about his nerves and noise sensitivity—symptoms of

what contemporaries identified as “neurasthenia,” a condition attributed to exhaustion of the nervous system wrought by the excessive stimuli of modern life.<sup>133</sup> Early in 1931, a doctor in an Orthez sanatorium wrote Besançon’s wife to inform her that the aeronaut had tried to kill himself five times and was “suffering from anxious melancholy with delusions of self-blame, from imaginary guilt, and was awaiting punishment.”<sup>134</sup> Soon after, Santos-Dumont left Europe for the last time and settled in at a hotel in the Brazilian beach resort of Guarujá. Then, on 9 July 1932, the Constitutionalist Revolution broke out against Getúlio Vargas’s coup d’état, which responded with the aerial bombing of São Paulo. Fourteen days later, Santos-Dumont hanged himself with two of his dandyish ties. Authorities obscured the real cause of death, claiming cardiac arrest—a version conveniently repeated by early Brazilian biographers.

#### CONCLUSION: THE COSMOPOLITAN BALLOON

If Santos-Dumont’s legacy is overshadowed by aviators who later emerged on the public scene, then it is all the more worth underlining how his celebrity fostered enthusiasm for flight. As the Zeppelin lingered in the waters of Lake Constance and the Wright brothers were grounded in Ohio, Santos-Dumont was flying around the Eiffel Tower, giving people the confidence to believe in the triumph of aviation. Photojournalist Gisèle Freund argued that with the advent of photography, “the faces of public personalities became familiar and things that happened all over the world were his to share. As the reader’s outlook expanded, the world began to shrink.”<sup>135</sup> At the turn of the century, Santos-Dumont became the figure on which the global gaze could focus and imagine a world interconnected by flying machines. His fan base ranged from the Brazilian man who wanted him to sign a postcard to the eight-year-old Parisian girl who saw the aeronaut out her window, prayed for his safety, and requested a signed photo of his airship.<sup>136</sup> The people who consumed the spectacle of his flights through photographs and caricatures were likely even more excited when they saw Ferdinand Zecca’s minute-long Pathé film *À la conquête de l’air* (1901). Inspired by Santos-Dumont’s flights and influenced by the futuristic drawings of Albert Robida, the film showed a man on an airship cruising above the Parisian skyline. The following year, the Edison Company released a copycat film titled *The Twentieth Century Tramp and His Flying Machine*, which featured the New York City skyline and was advertised in the United States as featuring a “Santos-Dumont type” airship.<sup>137</sup> This kind

of commercialization and consumption of aeronautics was key in sustaining popular support for the nascent industry.

Santos-Dumont's story is compelling as biography, but it also offers historiographical insights. Historians have done much to reverse the view that during the second half of the nineteenth century France fell behind the English, Americans, and Germans in the race toward modernity. The relentless sizing up between nations during the period indicates that, for contemporaries, things were far from certain. As Mary Nolan argues, "For all the talk of old Europe and young America in the decades before 1914, few predicted either the twilight of European hegemony or the ascendancy of an interventionist America."<sup>138</sup> For people around the globe, France encompassed both the old world of classical masterpieces and Gothic cathedrals and the new world of powerful engines and iron architecture. Visitors to Paris encountered a repository of history and an avant-garde theater of technology. If in 1900 the Cult of the Sacred Heart was inscribing its reactionary worldview onto the Parisian landscape through the Sacré-Coeur Basilica, forty million Frenchmen and foreigners made a pilgrimage to pray at another altar—the Palais des Machines.<sup>139</sup> And during that same period, a Brazilian in Paris convinced the world that human flight was possible.

Vanessa Schwartz argues that in turn-of-the-century Paris reality was made into spectacle.<sup>140</sup> But the converse is also true. For Parisians and audiences all over the world, from aristocrats lounging in Mediterranean yacht clubs to Afro-Brazilian entertainers performing on the streets of Rio, Paris was a place where the spectacular was made real and optimistic imaginings of a future united by flight seemed possible. Lord Northcliffe, the British newspaper magnate who owned the *Daily Mail* and sponsored the competition that led to Louis Blériot's flight across the English Channel put it in so many terms: "The public interest shown in the problems of aeronautics by the publicity given to the results of M. Santos-Dumont's trials is in itself an earnest that the conquest of the air can no longer be dismissed as a chimera."<sup>141</sup> However, the cosmopolitan vision of flight that Santos-Dumont appeared to embody had its limits. It did not automatically include Afro-Brazilians, who had to find creative ways to insert themselves into that vision. It was also rejected by Brazilians who saw the elision of cosmopolitanism and Frenchness as a cooptation of who they thought of as their rightful national hero.

By steering an airship above Parisian boulevards, Santos-Dumont seemed to signal the triumph of lighter-than-air flight. This turned out to be a short-lived moment, for the heavier-than-air alternative—airplanes—soon appeared on the scene as the fashionable technology (as indicated by Santos-Dumont's own shift). However, the airplane was not a *creatio ex nihilo*, and historians who emphasize a radical break between lighter-than-air and heavier-than-air flight obfuscate the fact that the latter emerged from the knowledge, practices, and institutional cultures cultivated during the ballooning revival in France. The last chapter explores this transition, focusing on the cultural continuities in the transition from lighter-than-air to heavier-than-air flight.



III

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THE SOARING REPUBLIC



## BECOMING THE “WINGED NATION”

From Lighter-than-Air to Heavier-than-Air Flight

On 2 April 1903, at the prestigious Hôtel de l'Automobile-Club, the American engineer Octave Chanute presented a dîner-conférence to club members. The crème de la crème of French aeronautical society was present. They all listened attentively as Chanute described two bicycle manufacturers from Ohio—the brothers Wilbur and Orville Wright—who were making significant progress in flying with a glider.<sup>1</sup> The spectators were stirred by Chanute's presentation, which turned out to be a turning point that inaugurated a contest between aviation enthusiasts in France and the United States. Who would be the first to fly a heavier-than-air machine? Ernest Archdeacon, a lawyer who was one of the original Aéro-Club founders, published an article in *La Locomotion* to spur the French to action. “France, this great homeland of inventors, assuredly does not hold the lead *in the special science of AVIATION?*,” he wrote.<sup>2</sup> News of the Wrights' experiments galvanized the French. The Aéro-Club created an Aviation Commission and started sponsoring prizes for heavier-than-air flight, while new figures like Ferdinand Ferber (an army officer who was inspired by Otto Lilienthal's efforts to take up gliding), Gabriel Voisin (an architect who helped Alberto Santos-Dumont manufacture his first airplanes), and Robert Esnault-Pelterie (a rentier who expended his energies in aeronautical engineering) emerged on the scene. These men tried to emulate the Wright brothers, but always seemed to be one step behind. Finally, in 1908, Wilbur came to France and dazzled everyone with his flights near Les Mans.

This is the story most historians of early aviation focus on.<sup>3</sup> But highlighting how the Wrights' experiments awoke France from a state of “inexplicable torpor and procrastination” (as the historian of early aviation Charles Gibbs-Smith put it) obscures just as much as it reveals.<sup>4</sup> Indeed, prior to receiving news of the Wright brothers' experiments, the Aéro-Club focused mainly on lighter-than-air flight, but the organization still had a contingent that explored heavier-than-air options. Even more intriguing, though, is the

shadow cast by French aeronautical culture over the brothers' success, and how its expansion in the decades preceding Wilbur's public flights in 1908 set the structures for Paris to emerge as the global center of aviation in the years before the First World War.

This chapter examines the transition from lighter-than-air to heavier-than-air flight. It situates the Wright brothers' invention within a broader universe of aeronautical science shaped by the French and explains how the airplane was assimilated into existing structures that were developed through ballooning practices. While France remained a leader in the manufacturing and employment of balloons and airships, the airplane quickly occupied a dominating place in the national imaginary, especially as nationalism ramped up in the years leading to the First World War. The guns of August that sounded across Europe marked not only the beginning of a war that would be defined by industrial mass destruction but also the end of the ballooning revival.

#### 1 AN "AMERICAN" INVENTION? THE WRIGHT BROTHERS IN THE FRENCH CONTEXT

Born in Paris in 1832, Octave Chanute immigrated to the United States in 1838 when his father, a professor at the Collège de France, was appointed vice-president of Jefferson College in Louisiana. Soon after, the two moved to New York, where Chanute was educated in the Coudert Lyceum, a school founded by French immigrants. After graduating in 1848, he secured an apprenticeship at the Hudson River Railroad. In 1853 he moved to Illinois, to partake in the Western railroad boom, and in 1854 he became an American citizen. By 1864, Chanute was the chief engineer of the Chicago & Alton Railroad, and the following year he designed and built the Chicago Union Stock Yards. His career continued to thrive, and he spent the following years working on a series of railroad and bridge projects across the Midwest. In 1873, he moved back east to become chief engineer at the Erie Railway, which he helped modernize. He left the Erie in 1883 and turned to consulting, his reputation being such that in 1891 he was elected president of the American Society of Civil Engineers.<sup>5</sup>

Much like another engineer on the other side of the Atlantic (Gustave Eiffel, who himself conducted a series of aerodynamics experiments), Chanute's interests extended beyond ironworks. In observing and studying the

aerodynamic properties of his structures, he also grew curious about the prospects of aviation, turning to the topic whenever the stresses from his normal job became too burdensome. In 1889, he was one of two American attendees at the International Aeronautical Congress, organized by the Société Française de Navigation Aérienne for the Universal Exposition (the other American was Samuel Pierpont Langley, the secretary of the Smithsonian Institution who was conducting his own experiments). Uncomfortable with his French, Chanute read his paper in English. Nonetheless, the event helped him become more integrated into the French aeronautical scene.

During the congress, Chanute repeatedly heard the name Louis-Pierre Mouillard, who a few years earlier had published *L'Empire de l'air*.<sup>6</sup> The book featured observations on the flight of large birds like the griffon vulture, which Mouillard, a Frenchman who lived in Cairo but corresponded with the SFNA, had the chance to observe in detail. Chanute started his own correspondence with Mouillard and translated his book, which Langley then published in an abridged version in the *Annual Report of the Smithsonian Institution for 1892*. Although they never met, Chanute and Mouillard struck a close epistolary friendship, the former even financially supporting the latter's experiments. They shared a common ethos, expressed by Mouillard in one of his first letters to Chanute: “It is a good thing that those who try to solve this irritating problem communicate with one another,” he wrote, “the greatest danger to aviation is the spirit of mystery in which those who take up the study of aeronautics generally cloak themselves.”<sup>7</sup> Chanute learned a great deal from Mouillard, and took to heart the Frenchman's insight that to fly “there need be no flapping whatever, if only the wind be strong enough,” thus focusing his own efforts on gliding experiments.<sup>8</sup> Even though Mouillard offered Chanute and then the Wrights a critical way to think about heavier-than-air flight, his own experiments never amounted to much. He died in poverty in 1897.

According to Tom Crouch, “More than any other figure, Chanute was responsible for propelling American aeronautics from folk technology to the status of an engineering discipline.”<sup>9</sup> He regularly corresponded with the SFNA, summarizing findings originally presented in *L'Aéronaute* and Gaston Tissandier's *La Navigation aérienne* (1886) in articles for the *American Engineer and Railroad Journal*. These articles were then collected in an 1894 book titled *Progress in Flying Machines*.<sup>10</sup> Chanute was the American embodiment of the spirit that informed the SFNA. He vigorously fostered an informal network

of correspondents, which he believed was necessary to bring together aeronautical knowledge isolated between different individuals. *Progress in Flying Machines* was meant to be more than just a history of aeronautical experiments; it was to help people decide which avenues to take in their own research, and which ones were a dead end—an aspiration similar to what Jules-François Dupuis-Delcourt envisioned for his unrealized museum (see chapter 1). As Chanute explained in the book's introduction, he sought "to save the waste of effort on the part of experimenters, involved in trying again devices which have already failed; and to point out, as much as may be, the causes of such failure."<sup>11</sup> In publishing the book and speaking at conferences, Chanute helped aeronautics finally gain some legitimacy in the United States.

In May 1900, Chanute received a letter from the Wrights, who had decided to pursue their interest in aviation in earnest. According to the brothers, the seeds for their fascination with flight were planted back in 1878, when their father gifted them a toy helicopter (Alphonse Pénaud, an SFNA member, had developed the apparatus).<sup>12</sup> Wilbur, who composed the letter, wrote that they wanted "to learn to what extent similar plans have been tested and found to be failures, and also to obtain such suggestions as your great knowledge and experience might enable you to give me."<sup>13</sup>

Chanute proved essential in introducing the Wright brothers to the field of aeronautics and guiding them through the mass of published material. In fact, the Wrights' first glider was based on the one Chanute designed in 1896.<sup>14</sup> After that, Chanute's direct technical contributions to the brothers' designs were minimal, but he was an important champion of their efforts. He offered them his own French-made instruments (like the Richard anemometer that they used to measure the necessary wind velocity for their gliders) and encouraged them to keep trying after disappointing results in 1901.<sup>15</sup> Chanute became a mentor to the Wrights, and his correspondence with the two brothers offered important insights for their eventual success.

But while the Wrights had originally reached out to Chanute expressing a shared belief that finding a solution to flight had to be an open and collaborative experience, they soon adopted a more secretive attitude. Concerned with securing patents in Europe, they demanded that Chanute not elaborate on their designs in his writings for the French press, an imposition that created fissures in their friendship.<sup>16</sup> The Wrights wanted to protect their "wing-warping" technique. Instead of trying to move their glider left and right while keeping it parallel to the ground, the brothers realized that stability

when turning increased dramatically if they did so by also rotating about the roll axis. In other words, one had to bank a flying machine much like one did with a bicycle. Chanute never grasped the originality of this principle, which helps explain why he was surprised with the Wrights’ steadfast position on secrecy.

Arguments about who invented the airplane are a fool’s errand. Although the terminology is anachronistic, there is something to be said about describing the airplane as an “open-source invention.”<sup>17</sup> One cannot deny the Wrights the merits of their insight concerning wing warping, and one should not forget that their background as bicycle makers and their experimental approach was what prompted them to focus on improving the equilibrium of their designs.<sup>18</sup> But would they have found the right track without having knowledge of which experimental avenues had potential and which did not (an awareness that relied on Chanute’s own mediating role in summarizing articles from publications like *L’Aéronaute*)?<sup>19</sup> In other words, the Wrights benefited from the open culture of aeronautical research, but they contributed less and less to it the closer they got to their ambition of securing patents.

Just as important was the role France would play after the Wrights decided to market their machine. Initially, the brothers offered the *Flyer* to the United States government. However, the image of Samuel Langley’s federally funded heavier-than-air *Aerodrome* falling like a rock into the Potomac River was still fresh in everyone’s mind, and the Board of Ordnance said that it would only be interested after a successful demonstration (the skepticism was warranted, since Langley had received \$50,000 from the federal government).<sup>20</sup> Wanting to protect their technology, the Wrights refused to show the *Flyer* or share technical descriptions before a contract was signed. Negotiations collapsed, so the Wrights set their sights abroad. In October 1905, after a failed overture to the British government, Wilbur reached out to Ferdinand Ferber and stated that the brothers were willing to deal with the French. Deep into his own gliding experiments, Ferber had been in correspondence with Chanute, who helped connect him to the brothers.

Negotiations moved slowly, for the government found the one-million-franc price tag unreasonable while the Wrights found issue with the performance requirements the French set. In December 1905, a French reporter arrived in Dayton to interview the Wrights and witnesses to their early flights. *L’Auto* published a four-part story reporting that the brothers had indeed succeeded in flying, but Paris received the news with skepticism.

In the absence of any public demonstration, most members of the Aéro-Club's Aviation Commission believed that the reporter had been duped. The Parisian press, which enthusiastically covered aeronautical feats during the previous decades, was losing its patience with the Wrights' secrecy and grew suspicious of skullduggery. On 10 February 1906, the Paris *Herald* published an editorial titled "Fliers or Liars?" that acerbically stated: "The Wrights have flown or they have not flown. They possess a machine or they do not possess one. They are in fact either fliers or liars. It is difficult to fly. It is easy to say, 'We have flown.'" By May, negotiations between the Wrights and the French government had broken down.<sup>21</sup>

The French government had its own reasons to be skeptical about investing in aviation. When Henri Giffard died in 1882, he left the state part of his fortune in support of Chalais-Meudon, the aeronautical laboratory in the outskirts of Paris. But Prime Minister Charles Freycinet decided instead to pass the money on to the Ministry of War, which struck a deal with the inventor Clément Ader to build a heavier-than-air apparatus. The contract required the machine to fly two people for six hours at fifteen meters per second, an unfeasible standard given the state of aeronautical technology at the time. Ader's steam-powered, bat-like machine—the *Avion III*—managed a small hop at best. After spending at least 600,000 francs, the commission deemed Ader's efforts a failure and cut funding.<sup>22</sup>

The *Herald's* "Fliers or Liars" editorial expressed the conflict between two different cultures of invention. The Wrights were self-assured of what they had accomplished, and in an era when patents were becoming associated with the process of invention it is understandable that they worried about protecting their intellectual property.<sup>23</sup> To expose the *Flyer* without any kind of guarantee, they believed, was to lose ownership of their invention without financial compensation. But French aeronautical culture had developed in a very public manner. The weight placed on publicity was, in part, a response to the long history of inventors claiming to have found a solution to flight and offering to reveal it as soon as their subscription was paid in full. After numerous disappointments, it is not surprising that people became Doubting Thomases. The only eye-witness report of Wilbur's 20 September 1904 closed-circuit flight (one of the thresholds that had been established to judge progress in aviation) was from an apiarist in *Gleanings in Bee Culture*—not much to convince Aéro-Club members about the legitimacy of these two small town bicycle manufacturers. The contrast between publicity and

secrecy becomes even sharper when we consider how the first flight officially recorded by the Aéro-Club—Santos-Dumont’s sixty-meter hop aboard the *14-bis* on 23 October 1906—featured a large audience and was covered by both the specialized and the popular press. When it came to flight—probably more than any other technology—to see was truly to believe.

The contrast between Santos-Dumont and the Wrights reveals other differences. Santos-Dumont was enmeshed in the Aéro-Club’s aristocratic culture, where one’s self-worth was measured based on one’s deeds. And for a deed to have value, it had to be public. He did not take any patents, for the measure of his value was based on how others saw him (one of the privileges that came with being the son of a coffee mogul). In cultivating the image of a selfless inventor, Santos-Dumont negotiated his position in an economy of status. Isolated from this milieu and working anonymously in their Dayton bicycle shop, the Wrights had little concern for how others saw them. In fact, they shunned exposure, going as far as avoiding sending their portraits for a proposed feature in *L’Aérophile*.<sup>24</sup> Raised by a stern Protestant bishop and having experienced various moments of financial instability, the Wrights’ goal was monetary. The role of Protestantism in the rise of capitalism is a matter for other historians to debate, but in this limited case a kind of “Protestant ethic” might have played a role in shaping how the Wrights approached publicizing themselves and their invention.

Because of these incompatibilities, by the end of 1907, the Wrights had yet to settle with a buyer. Eventually the brothers became more flexible in their terms, for they were concerned that public flights happening in Paris would diminish their invention’s value.<sup>25</sup> Finally, the brothers struck a deal with the Compagnie Générale de Navigation Aérienne, a syndicate headed by Deutsch de la Meurthe and Lazare Weiller (the latter was also an industrialist of Alsatian Jewish background who rallied behind the aeronautical cause to prove his allegiance to the French nation and facilitate his integration into Parisian high society).<sup>26</sup> According to the contract, after making a public demonstration the Wrights would receive 500,000 francs for the first machine, 20,000 for four additional ones, and receive half the shares of the syndicate, which would hold the patent for the *Flyer* in France. At around the same time they also came to terms with the U.S. Signal Corps.<sup>27</sup>

The *Flyer*’s first public debut finally happened in August 1908—not in the United States, but in France. During that month Wilbur made a series of flights near Le Mans that drew large crowds. The press, Aéro-Club members,

politicians, and locals all came to see what the American had to offer—and they were dutifully impressed. No longer taken to be a bluffer, Wilbur was embraced and celebrated by the French.<sup>28</sup> As an article in *Le Figaro* put it, “It was not a success, it was a triumph!”<sup>29</sup>

The deal came at an opportune time. If the brothers had kept delaying, they might have lost people’s attention, for improvements in French airplanes were now progressing at a steadier pace (on 12 January 1908, Henri Farman won the Aéro-Club’s 50,000-franc Grand Prix d’Aviation Deutsch-Archdeacon by completing a one-kilometer closed-circuit flight). Once the Wrights introduced their machine to France, the French applied the Americans’ insights to their own airplanes, which soon surpassed the *Flyer*.<sup>30</sup> Paris was already home to a critical mass of aeronautical engineers, and the city’s culture of public demonstrations meant that they would constantly publicize a new design that could then be improved by a competitor. Just as had been the case with balloon manufacturers, small airplane ateliers sprouted up across the Paris region, and technical knowledge on how to improve each iteration of a new airplane circulated through the city.<sup>31</sup> Meanwhile, the Wrights became embroiled in a series of patent lawsuits, which distracted them from improving their invention. By 1912, the Chicago branch of the Aero Club of America was ruing in the inaugural article of its monthly publication that France had “taken a new place amongst the nations of the world” thanks to its commitment to aviation.<sup>32</sup> Born in the United States, the airplane would go on to grow up in France.

## 2 ASSIMILATING THE AIRPLANE: EARLY AVIATION IN FRANCE

France took the lead in heavier-than-air flight because it already had a thriving community of air-minded people, and at its center stood the Aéro-Club. By the time Wilbur brought the *Flyer* to France, the institution had ten years of experience developing the country’s aeronautical culture. Just as the club took charge of issuing brevets for those operating balloons, it also became responsible for setting up the permit structure for early aviators. In December 1908, the Aéro-Club adopted regulation for issuing brevets for airplanes, and the exams it created to assess whether someone was ready to get a license were replicated around the world.<sup>33</sup> Aviation schools proliferated around Paris, and by October 1914, 1,754 brevets had been issued in France—substantially

more than in any other country.<sup>34</sup> The Aéro-Club also applied its experience organizing balloon races to putting together airplane meets. It built an aviation field fifteen kilometers from Paris that closely resembled the Longchamp hippodrome. Parisian crowds flocked to Port-Aviation, as the field in Juvisy came to be known, and the field’s regular aviation events gave the airplane manufacturers setting up shop in Paris a valuable stimulus.<sup>35</sup>

Early aviation culture was less about transportation and more about spectacle, a sign of just how much it drew from ballooning culture. The first aviation meet—and the one that has stuck in the public’s memory—was the Grande Semaine d’Aviation de la Champagne, held between 22 and 29 August 1909. The idea of using the Bétheny plain on the outskirts of Reims for an aeronautical event came up after Henry de La Vaulx made a balloon flight over the area in 1908. Impressed by the region’s uniformity of terrain, La Vaulx thought it would make a good spot for an aerodrome. At around the same time, Henri Farman successfully flew an airplane from Châlons to Reims, and local leaders realized that they could capitalize on associating the region with aviation. Media coverage of flights occurring in Paris had already made the local population enthusiastic about the prospects of aviation, with children at the lycée in Reims celebrating Santos-Dumont’s flights. When Henri’s brother, Maurice, relocated his experiments from Issy-des-Molineaux to Châlons, the children became even more invested. Whenever they had a day off, local schoolboy Marc Walbaum and his friends would take the train or ride their bicycles the forty kilometers from Reims to Châlons to watch Farman in action. Inspired, the children even tried building their own glider and started a kite club. Maurice was soon followed by others, like Léon Levavasseur and Hubert Latham, and the aviators became local celebrities.<sup>36</sup> The Marquis de Polignac, an aristocrat who headed the Maison Pommery, figured that champagne producers should associate their high-end product with an avant-garde activity, and he persuaded other houses, such as Veuve-Cliquot, Moët et Chandon, and Mumm, to join the cause. He took the helm of a steering committee that in three months secured more than 250,000 francs to organize the Grand Semaine d’Aviation.<sup>37</sup> As he argued in a subscription letter sent to a mayor from a nearby commune, “The influx of French and foreign visitors that we rightfully expect during this week will be a source of wealth for the region.”<sup>38</sup>

Dubbed Aéropolis, the vast infrastructure set up for the meet included tribunes, a restaurant for six hundred people, merchandise stands, hangars,

a special railway that connected Bétheny to Reims, and a post office from where people could mail postcards featuring different airplane designs.<sup>39</sup> The Aéro-Club crafted the rules and regulations, created a series of prizes that aviators would compete for throughout the week, and supervised the flights. James Gordon Bennett, Jr., who for years supported ballooning pursuits through his media empire (see chapter 4), sponsored the event's grand prize, the Gordon-Bennett Trophy—a competition between national teams to see who could complete two laps in a ten-kilometer circuit the fastest. Promoters of the meet used all the tools available in modern advertising to promote the event (figure 7.1).<sup>40</sup> Once at the meet, visitors could mail their friends a nifty souvenir that offered a taste of the glamour of flight: a champagne cork in which a person could peek inside and see the cliché of an aviator and his airplane (figures 7.2 and 7.3).

Despite the dismal weather, half a million people attended the meet and got to see airplanes fly a combined 2,462 kilometers. French airplanes performed significantly better than the Wright models, an indication of how quickly manufacturers in France had adopted and adapted the Americans' insights.<sup>41</sup> The symbolic triumph of the Grande Semaine d'Aviation was even more resonant because of the position Reims held in French history. The city's cathedral, which was depicted in the event's program, had been the traditional site for the coronation of the kings of France. The analogy was obvious—aviators were the new royalty, and people referred to the meet as "le sacre de Reims." Similar events were soon held around Europe and beyond—at the Riviera, which was developing its image as a place where natural beauty and mechanical speed coexisted to draw in tourists; at Brescia, where a young Franz Kafka penned an article describing the spectacle; and in Heliopolis, Egypt, where a group of colonial entrepreneurs hoped to develop a luxurious winter resort.<sup>42</sup> The culture of competing for prizes extended beyond these large meets, and by the time the war was declared, the financial rewards offered in competitions organized by the Aéro-Club neared 2.5 million francs.<sup>43</sup>

The Aéro-Club was a central player in early aviation because it harbored not only prominent industrialists and aristocratic figures but also influential political figures, thus producing a "parapolitical sphere" that bridged the gap between civil society and government.<sup>44</sup> Paul Painlevé, for example, was a celebrated mathematician and member of both the Aéro-Club and the Academy of Sciences. He gave public lectures, wrote about aviation in the popular



Figure 7.1  
A poster for the Grande Semaine d'Aviation de la Champagne, 1909. Wikimedia Commons.



Figures 7.2 and 7.3

The cliché inside this souvenir champagne cork (cleverly titled “All the Aviators in a Cork”) depicts Hubert Latham and his airplane. Bibliothèque Historique de la Ville de Paris (Actualités 125).

press, and in 1908 helped found the Ligue Nationale Aérienne, which boasted Raymond Poincaré (a prominent republican deputy for the Meuse who would go on to serve as president and prime minister) on its steering committee. Modeled after the German Naval League and inspired by the “Miracle at Echterdingen” (when subscriptions to support Count Ferdinand von Zeppelin took Germany by storm after the *LZ-4* crashed on 5 August 1908), the Ligue Nationale Aérienne sought to encourage the French to contribute financially to the aeronautical cause.<sup>45</sup> On the cover of the program for its first fête, held at the Grand Amphithéâtre de la Sorbonne on 18 February 1911, organizers pleaded: “Join the League, register your parents, your children, get members, the German Naval League has a million members.”<sup>46</sup> Painlevé was invited to engage as an expert with the Groupe Sénatorial de l’Aviation, which in 1909 secured 400,000 francs for aviation in the military budget (he mobilized the Zeppelin threat to encourage the French government to invest in aeronautics).<sup>47</sup> In 1910, he was elected to the Chamber of Deputies, where he continued to champion investments in aviation, and eventually served as minister of air in the 1930s. Meanwhile, people like Henri Deutsch de la Meurthe founded educational institutions like the Institut Aéronautique de Saint-Cyr, which gave birth to a new generation of aeronautical experts.<sup>48</sup>

Below the level of high politics, publishers like the Librairie Aéronautique put out a slew of popular publications seeking to “domesticate” the airplane,

such as the thirty-page pamphlet *L'Aviation à la portée de tous*: “*Ce qu'il faut savoir*.”<sup>49</sup> While explaining the basic principles of heavier-than-air flight, these publications also offered a survey of the history of flight going back to the Montgolfier brothers, thus connecting the present moment of enthusiasm for heavier-than-air flight to France's long tradition of lighter-than-air pursuits. The first Exposition Internationale de Locomotion Aérienne (also known as the Salon de l'Aviation) presented a similar visual narrative. The event ran from 25 September to 17 October 1909, and in the first three days more than one hundred thousand people visited the Grand Palais. Although the *Blériot XI* was the event's centerpiece, when people looked up, they also saw replicas of the Montgolfiers' balloon and a Siege of Paris balloon. Situating the airplane within a longer history of flight dating back to the first balloons centered the technology as part of a French story (figure 7.4).

### 3 CHANGING WINDS: AIRSHIPS AT THE DAWN OF THE HEAVIER-THAN-AIR AGE

Once the Wrights decided to make their invention public, enthusiasm for heavier-than-air flight spread like wildfire. Skeptics turned into believers, early champions of aviation who were mocked for their ambitions retroactively became prophets, and the airplane overshadowed the airship as the most promising flying machine (figure 7.5). As *L'Illustration* reported, although airships made amusing appearances at the Grande Semaine d'Aviation, the sight of airplanes buzzing past “these enormous masses of 1,400 and 4,000 cubic meters” made it clear that “the most sophisticated montgolfière will doubtlessly never be able to compete with heavier-than-air machines.”<sup>50</sup> And if Santos-Dumont's airships had inaugurated the use of flying machines in advertising, in just a few years the airplane would take the helm (figure 7.6).

Even so, the French continued to pursue experiments in lighter-than-air flight. The major figures who drove the production of airships in France in the early twentieth century were Paul and Pierre Lebaudy. Heirs to a large sugar fortune, the two brothers became interested in aeronautical pursuits after witnessing Santos-Dumont's experiments. In 1902, they erected a large hangar in Moisson, where Henri Julliot and Édouard Surcuof manufactured the *Lebaudy*, a fifty-eight-meter-long fusiform semi-rigid airship. A series of campaigns that began in late 1902 and extended up until 1905 drew the attention of the Ministry of War. Especially memorable was an ascent made on



Figure 7.4

The replica of a Siege of Paris balloon floats above a *Blériot XI* in the 1909 Salon de l'Aviation. In the background, one sees a small replica of an eighteenth-century montgolfière. Jules Beau, untitled photograph, in *Collection Jules Beau. Photographie sportive: T. 35*, 1909. Source: gallica.bnf.fr / Bibliothèque nationale de France.



Figure 7.5

Children representing different nations clamor for the airplane held by Progress. The caption reads: “Yes, you will have it, impatient little ones, but promise me that you will not use it to fight one another like with all the other ones.” Press clipping, 1908. Bibliothèque Historique de la Ville de Paris (Actualités 125).

12 November 1903, when the *Lebaudy* departed from Moisson and landed at the Champ-de-Mars. Parisians welcomed the airship, with some lamenting that it had not been present for the Siege of Paris, and the brothers decided to exhibit it in the Gallery of Machines for a week before it continued its journey to Chalais-Meudon (figure 7.7). In December 1905, the Ministry of War purchased the *Lebaudy* for 80,000 francs.<sup>51</sup> During the next couple

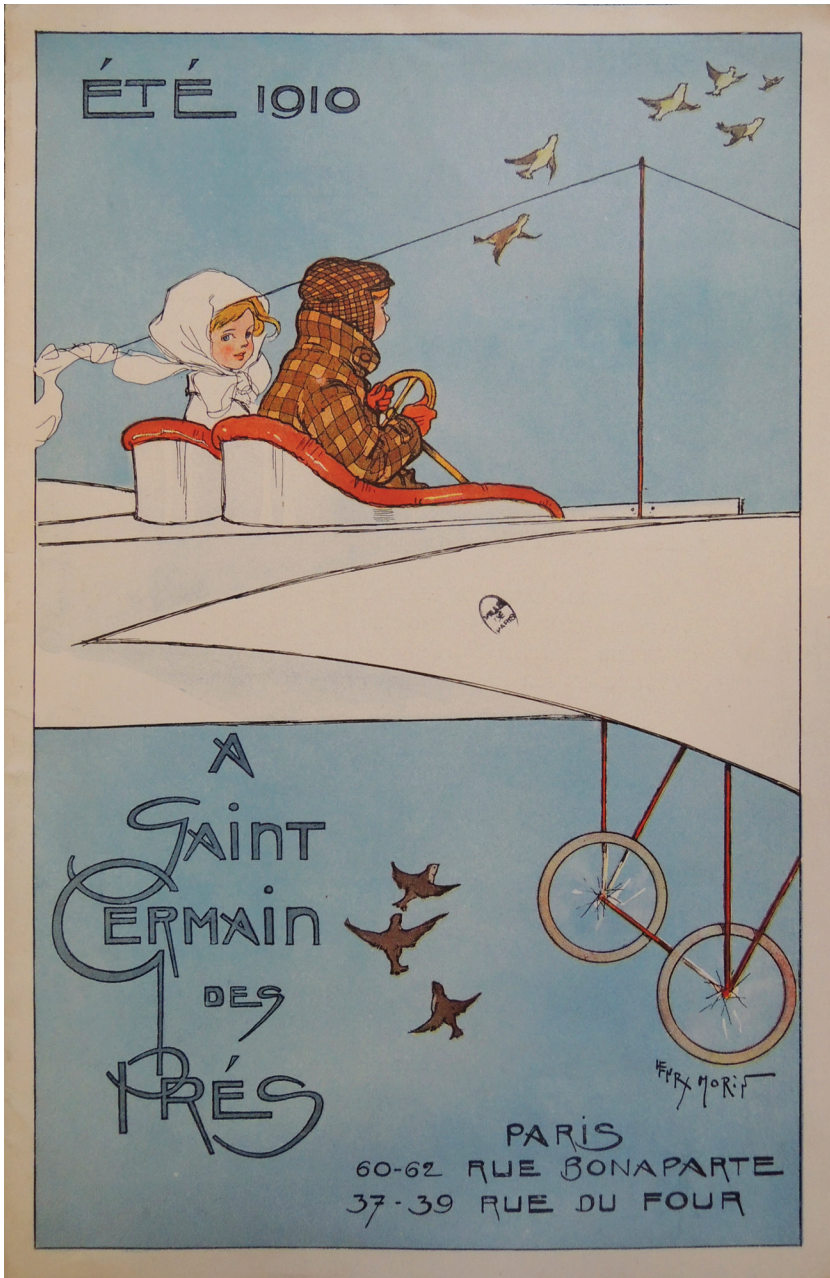


Figure 7.6

À Saint Germain des Prés department store advertisement, 1910. Bibliothèque Historique de la Ville de Paris (Actualités 125).



Figure 7.7

In a scene reminiscent of Santos-Dumont's feats, a crowd gathers to watch the *Lebaudy* depart from the Champ-de-Mars and head toward Chalais-Meudon. Jules Beau, untitled photograph, in *Collection Jules Beau. Photographie sportive: T. 23*, 1903. Source: gallica.bnf.fr / Bibliothèque nationale de France.

of years it would occasionally ascend from Chalais-Meudon and head to Paris. This prompted the *Journal des débats* to reminisce about how just twenty years earlier, Albert Robida was surprising teenagers in his book, titled *Le Vingtième Siècle*, with descriptions of airships crowding the skies of a futurist Paris. According to the article, for those who had read the book as teenagers and were now all grown up, “that history was fulfilled.”<sup>52</sup>

The French military purchased other airships manufactured by the Lebaudy, including the *Patrie* and the *République*. When the latter made its first sortie, newspapers announced that it could reach the eastern border and return without stopping, an indication of how the specter of the Franco-Prussian War and the desire for vengeance haunted the enthusiasm for flight.<sup>53</sup> The *République* became the subject of even more press coverage when, on 25 September 1909, it crashed due to a mechanical failure, killing the four aeronauts on board. The press portrayed the soldiers as republican martyrs, much in the vein of its treatment of the deaths of Joseph Crocé-Spinelli and Théodore Sivel. *Le Matin* described the event as a “national catastrophe,” lamenting

(but also boasting) how “a nation, in peace as in war, must always buy its supremacy with blood and tears” (figure 7.8).<sup>54</sup>

The French continued to lead production of airships not only for themselves but also for other countries. The Lebaudy sold the *Morning Post* to the British government, while the Société Astra, founded in 1908 by Deutsch de la Meurthe, sold airships to Russia and Spain. By the end of June 1913, the French military had a substantial airship fleet of five croiseurs, five éclaireurs, one rigid airship, and three smaller cadettes (it had also ordered seven grands croiseurs from French companies and was working on manufacturing one of its own).<sup>55</sup> Airships partook in major French military maneuvers in the years preceding the First World War, their imposing size still drawing the awe of spectators, but their bulkiness becoming all the more evident by the contrast of airplanes buzzing around (figure 7.9). Six French airships were operational during the war itself, and while they are obscured by the legend that grew around the “aces,” they were useful during the conflict to collect military intelligence and experiment with aerial bombing missions.

Just as public opinion had shifted to the airplane, the military also made moves toward prioritizing heavier-than-air flight. A report concerning the 1911 maneuvers argued that the airplane was a much more effective reconnaissance technology than the tethered balloon, and called for the substitution of “sections d’aviation” for all the “parcs aérostatiques.”<sup>56</sup> Although the public may have imagined military airplanes as engines of destruction, the high brass saw them primarily as a new form of scouting “cavalry.”<sup>57</sup> As engineers improved the distance and speeds that airplanes could achieve, the machines became all the more compelling. From 1907 to 1909, three million francs were allocated to airships and only 400,000 francs to airplanes. By 1913, the expected military funding for airplanes reached 19,850,000 francs, against 8,842,800 for lighter-than-air machines.<sup>58</sup>

As France turned its attention to the airplane, public enthusiasm for the Zeppelin soared in Germany, which took the spotlight in the airship business much to the despair of French champions of lighter-than-air flight.<sup>59</sup> During a December 1909 meeting of the Groupe Sénatorial de l’Aviation, Paul Painlevé warned that to neglect the airship was to “commit an *imprudence*” while to ignore the airplane was to “commit an *improvidence*.”<sup>60</sup> In 1911, Henry de La Vaulx went to Russia to deliver airships manufactured by the Société Zodiac, which he had founded in 1905. Impressed by developments happening in the east, La Vaulx penned an article contrasting the state of aeronautics in France



Figure 7.8  
 An allegory representing the death of the four aeronauts who were aboard the *République*. The caption reads: “France bows to the heroes who died for Science and for the Fatherland.” *Le Petit Journal*, 10 October 1909. Source: gallica.bnf.fr / Bibliothèque nationale de France.

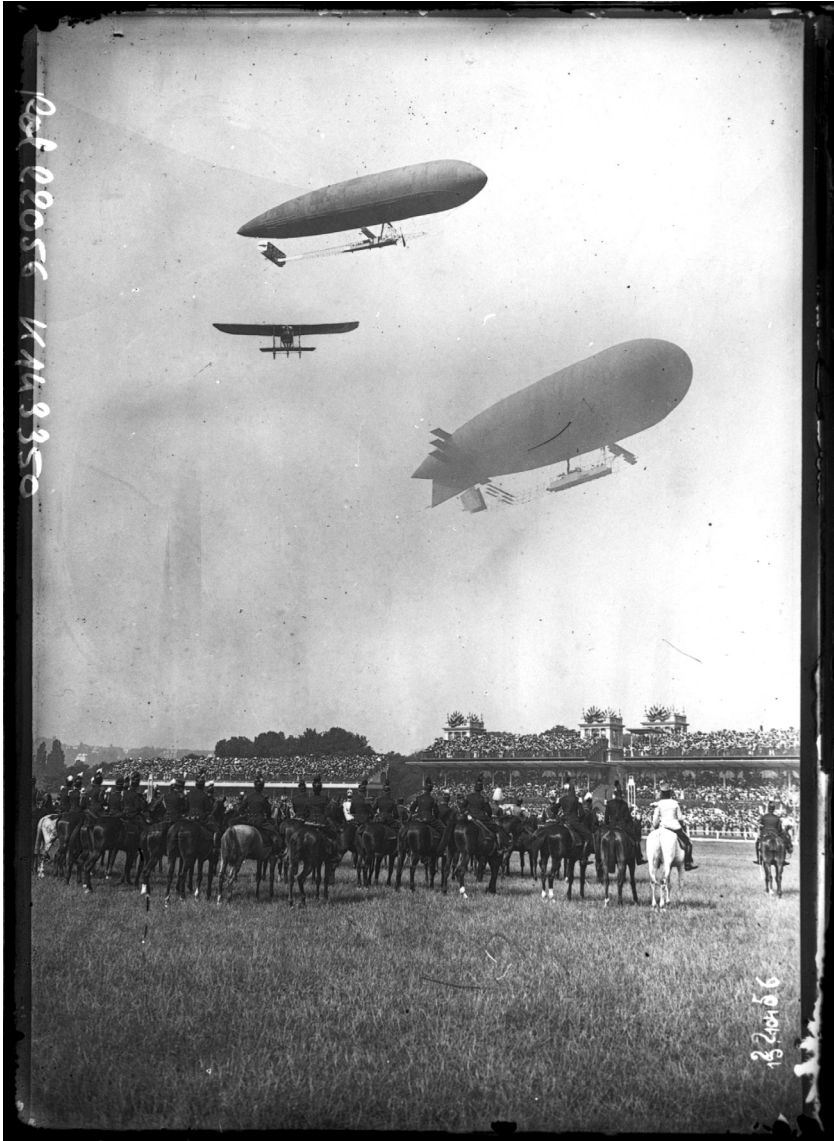


Figure 7.9  
 A photograph of an airplane and the *Clément-Bayard* and *Conté* airships flying above the 14 July 1912 military review in Longchamp. Agence Rol, *Revue du 14 juillet*, 14 July 1912. Source: gallica.bnf.fr / Bibliothèque nationale de France.

and neighboring countries. He was especially concerned with Germany, which he argued was “at the present time the country best equipped from the point of view of military ballooning.” According to the aristocrat, France’s early initiative had, in fact, become a hindrance, for the French ignored what went on outside their country. The Germans, on the other hand, had apparently been attentive. La Vault argued that they went to work after hearing of the thriving ballooning culture that was developing in France, with many German towns establishing “aeronautical sportive associations.” As empirical support for his concerns, La Vault offered the patterns in gas consumption for balloons in both countries. In 1905, France consumed 310,471 cubic meters against Germany’s 202,202; by 1910 Germany was consuming 1,261,162 cubic meters while France used only 810,983.<sup>61</sup>

Ultimately, La Vault’s talk of cubic meters did not draw much attention. While those in the thick of aeronautical circles continued to debate the merits and disadvantages of lighter-than-air machines, the popular press increasingly turned to the airplane as a way to continue affirming its central role in shaping modernity. Newspapers drove public enthusiasm for heavier-than-air flight by sponsoring races and meets.<sup>62</sup> In 1908, the owner of the *London Daily Mail*, Lord Northcliffe, announced a major publicity stunt: a financial prize to the aviator who crossed the English Channel first. Northcliffe initially tried to lure Wilbur Wright by secretly offering him an extra financial incentive, but the American refused. Instead, the French led the competition for the prize, and on 25 July 1909 Louis Blériot took off from a beach just west of Calais, crossed the body of water and landed in Dover aboard his *Blériot XI*. He immediately became a celebrity in both Britain and France. In Paris, more than 100,000 people greeted him at his arrival at the Gare du Nord. Charles Fontaine, a correspondent for *Le Matin* who had accompanied the aviator in his pursuit, immediately published a richly illustrated account of the feat that also featured a conclusion by Paul Painlevé, who predicted that in five years Blériot’s heroic feat would seem banal.<sup>63</sup> After the crossing, *Le Matin* also purchased the *Blériot XI* for 10,000 francs and displayed it in front of its headquarters to the delight of Parisian crowds (figure 0.2).

*Le Matin* also organized the first major airplane race featuring multiple stops. The 1910 Circuit de l’Est required aviators to fly from Paris to Troyes, Nancy, Mezieres, Douai, Amiens, and back to Paris. It was no accident that the route inched close to the Franco-German border, for in doing so *Le Matin* could draw attention to the event by fanning the flames of nationalism. The

newspaper's headlines called the completion of the first leg from Paris to Troyes "L'Austerlitz de l'Aviation" (a reference to Napoléon Bonaparte's greatest military victory), and celebrated as French airplanes approached the eastern border of the "mutilated nation."<sup>64</sup> The winner was Alfred Leblanc, a member of the Aéro-Club who began his aeronautical practices with balloons and became the first student at Blériot's flying school. Other publications immediately followed *Le Matin's* example and sponsored their own races.

Indeed, many aeronauts like Santos-Dumont and Henri Farman made the transition from lighter-than-air to heavier-than-air flight. But a new cast of characters also entered the fray. Some of the most celebrated pilots in the early years of aviation—men like Jules Védrines, a daring record breaker who became a fan favorite—began their careers as mechanics, and the charismatic *mécano* who worked his way up to the status of pilot became a common trope in the press.<sup>65</sup> While people of means continued to dominate aerial practices, the airplane appeared to be a more democratic technology than the balloon. Public enthusiasm was driven by a thriving visual economy that included the mass production of posters and a multitude of postcards featuring individual aviators and their machines—objects that offered both an admiring and aspirational mediating relationship between fan and idol (figure 7.10).<sup>66</sup>



Figure 7.10

A postcard featuring Jules Védrines Deperdussin's monoplane and his headshot. Bibliothèque Historique de la Ville de Paris (CPA.2663.056).

The press also had financial reasons for enthusiastically covering the airplane, for manufacturers purchased product placement inside news stories. For instance, in 1910 Farman Frères paid *Le Journal* 100 francs monthly for the newspaper to mention the brand every time it reported on one of its flights.<sup>67</sup> Blériot Aéronautique had a similar deal, and the fact that their contract rose from 1,800 francs in 1910 to 6,000 francs in 1911 shows just how much manufacturers were willing to pay to insert their names in news stories.<sup>68</sup> By 1914, Blériot Aéronautique and *Le Journal* had also come to an agreement that the newspaper would receive seven percent of the gross revenues from meets at the manufacturer’s aerodrome that the newspaper reported on.<sup>69</sup> At the turn of the century the press eagerly embraced the sport of ballooning as a promising avenue for publicity and profits. It now did the same with the airplane.

#### 4 THE AIRPLANE AND THE NATIONALIST REVIVAL: FROM THE LIGUE NATIONALE AÉRIENNE TO THE COMITÉ NATIONAL POUR L’AVIATION MILITAIRE

By the early 1910s, the French had embraced the idea that the airplane would be the more critical aerial technology for the nation, and the Ligue Nationale Aérienne (LNA) became a driving force to cultivate that mentality. Founded by the physiologist René Quinton in September 1908, by the end of 1909 the LNA had 15,870 members. More than half were affiliated with the organization’s headquarters in Paris, while the rest were spread throughout twelve sections in France, four sections in the colonies (Madagascar, Oran, Tunis, and Saigon), and one section in Egypt.<sup>70</sup> As benefits, members could attend LNA fêtes and received discounted rates for hotels, airplane meets, and entrance to airfields. On its part the LNA, like the Aéro-Club, funded prizes to encourage progress in aviation and financed the construction of monuments. But it also went further, organizing the construction of airfields across France and leading an initiative to expand aviation in France’s colonies, which the organization argued would “greatly contribute to the development of the commercial wealth of our dependencies and to the extension of our influence over the natives.”<sup>71</sup>

In its first couple of years of existence, the LNA partnered with the Ministry of War and the Ministry of Colonies to survey the climate, geography, and soil in colonial possessions, sponsored flight lessons for students at the École Coloniale, and purchased airplanes for colonial territories.<sup>72</sup> Not much had changed since Édouard Deburax’s misadventures, and North Africa still

occupied the imagination of those wanting to develop aviation in the colonies. Writing for *La Revue aérienne* (the LNA's mouthpiece), Captain Cortier argued that "the desert is, we may say, the promised land of aerial exploration." He believed that the airplane would have a moral effect, producing "on the hostile Arabs and the still savage Blacks an impression of French superiority that will emerge from the passage of the aerial men" (the racist hierarchies developed by the likes of Arthur de Gobineau remained influential well into the twentieth century). But even more important, Cortier argued that the airplane would aid in the identification of water sources so that ground troops could march through the desert, thus facilitating the circulation of materials and peoples across the inhospitable Saharan environment.<sup>73</sup> An illustration accompanying the article juxtaposed North Africa with Europe to highlight the region's size and the large distances that separated French settlements (figure 7.11). The seeds sown by Deburaux decades earlier were starting to bloom.

From the start, the LNA was a relentless lobbyist for greater investments in military aviation. Reflecting what Eugen Weber dubbed France's "second nationalist revival," beginning in late 1911 the LNA became much more militaristic.<sup>74</sup> As one writer argued in a January 1912 article titled "Armons-nous d'abord" (Let's arm ourselves first), aviation had become a matter of military concern and "sport [came] second."<sup>75</sup> There was evidence to sustain that claim. The 1913 Salon de l'Aviation mirrored the fact that the military had become the foremost consumer in the aeronautics market. One critic lamented how the Salon evoked images of H. G. Wells's *The War in the Air* and asked, "Where are the beautiful dreams of yesteryear? Where is the suppression of the borders?"<sup>76</sup>

The LNA celebrated when Raymond Poincaré, who was a member of its steering committee, was elected president of France in February 1913. The organization took that opportunity to spread its nationalist vision of air-mindedness among a broad swath of the French population. That same month, in an event celebrating both Lorraine (one of the territories ceded to Germany during the Franco-Prussian War) and aviation, the LNA inaugurated a section in the prestigious Lycée Louis le Grand—a breeding ground for the French elite. The event was attended by President Poincaré, and the 1,200 students present listened attentively to Painlevé lecture about "the stages of the glorious Aerial Epic" in France.<sup>77</sup> A few months later, *La Revue aérienne* published a poem by a coal miner from the north of France. Written in the local patois,

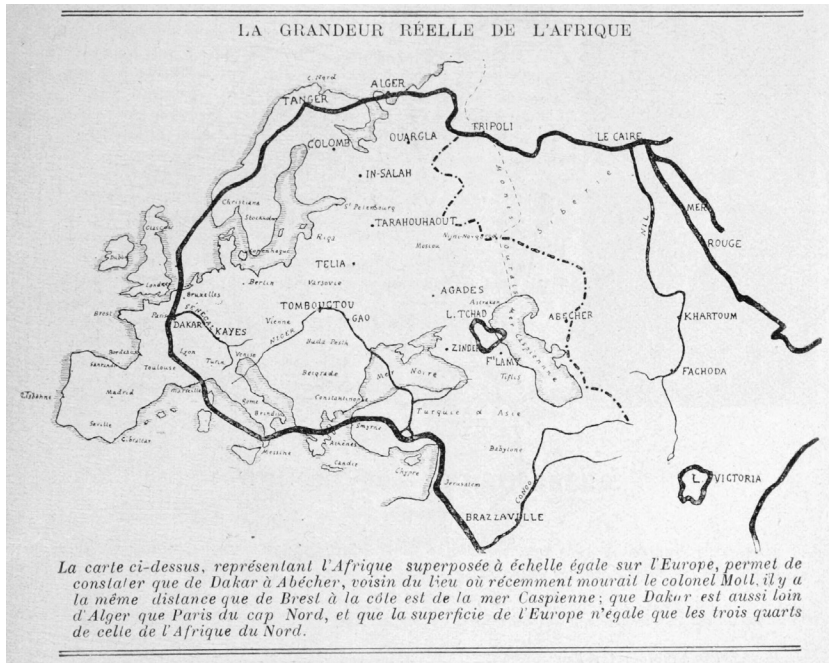


Figure 7.11

The caption in this image juxtaposing maps of North African and Europe drove home the point that the vast expanses of France’s colonial possessions posed a challenge for security, since the “the distance from Dakar to Abéché, near the site where colonel [Henri] Moll recently died [in combat], is the same as that from Brest to the eastern coast of the Caspian Sea.” Capitaine Cortier, “L’Aviation coloniale. Oeuvre humanitaire,” *La Revue aérienne*, 10 March 1911. Source: gallica.bnf.fr / Bibliothèque nationale de France.

the poem “L’Oziau de France” (*sic*) described how Adjudant Revanche and Capitaine Sanpeur (Adjutant Revenge and Captain Fearless) mocked German soldiers at the border as they flew to Alsace and Lorraine to greet their “frères.”<sup>78</sup>

The LNA also joined other aeronautical organizations like the Aéro-Club and representatives of France’s major newspapers to form the Comité National pour l’Aviation Militaire, which organized a public campaign to finance France’s aerial armament beyond the credits secured by the Parliament.<sup>79</sup> The money collected would serve to purchase new airplanes, build airfields, and train pilots (tellingly, none of it was to be directed to lighter-than-air flight). Local subscription committees popped up all over the place,

many seeking to reach the 15,000 francs necessary to receive the honor of baptizing an airplane for the army. The commune of Roanne, for example, organized a series of fêtes and raised 15,500 francs for an airplane to be named either *Ville de Roanne* or *Le Roannais*.<sup>80</sup> Organizations and private businesses also joined the effort, with the Touring-Club de France and the Cusenier Distillery raising enough to offer the army eponymous airplanes.<sup>81</sup> The LNA's propaganda effort with schoolchildren also paid off. In June 1912 a delegation of students from lycées and collèges held a ceremony at the Sorbonne where they offered the Comité National pour l'Aviation Militaire 104,000 francs with the expectation that it would finance the *Stanislas*, the *Jeanne-d'Arc*, and the *Potache* (a slang for schoolkid).<sup>82</sup> Even Sarah Bernhardt got behind the initiative, collecting enough money between acts to sponsor an airplane named after Edmond Rostand's hugely successful nationalist play *L'Aiglon*, in which she played the role of Napoléon Bonaparte's son.<sup>83</sup>

The effort to build up French airpower was fueled by nationalist sentiment and helped fan nationalist flames (figure 7.12). Subscribers to *Le Vétéran*, a publication serving those who had fought in the Franco-Prussian War, raised enough money to finance two airplanes. For the first, they chose the harmless name *Le Vétéran*. But they baptized the second with a name that was as unsubtle as it was cumbersome: *Oublier? . . . Jamais! 1870–71*.<sup>84</sup> Those outside of France also joined the initiative. Members of the LNA in Egypt proudly gifted the French army an airplane baptized *Louis Mouillard*, French colonists in New Caledonia collected 25,500 francs to finance an airplane in their name, and the small French community in Jerusalem offered its own modest contribution of 249 francs.<sup>85</sup>

By October 1913, donations to the Comité National pour l'Aviation Militaire, the local committees, and directly to the French Treasury totaled more than six million francs, which were then used to manufacture 208 airplanes, train seventy-five pilots, and build sixty-nine airfields.<sup>86</sup> Thanks to increased government funding and the subscription drive, between 1912 and July 1914 the French army had acquired 846 airplanes—a number that fell far short of its goal of 1,832 but that was still significantly more than any other country. On August 1, the day before the war broke out, the army could count on 134 airplanes in the front lines, 180 in reserve, and another 360 in other locations (like flying schools). But France's nascent aviation industry truly grew its wings during the war, supplying the army with more



Figure 7.12

An allegory depicting the nationalist enthusiasm surrounding the effort to build up France’s airpower. Workers, bourgeois, and children offer money to a triumphant Marianne as airplanes fly above. *Le Petit Journal*, 10 March 1912, Source: gallica.bnf.fr / Bibliothèque nationale de France.

than 50,000 airplanes and 93,000 engines (respectively more than 27 percent and 37 percent of the total for all the main belligerents).<sup>87</sup>

Enthusiasm for the airplane was bolstered by how the technology permitted the French to become emotionally invested in it both through democratic participation and individualist identification. Airplanes were cheaper to manufacture than airships, so a single airplane could be financed by just one organization, which then felt a sense of ownership over its collaboration to France's aerial fleet. In theory, there could be an airplane for any group out there, which meant that even those who were not privy to partaking in the heroics of joining the nascent army of the air could still claim that they had contributed to its success. An example was how a committee that counted the First Lady among its honorary members purchased an airplane and named it *Les Françaises*, in honor of the French women who rose to the occasion.<sup>88</sup> Meanwhile, in contrast to larger airship crews, an airplane was usually manned by one person. Thus, aviation fostered a greater identification between the machine and the individual heroic pilot—an association that was promoted through postcards and other collectible media. As an officer writing for *La Revue aérienne* put it, "If an airplane exists as a brand for the crowd, it exists above all thanks to the pilot who leads it to victory; . . . in an airship, the public knows only the name of the balloon, and since we are more easily occupied by men than by things, there you have a new cause for the airship to maneuver without being noticed."<sup>89</sup>

While one historian has referred to the period between 1910 and 1912 as a "genuine hecatomb" for aviators (about 280 died in accidents), promoters of the LNA's mission framed those deaths as courageous individual sacrifices for the nation.<sup>90</sup> Even Maurice Barrès, that vehement critic of "industrial mechanization," got behind the cause.<sup>91</sup> A member of the LNA's steering committee, he wrote the introduction to Roger Dépagniat's *Les Martyrs de l'aviation*, a book that was reissued at least twenty times. Barrès compared aviators to the knights of yore and described the emotions he felt while looking at a postcard featuring Lieutenant Jacques de Caumont climbing into his airplane (Caumont had flown in the Circuit de l'Est and participated in the Picardie maneuvers before dying of injuries sustained in a crash). "To enchant our skies and then bloody our soil, what a fascinating fate!" Barrès wrote. "After so many centuries being riveted to the ground, to know the euphoria of the bird and then to crash so quickly is a tragedy, but it is one of those where we must, more than admire, love the heroes."<sup>92</sup>

Lieutenant Jean Taboreau, a professor at Saint-Cyr Military Academy, argued that the martyrization of individual pilots could serve as a ritual that helped solidify the national imagined community, and he compared the death of each aviator to a stone thrown in the middle of a pond, whose ripples stirred the surrounding inert dead leaves.<sup>93</sup> By the time the First World War erupted, the tropes used to mythologize airmen into an elite distinct from the “ordinary” *poilu* were already in place. Although aviation played a marginal role in the conflict, the intensity with which the French population had followed it during the prewar years continued into the war and was exploited by the government, which used it as one of the chief topics for propaganda to bolster French morale in the home front.<sup>94</sup> If sacrificial patriotism could be used to mobilize support for science, it also could serve the cause of military carnage.

#### CONCLUSION: THE BALLOON DEFLATES

The question of who was the first to fly an airplane will elicit different answers around the world. Ask an American, and they will probably say the Wright brothers. Ask a Brazilian, and the answer will likely be Alberto Santos-Dumont. Some people in France still claim the title belongs to Clément Ader. At their heart, these debates have more to do with nationalist anxieties than with a drive to understand the forces that shaped the airplane’s development. The evidence here is unambiguously clear—the Wright brothers were the first to achieve sustained controlled flight with a heavier-than-air machine. But that fact in and of itself is not very interesting, or at least it is not as interesting as the questions that it elicits: in particular, how did the Wrights achieve that feat, and why did others surpass it so quickly?

To answer those questions, one needs to factor France into the equation. Counterfactuals are tricky business, but it is hard to imagine the Wrights succeeding without Octave Chanute’s role as a knowledge mediator who helped steer the brothers through the mass of existing aeronautical research (most of it French). Meanwhile, during the ballooning revival that began after the Franco-Prussian War, French aeronautical enthusiasts set up solid aeronautical institutions and cultivated a thriving culture of flight—both of which were essential for the Paris region to emerge as the global center for aviation in the years preceding the First World War. Although polemicists like Nadar (and a good number of historians that followed) pitted lighter-than-air and heavier-than-air flight as antithetical

to each other, I would argue that there was actually a much more complex genealogical relationship between the two.

That being said, lighter-than-air flight started to lose traction once the airplane became functional. The popular press turned its spotlight to the newer technology, as did wealthy patrons. German identification with airships, driven in large part by popular enthusiasm for Zeppelins, also contributed to the French embracing the airplane as *their* technology. In a sense, the nationalist revival structured what technology each nation embraced. While German authorities and industrialists piggybacked on “Zeppelinism” to drive up the manufacturing of airships,<sup>95</sup> the Ligue Nationale Aérienne aggressively campaigned for the French to embrace the airplane as a technology that would be critical for the country’s supremacy. In France, excitement for the airplane and nationalist flames fed off one another. Observers in the United States jealously commented on the LNA’s success in driving enthusiasm for military aviation. “In every part of France the people—men and women, rich and poor, young and old, and of all beliefs and factions—united their efforts with the Press and political, social, professional and sportive organizations, and all contributed their share to give France a large aerial fleet and make it supreme in arial armament,” read an appeal in *Aerial Age Weekly* calling for Americans to catch up with what was going on in Europe.<sup>96</sup>

If 1909 marked the beginning of the end for the ballooning revival, the outbreak of the First World War sealed its fate. Henceforth, from the legend created around the aces up to the symbolic status of the Concorde’s supersonic speed, French airmindedness would be dominated by heavier-than-air flight. But the hatching of this “winged nation” would have been very unlikely without the ballooning revival, and the cultural strands of sacrificial patriotism, aristocratic modernity, colonial anxiety, and technological cosmopolitanism persisted in shaping the French experience with flight long after balloons had receded from the picture.

## CONCLUSION

### The Balloon's Long Shadow

With the airplane came a new period in the history of flight. As indicated by the Aéro-Club's activity, lighter-than-air practices continued to thrive until the First World War. Nevertheless, the airplane rose to prominence in the public imaginary, in large part because the mass press was conditioned to turn its attention to the newest thing.<sup>1</sup> The speeds achieved by the new machines transformed how people perceived the world.<sup>2</sup> In the subsequent decades, artists incorporated this new sensorial experience into how they interpreted, depicted, and planned the modern environment—from Robert Delaunay's experiments in Cubism to Le Corbusier's High Modernism.<sup>3</sup> The airplane embodied speed and power in ways lighter-than-air flight could not, so the new technology also stimulated a cult of the machine that reached its apex with Futurism.

Yet the fact remains that the constitutive elements of French airmindedness persevered even after heavier-than-air flight arrived with tremendous éclat. While the airplane was a radically different artifact, the French engaged with it through the strands of sacrificial patriotism, aristocratic modernity, colonial anxiety, and technological cosmopolitanism—the same strands that had defined the emergence of French airmindedness during the decades of the ballooning revival.

The notion of sacrificial patriotism continued to inform how the French celebrated those who took flight. Like Sully Prudhomme's "Le Zénith," Edmond Rostand's 1922 "Le Cantique de l'Aile" developed the trope of aviators reincarnating the spirit of antique heroism in modern times:

Higher! ever higher, pilot! and glory to men  
Of great will!  
Glory to those stealers of the flame that we are!  
Glory to Humanity!<sup>4</sup>

The force of sacrificial patriotism in French airmindedness reached its apex with the cult of the ace in the First World War. Airmen like Roland Garros

and Georges Guynemer were celebrated for embracing aviation and offering their lives to the defense of France. However, whereas when Crocé-Spinelli and Sivel died in 1875 the official memorialization was a response to pressure from civil society, now the French state had become invested in aeronautical pursuits and actively promoted the nationalist celebration of Garros and Guynemer as martyrs.<sup>5</sup>

Meanwhile, events like the Grande Semaine d'Aviation testify to how the idea of aristocratic modernity endured. What could be more aristocratic than champagne and more modern than the Marquis de Polignac deftly marketing the beverage by associating it with the new technology? The persistence of aristocratic values also revealed itself in the image of the ace.<sup>6</sup> Both French and Germans liked to imagine that the war in the air was informed by aristocratic virtues. Although the reality was far less glamorous, popular culture and government propaganda presented airmen as chivalrous duelists—a theme explored in the beginning of Jean Renoir's *La Grande Illusion* (1937), when the German flying ace Captain von Rauffenstein and the French aviator he shot down (Captain de Boëldieu) bond over their aristocratic backgrounds and discover they share common acquaintances. If the anonymous *poilu* became a symbol for the industrial carnage of modern war, famous aces were portrayed as highly individualized actors who took control of their fate, operated under a strict code of honor, and engaged in an artistic battle in the skies. And although airmen clearly used an industrial technology, they were presented in the press as aristocrats who fought with spirit rather than as machine operators—an image that would only disappear with the advent of a new form of aerial warfare in the Second World War that emphasized bombing campaigns.<sup>7</sup>

When it came to continuities in colonial anxiety, one only needs to consider the pilots of La Ligne—as the famous Aéropostale company was known. Founded in 1918 by Pierre-Georges Latécoère (at first the company took his last name), Aéropostale sought to connect France, its colonies in Africa, and countries in South America by way of an air postal service. Although a financial mess (it was dissolved in 1933 after a scandal involving government subsidies and then merged with several other companies to create Air France), the enterprise acquired a powerful mythology that served French postwar colonial ideology. The epic reportages of Joseph Kessel and the literary work of Aéropostale's most famous pilot, Antoine de Saint-Exupéry (himself from aristocratic lineage), perpetuated the myth of French grandeur.<sup>8</sup>

But the appropriation of colonial airspace never produced the kind of supremacy imagined by its partisans, as was discovered by pilots who crashed

and barely survived the desert (like Saint-Exupéry) or were captured and held captive by indigenous groups (like Jean Mermoz). Just as with earlier ballooning fiction and experiments, these challenges were taken as examples of French bravery and selflessness in the pursuit of “civilization.” Ironically, these very failures in navigating colonial airspace were transformed into evidence of the superiority of the Gallic spirit. In works like *Vol de nuit* (1931) and *Terre des hommes* (1939), Saint-Exupéry portrayed the men of La Ligne as stoic and selfless heroes who flew into storms in Patagonia and endured the deadly Saharan sun to make sure people got their mail. They gave their lives to flying, sacrificing personal relationships for the greater good of France and humanity. In France, first the colonial aeronautical hero and then the colonial aviation hero were produced through the ambiguous interplay between illusions of technological supremacy and anxieties concerning the mastery of the winds, territories, humans, and machines. Even though they share very little stylistically, a thematic line connects Jules Verne and Saint-Exupéry.

Finally, although there was a paroxysm of nationalist passions in the years leading up to the First World War, the idea of technological cosmopolitanism remained latent and reemerged with the signing of the Treaty of Versailles. Once again, people started thinking about the ways flight could bring the world together, and the French still saw themselves (and were seen by many around the world) as central to that project.<sup>9</sup> Charles Lindbergh’s 1927 transatlantic flight was a climactic expression of that idea.<sup>10</sup> Sponsors of the Orteig Prize recognized Paris’s importance in the aeronautical imagination by requiring competitors to either depart from or arrive in the city. One might have expected the French to entrench themselves in a nationalist rivalry against the Americans when two of their war heroes (Charles Nungesser and François Coli) perished while gunning for the prize. Yet, the opposite happened. Lindbergh, the underdog, took off from Long Island’s Roosevelt Field on 20 May, and when news arrived in Paris that his arrival seemed imminent, 150,000 Parisians rushed to the Le Bourget Airport to greet the *Spirit of St. Louis*. A report by the director of the Paris police conveyed the scope of the phenomenon: “It must be recognized that we have never seen a crowd gather this fast before and whose enthusiasm knew no bounds.”<sup>11</sup>

In the days that followed, Parisians enthusiastically celebrated Lindbergh. He visited the Tomb of the Unknown Soldier at the Arc de Triomphe, waved the tricolore while yelling “Vive la France!” from the portico of the American Embassy, paid a visit to Nungesser’s mother, and received the Legion of Honor. When Henri Deutsch de la Meurthe’s widow gave him a

200,000-franc gift, he used it to start a fund for the widows of French airmen. And during his speech at the Chamber of Deputies, Lindbergh recounted the story of Benjamin Franklin witnessing his first balloon ascent and argued that his flight was “the forerunner of a great air service from America to France, from America to Europe, which will bring our peoples together.”<sup>12</sup> This, of course, was years before the traumatic kidnapping and murder of his twenty-month-old son, which caused the Lone Eagle to resent his celebrity. It was also before the economic and political crises that prompted him to embrace the isolationist politics of America First in the 1930s.

Charles Lindbergh’s flight, his leanings toward fascism, and the demise of La Ligne pointed toward major shifts in the global history of flight. After returning from France, Lindbergh became an ambassador for Pan Am, the American company that competed with Aéropostale for control over the air routes in South America. Pan Am and its signature *Clipper* emerged triumphant, signaling the beginning of “American ascendancy” in aviation.<sup>13</sup> Meanwhile, fascist regimes appropriated the airplane as a regenerative technology. The most obvious examples of the productive relationship between aviation and fascism were the propaganda raids of Benito Mussolini’s Regia Aeronautica.<sup>14</sup> Hermann Goering also promoted the idea that Germany “must become a nation of fliers,” and the association of Hitler with the spiritual technology of the airplane was a prominent feature in Leni Riefenstahl’s *Triumph of the Will* (1935), a quintessential display of the “reactionary modernist” aesthetic.<sup>15</sup> France was not immune to this process. The Croix de Feu (the country’s largest interwar nationalist league) and the Parti Social Français (the political party that emerged from it) mobilized enthusiasm for flight to promote their own authoritarian vision of mass politics.<sup>16</sup> Yet, aviation and fascism stopped being bedfellows once the latter became politically toxic with the defeat of Il Duce, the Nazis, and Vichy.

Even more than the previous war, the Second World War prompted a large-scale industrialization of aviation, which in turn rendered flight more accessible. Although more people were now flying than ever before, the memory of carpet bombing in Europe and of the nuclear destruction of Hiroshima and Nagasaki precluded the revival of any utopian ideas associated with flight. Meanwhile, France’s aeronautical core shifted from Paris to Toulouse. Starting in the late 1930s, the aviation industry grew into one of the cornerstones of the French modern economy, and it became an experimental ground for France’s style of state capitalism.<sup>17</sup> Toulouse, which had been Aéropostale’s

hub, developed a thriving aircraft industry that became a symbol for France's postwar state-planned modernization. The first Concorde took off from the city's Blagnac International Airport in 1969, and Airbus—one of the world's leading aircraft manufacturers—is still based in the area.<sup>18</sup> Paris is no longer the world capital of flight, but for the French flight is still very much a matter of national pride.

Like much that defines France today, from debates concerning *laïcité* to the Tour de France, the country's special relationship with flight can only be understood in light of the Third Republic context it emerged from. It was in the decades following the Franco-Prussian War that French aeronauts self-consciously came together in associations to champion aeronautical pursuits, making Paris the epicenter for all matters concerning flight. In a period where few took seriously the prospects of humans commanding the skies, these men and women from diverse backgrounds sustained public enthusiasm for flight by mobilizing the balloon as a technology of republican science, aristocratic distinction, imperial management, and spectacular cosmopolitanism. The contours for French airmindedness, then, did not emerge *ex nihilo* with soaring airplanes, but with balloons being carried by the wind.



## NOTES

### INTRODUCTION

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3. Henry de La Vaulx, "La Traversée de la Méditerranée en ballon," *L'Écho de Paris*, 1 September 1901.
4. Gaston Tissandier, "Une fabrique d'aérostats," *La Nature*, 29 September 1883, 280–282.
5. "Personnel d'aéronautiques qu'on pourrait trouver dans le ressort de la Préfecture de Police," 2 August 1888; "Recensement du matériel et du personnel aérostatique des associations civiles," 12 April 1888, ANF, F/7/12650.
6. *Aéro-Club de France: Annuaire pour 1910* (Paris: 1910), 200.
7. *The Aero Club of America, Navigating the Air: A Scientific Statement of the Progress of Aeronautical Science up to the Present Time* (New York: Doubleday, 1907), x.
8. "M. Santos-Dumont Is Disappointed," *New York Herald*, 26 August 1902.
9. Stephen Kern, *The Culture of Time and Space, 1880–1918* (Cambridge, MA: Harvard University Press, 2003).
10. Vanessa R. Schwartz, *It's So French! Hollywood, Paris, and the Making of Cosmopolitan Film Culture* (Chicago: The University of Chicago Press, 2007).
11. Hollis Clayson, *Illuminated Paris: Essays on Art and Lighting in the Belle Époque* (Chicago: University of Chicago Press, 2019), 3–10.
12. Peter S. Soppelsa, "The End of Horse Transportation in Belle-Époque Paris," *ISLE: Interdisciplinary Studies in Literature and Environment* 24, no. 1 (2017): 113–129.
13. Elizabeth Emery, "Protecting the Past: Albert Robida and the *Vieux Paris* Exhibit at the 1900 World's Fair," *Journal of European Studies* 35, no. 1 (2005): 65–85. On the modernity of "old cities," see Patrick Luiz Sullivan De Oliveira, "Imagining an

Old City in Nineteenth-Century France: Urban Renovation, Civil Society, and the Making of Vieux Lyon,” *Journal of Urban History* 45, no. 1 (2019): 67–98.

14. Seymour L. Chapin, “A Legendary Bon Mot?: Franklin’s ‘What Is The Good of a Newborn Baby?’,” *Proceedings of the American Philosophical Society* 129, no. 3 (1985): 278–290.

15. B. Baden-Powell, *Ballooning as a Sport* (Edinburgh: William Blackwell and Sons, 1907), x.

16. Masha Belenky makes a similar observation in her analysis of the omnibus, which she argues was representative of a “cultural modernity” that “involves the perception and representation of a phenomenon as new, a self-conscious understanding of one’s moment as radically departing from what preceded it.” *Engines of Modernity: The Omnibus and Urban Culture in Nineteenth-Century Paris* (Manchester: Manchester University Press, 2019), 4.

17. David Edgerton, “From Innovation to Use: Ten Eclectic Theses on the History of Technology,” *History and Technology* 16, no. 2 (1999): 111–136 and *The Shock of the Old: Technology and Global History since 1900* (Oxford: Oxford University Press, 2007). Examples of studies influenced by Edgerton’s call for a methodological shift include Ann Norton Greene’s *Horses at Work: Harnessing Power in Industrial America* (Cambridge, MA: Harvard University Press, 2008) and Annapurna Mamidipudi and Wiebe E. Bijker’s “Innovation in Indian Handloom Weaving,” *Technology and Culture* 59, no. 3 (2018): 509–545.

18. On the invention and early history of the balloon, see Charles Coulston Gillispie, *The Montgolfier Brothers and the Invention of Aviation, 1783–1784* (Princeton, NJ: Princeton University Press, 1983); Marie Thébaud-Sorger, *L’Aérostation au temps des Lumières* (Rennes: Presses Universitaires de Rennes, 2009); Michael R. Lynn, *The Sublime Invention: Ballooning in Europe, 1783–1820* (London: Pickering & Chatto, 2010); Mi Gyung Kim, *The Imagined Empire: Balloon Enlightenments in Revolutionary Europe* (Pittsburgh: University of Pittsburgh Press, 2016); Clare Brant, *Balloon Madness: Flights of Imagination in Britain, 1783–1786* (Woodbridge, UK: Boydell Press, 2017). As Eric Schatzberg shows in *Wings of Wood, Wings of Metal: Culture and Technical Choice in American Airplane Materials, 1914–1945* (Princeton, NJ: Princeton University Press, 1999), even new design materials, like the case of metal for airplanes in the early twentieth century, require major cultural work to be configured as modern.

19. Lee Vinsel and Andrew L. Russell, *The Innovation Delusion: How Our Obsession with the New Has Disrupted the Work that Matters the Most* (New York: Currency, 2020).

20. Marc Bloch, *The Historian’s Craft*, trans. Peter Putnam (New York: Vintage Books, 1953), 29–30.

21. For a related argument focusing on a different technology and different period, see Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 1998).

22. Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, rev. ed. (London: Verso, 2006).

23. The literature on nineteenth-century French civil society is vast, but critical studies include Maurice Agulhon, *The Republic in the Village: The People of the Var from the French Revolution to the Second Republic*, trans. Janet Lloyd (Cambridge: Cambridge University Press, 1982); Philip Nord, *The Republican Moment: Struggles for Democracy in Nineteenth-Century France* (Cambridge, MA: Harvard University Press, 1995); Janet R. Horne, *A Social Laboratory for Modern France: The Musée Social and the Rise of the Welfare State* (Durham, NC: Duke University Press, 2002); Stéphane Gerson, *Pride of Place: Local Memories and Political Culture in Nineteenth-Century France* (Ithaca, NY: Cornell University Press, 2003); and Pierre Rosanvallon, *The Demands of Liberty: Civil Society in France since the Revolution*, trans. Arthur Goldhammer (Cambridge, MA: Harvard University Press, 2007). The now-obsolete argument that French civil society was weak and stale is best articulated in Stanley Hoffman, "Paradoxes of the French Political Community," in Stanley Hoffman et al., *In Search of France: The Economy, Society, and Political System of the Twentieth Century* (Cambridge, MA: Harvard University Press, 1963), 1–117.

24. On the relationship between science and the state, see Robert Fox, *The Savant and the State: Science and Cultural Politics in Nineteenth-Century France* (Baltimore, MD: The Johns Hopkins University Press, 2012).

25. Annelise Maugue, *L'Identité masculine en crise au tournant du siècle, 1871–1914* (Paris: Rivages, 1987); Robert A. Nye, *Masculinity and Male Codes of Honor in Modern France* (New York: Oxford University Press, 1993); Judith Surkis, *Sexing the Citizen: Morality and Masculinity in France, 1870–1920* (Ithaca, NY: Cornell University Press, 2006); Christopher E. Forth, *The Dreyfus Affair and the Crisis of French Manhood* (Baltimore, MD: Johns Hopkins University Press, 2006); Karen Offen, *Debating the Woman Question in the French Third Republic, 1870–1920* (Cambridge: Cambridge University Press, 2018).

26. Karen Offen, "Depopulation, Nationalism, and Feminism in Fin-de-Siècle France," *The American Historical Review* 89, no. 3 (1984): 648–676.

27. Ruth Oldenziel, *Making Technology Masculine: Men, Women and Modern Machines in America, 1870–1945* (Amsterdam: Amsterdam University Press, 1999).

28. Patricia Mainardi, *Art and Politics of the Second Empire: The Universal Expositions of 1855 and 1867* (New Haven, CT: Yale University Press, 1987); Brigitte Schroeder-Gudehus and Anne Rasmussen, *Les Fastes du progrès: Le guide des Expositions universelles 1851–1992* (Paris: Flammarion, 1992); Anne-Laure Carré, Marie-Sophie Corcy, Christiane Demeulenaere-Douyère, and Liliane Hilaire-Pérez, eds., *Les Expositions universelles en France au XIXe siècle* (Paris: CNRS Éditions, 2012).

29. Vanessa R. Schwartz, *Spectacular Realities: Early Mass Culture in Fin-de-Siècle Paris* (Berkeley: University of California Press, 1999).

30. One example of how important mediatic representations were in shaping the foreign image of Paris was how French graphic artists were key in fashioning the image of Paris as “*la ville lumière*,” even if cities in the United States, Germany, and Britain were far ahead in applying electricity to urban lighting. See Shelley Wood Cordulack, “A Franco-American Battle of Beams: Electricity and the Selling of Modernity,” *Journal of Design History* 18, no. 2 (2005): 147–166.

31. Christopher S. Thompson, *The Tour de France: A Cultural History* (Berkeley: University of California Press, 2006); Éamon Ó. Cofaigh, “Motor Sport in France: Testing-Ground for the World,” *The International Journal of the History of Sport* 28, no. 2, (2011): 191–204; Hugh Dauncey and Geoff Hare, “Cosmopolitanism United by Electricity and Sport: James Gordon Bennett Jnr and the Paris Herald as Sites of Internationalism and Cultural Mediation in Belle Époque France,” *French Cultural Studies* 25, no. 1 (2014): 38–53; Eric Reed, *Selling the Yellow Jersey: The Tour de France in the Global Era* (Chicago: University of Chicago Press, 2015).

32. For a thorough analysis of how the Dreyfus Affair tore apart French society, see Ruth Harris, *Dreyfus: Politics, Emotion, and the Scandal of the Century* (New York: Metropolitan Books, 2010).

33. George Henry Payne, “The Balloon Club of Paris,” *Ainslee’s Magazine* 4, no. 5 (1899): 574–575.

34. Books on the technological progression of airplanes and biographies of aviators dominated the historiography of flight until the 1980s, when the field made a turn toward social, political, and cultural analyses. The first to take a more contextual approach was Joseph J. Corn, who in 1983 published *The Winged Gospel: America’s Romance with Aviation, 1900–1950* (New York: Oxford University Press, 1983). A few years later, James R. Hansen called for others to follow Corn’s example, “Aviation History in the Wider View,” *Technology and Culture* 30, no. 3 (1989): 643–656. Since then, numerous studies on airmindedness have been published, including Peter Fritzsche, *A Nation of Fliers: German Aviation and the Popular Imagination* (Cambridge, MA: Harvard University Press, 1992); Jonathan Franklin William Vance, *High Flight: Aviation and the Canadian Imagination* (Toronto: Penguin, 2002); Scott W. Palmer, *Dictatorship of the Air: Aviation Culture and the Fate of Modern Russia* (New York: Cambridge University Press, 2007); Guillaume de Syon, *Zeppelin! Germany and the Airship, 1900–1939* (Baltimore, MD: Johns Hopkins University Press, 2007); David Edger-ton, *England and the Aeroplane: Militarism, Modernity and Machines* (London: Penguin, 2013); Jenifer Van Vleck, *Empire of the Air: Aviation and the American Ascendancy* (Cambridge, MA: Harvard University Press, 2013); Brett Holman, *The Next War in the Air: Britain’s Fear of the Bomber, 1908–1941* (Farnham, UK: Ashgate, 2014); Willie Hiatt, *The Rarified Air of the Modern: Airplanes and Technological Modernity in the Andes* (New York: Oxford University Press, 2016). For a more in-depth analysis on the growing historiography of flight, see Patrick Luiz Sullivan De Oliveira, “Flight,” *Encyclopedia of the History of Science* (June 2021), <https://doi.org/10.34758/4xby-mq38>.

35. One notable exception is de Syon's *Zeppelin!*
36. See endnote 18 above. The only study to address French ballooning toward the end of the nineteenth century is Luc Robène, *L'Homme à la conquête de l'air: des aristocrates éclairés aux sportifs bourgeois*, 2 vols. (Paris: L'Harmattan, 1998). However, its comprehensive coverage from 1783 to the First World War precludes a more in-depth analysis of the critical decades between 1870 and 1914. Popular historian Richard Holmes also wrote a history of ballooning in the West from 1783 to the end of the nineteenth century, with much of the focus on France. But *Falling Upwards: How We Took to the Air* (New York: Pantheon Books, 2013) is not so much a critical analysis of ballooning than it is, as Holmes put it, "my cluster of balloon stories," 351.
37. Nathalie Roseau and Marie Thébaud-Sorger, eds., *L'Emprise du vol de l'invention à la massification: Histoire d'une culture modern* (Genève: Métis, 2013).
38. Robert Wohl, *A Passion for Wings: Aviation and the Western Imagination, 1908–1918* (New Haven, CT: Yale University Press, 1994), 2.
39. Charles H. Gibbs-Smith, *The Invention of the Aeroplane (1799–1909)* (London: Faber and Faber, 1966); *The Rebirth of European Aviation, 1902–1908* (London: Her Majesty's Stationery Office, 1974).
40. John M. Staudenmaier, *Technology's Storytellers: Reweaving the Human Fabric* (Cambridge, MA: MIT Press, 1985).
41. The historiography informed by the Social Construction of Technology (SCOT) approach is too vast to cite here, but the foundational text is Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, eds., *The Social Construction of Technological Systems: New Directions in Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987).

## CHAPTER 1

1. Gillispie, *The Montgolfier Brothers*, 3–8.
2. On the competition between the Montgolfiers and Charles, see Mi Gyung Kim, "Invention as Social Drama: From Ascending Machine to Aerostatic Globe," *Technology and Culture* 54, no. 4 (2013): 853–887.
3. Robène, *L'Homme à la conquête de l'air*, vol. 1, 116–118; Thébaud-Sorger, *L'Aérostation*, 32.
4. Marie Thébaud-Sorger, *Une histoire des ballons: Invention, culture matérielle et imaginaire, 1783–1909* (Paris: Éditions du Patrimoine, 2010), 41–85; Lynn, *The Sublime Invention*, 143–161; Robène, *L'Homme à la conquête*, vol. 1, 127–143; Georges Lecocq, *Étude sur les faïences patriotiques au ballon* (Paris: Raphael Simon, 1876).
5. Thébaud-Sorger, *Une histoire des ballons*, 43; Paul Keen, "The 'Balloomania': Science and Spectacle in 1780s England," *Eighteenth-Century Studies* 39, no. 4 (2006): 507–508, 520.

6. Thébaud-Sorger, *L'Aérostation*, 76. Members of the Academy of Sciences also embraced the balloon to bring attention to their own experiments, as was the case with Lavoisier, who was diligently pursuing ambitious reforms in the field of chemistry. Mi Gyung Kim, "'Public' Science: Hydrogen Balloons and Lavoisier's Decomposition of Water," *Annals of Science* 63, no. 3 (2006): 291–318.
7. Richard Gillespie, "Ballooning in France and Britain, 1783–1786: Aerostation and Adventurism," *Isis* 75, no. 2 (1984): 249–268; Marie Thébaud-Sorger, "'Nation fière, nation légère . . .': La France, l'Angleterre et l'invention des ballons à la fin du XVIIIe siècle," *Documents pour l'histoire des techniques* 19 (2010): 229–241.
8. Siobhan Carroll, *An Empire of Air and Water: Uncolonizable Space in the British Imagination, 1750–1850* (Philadelphia: University of Pennsylvania Press, 2015), 118–143.
9. Provincial academies also investigated how to improve balloons. The Académie de Lyon promoted a contest asking the best means to steer the balloon and received 101 essays, although none were deemed worthy of a prize. James Martin Hunn, "The Balloon Craze in France, 1783–1799: A Study in Popular Science," PhD diss. (Vanderbilt University, 1982), 308–374.
10. Hunn, "The Balloon Craze," 236–237, 322.
11. Hunn, "The Balloon Craze," 418–420.
12. Mona Ozouf, *Festivals and the French Revolution*, trans. Alan Sheridan (Cambridge, MA: Harvard University Press, 1988), 132.
13. LoC-TC, 4/3; Hunn, "The Balloon Craze," 424–426; Jacques Godechot, "L'Aérostation militaire sous le Directoire," *Annales historiques de la Révolution française* 8, no. 45 (1931): 225.
14. Charles Coulston Gillispie, *Science and Polity in France: The Revolutionary and Napoleonic Years* (Princeton, NJ: Princeton University Press, 2004).
15. Robène, *L'Homme à la conquête*, vol. 1, 76–93; Godechot, "L'Aérostation militaire," 214, 221; Hunn, "The Balloon Craze," 446; Lucien Robineau, "Lazare Carnot et les Compagnies d'Aérostiers de la République," in *Lazare Carnot, ou le savant-citoyen: Actes du colloque tenu en Sorbonne les 25, 26, 27, 28 et 29 janvier 1988*, ed. Jean-Paul Charney (Paris: Presses de l'Université de Paris-Sorbonne, 1990), 413–427.
16. Godechot, "L'aérostation militaire," 216–220.
17. Hunn, "The Balloon Craze," 442–446.
18. Patrice Bret, "Recherche scientifique, innovation technique et conception tactique d'une arme nouvelle: L'aérostation militaire (1793–1799), in *Lazare Carnot, ou le savant-citoyen*, 430–451.
19. Quoted in Hunn, "The Balloon Craze," 449.
20. Cen. A. F. Lomet, "Mémoire sur l'emploi des machines aérostatiques aux reconnaissances militaires et à la construction des cartes géographiques," *Journal de l'École Polytechnique*, Onzième Cahier, Tome IV (1802): 252–258.

21. ANF, F/12/2214, F/12/2215, and F/12/2430.
22. Maurice Crosland, *Gay-Lussac: Scientist and Bourgeois* (Cambridge: Cambridge University Press, 1978), 26–31.
23. Correspondence in LoC-TC, 1/20-21–22.
24. Magistrats de la Capitale d’Hannovre to Blanchard, 30 May 1788, LoC-TC, 1/22.
25. Tom D. Crouch, *The Eagle Aloft: Two Centuries of the Balloon in America* (Washington, DC: Smithsonian Institution Press, 1983), 102–141.
26. Hunn, “The Balloon Craze,” 456; Robène, *L’Homme à la conquête*, vol. 1, 261–278; LoC-TC, 23/13.
27. Robène, *L’Homme à la conquête*, vol. 1, 279–284.
28. Robène, *L’Homme à la conquête*, vol. 1, 284–286
29. “Madame Blanchard, née Magdeleine-Sophie Armant,” LoC-TC, 2/2.
30. The BHVP’s catalog indicates a “Collection Godard,” (f. 32348) that might be useful in developing a more thorough history of the Godard dynasty, but librarians have not been able to locate it.
31. Philippe Foubert, *Eugène Godard: Une vie en ballon, 1827–1890* (Paris: Bernard Giovanangeli, 2014).
32. B. Gastineau, *La Vie et les ascensions de l’aéronaute Eugène Godard* (Brussels: Imp. E. Vandenkerckhoven and Jules Procureur, ca. 1870s), 14.
33. LoC-TC, 9/17.
34. “Ceux qui disparaissent,” *L’Aérophile*, 15 May 1908, 196–197.
35. Dupuis-Delcourt, *Nouveau manuel complet d’aérostation, ou guide pour servir à l’histoire et la pratique des ballons* (Paris: Librairie Encyclopédique de Roret, 1850), 187.
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37. Numerous Athénée “Bulletin des cours du soir,” LoC-TC, 25/7.
38. “Société Aérostatique et Météorologique de France,” October 1852, LoC-TC, 26/8; Dupuis-Delcourt, “Considérations relatives à l’établissement d’un Musée Aérostatique,” Loc-TC, 27/6.
39. A. Morin to Ministre de l’Agriculture, du Commerce et des Travaux Publics, 28 March 1865, ANF, F/12/2214.
40. Jennifer Tucker, “Voyages of Discovery on Oceans of Air: Scientific Observation and the Image of Science in an Age of ‘Balloony,’” *Osiris* 11 (1996): 144–176.
41. Robène, *L’Homme à la conquête*, vol. 1, 332. For a more extensive analysis of the utopian moment in lighter-than-air flight, see Patrick Luiz Sullivan De Oliveira, “The Utopian Machine: Lighter-than-Air Flight and Utopianism in Nineteenth-Century

France,” forthcoming in *Flight Culture and the Human Experience*, ed. Scott W. Palmer (College Station: Texas A&M University Press, 2025).

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74. Ponton d’Amécourt, *Collection de mémoires sur la locomotion aérienne sans ballons* (Paris: Gauthier-Villars, 1864–1867), v–vii.
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89. Nadar, *Mémoires du Géant*, 396.
90. BHVP, MS-NA-472, f. 333, 363, 381, 383, 390, 395, 398–399.
91. "Société de navigation aérienne," *L'Aéronaute*, 7 February 1864, 1–2.
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103. BHVP, MS-NA-469, MS-NA-470, MS-NA-471.
104. Nadar, *Mémoires du Géant*, 232.

105. BnF, NAF 24989: Nadar to directeur du *Petit Bleu*, 28 November 1899 (f. 145–146); Nadar to directeur du *Le Vélo*, 15 August 1901 (f. 162).
106. Nadar to Blériot, 25 July 1909, BnF, NAF 24988, f. 100.
107. BHVP, MS-NA-474, f. 1–138.
108. Jules Cousin to Nadar, 25 February 1881, BHVP, MS-NA-474, f. 10–11.
109. Juliette Jestz, “Soutenir l’aérostation pour mieux la tuer. La collection Nadar conservée à la Bibliothèque historique de la Ville de Paris et au musée Carnavalet,” *In Situ*, no. 35 (2018), <http://journals.openedition.org/insitu/16768>.

## CHAPTER 2

1. Stéphane Audoin-Rouzeau, *1870: La France dans la guerre* (Paris: Armand Collin, 1989); Nord, *The Republican Moment*.
2. Hermione Quinet, *Paris, journal du siège par Mme Quinet, précédé d'un préface d'Edgar Quinet* (Paris: E. Dentu, 1873), i.
3. Michael Howard, *The Franco-Prussian War: The German Invasion of France, 1870–1871* (New York: Macmillan, 1961). Although it came out too late for me to engage with it in this book, readers should also refer to Rachel Chrastil's *Bismarck's War: The Franco-Prussian War and the Making of Modern Europe* (New York: Basic Books, 2023), an updated survey of the conflict that focuses especially on the experience of civilians and ordinary soldiers.
4. Henri Dabot, *Griffonnages quotidiens d'un bourgeois du Quartier latin (1869–1871)*, ed. Jacqueline Lalouette (Paris: Mercure de France, 2011 [1895]), 55.
5. Felix M. Whitehurst, *My Private Diary during the Siege of Paris*, Vol. 1 (London: Tinsley Brothers, 1875), 6.
6. Dabot, *Griffonnages*, 59.
7. Audoin-Rouzeau, *1870*, 143–145.
8. Edmond de Goncourt, *Paris under Siege, 1870–1871: From the Goncourt Journal*, ed. and trans. George J. Becker (Ithaca, NY: Cornell University Press, 1969), 53.
9. Quinet, *Paris*, 46.
10. “Proclamation du Gouvernement de la Défense nationale à l’armée,” 5 September 1870, in *La Guerre de 1870–71: L’investissement de Paris (Documents annexes)* (Paris: Librairie Militaire R. Chapelot, 1908), 1–2.
11. “Circulaire adressée aux Administrateurs provisoires et aux Préfets des départements de la République par le Ministre de l’Intérieur,” 5 September 1870, in *La Guerre de 1870–71: L’investissement de Paris (Documents annexes)*, 2–3.
12. Alistair Horne, *The Fall of Paris: The Siege and the Commune 1870–1* (London: Macmillan, 1965), 69.

13. *La Guerre de 1870–71: L’investissement de Paris* (Paris: Librairie Militaire R. Chapelot, 1908), 215, 49–53; Melvin Kranzberg, *The Siege of Paris, 1870–1871* (Ithaca, NY: Cornell University Press, 1950), 28–29.
14. Xavier Raymond, “Les Fortifications et les défenses de Paris,” *Revue des Deux Mondes* 89 (1870), 196–197; Audoin-Rouzeau, *1870*, 206.
15. Wilfrid de Fonvielle, *Le Siège de Paris vu à vol d’oiseau* (Paris: J. Hetzel, n.d.), 51.
16. Victor Hugo, “Introduction,” *Paris-guide par les principaux écrivains et artistes de la France* (Paris: A. Lacroix, Verboeckhoven et Cie, 1867), xxii.
17. Dabot, *Griffonages*, 55.
18. Report by M. Chassinat, Directeur Général des Postes (collationné le 19 février 1880), ANF, F/90/19092; *La Guerre de 1870–71: L’investissement de Paris*, 217–218; François-Frédéric Steenackers, *Les Télégraphes et les postes pendant la guerre de 1870–1871: Fragments de mémoires historiques* (Paris: G. Charpentier, 1883), 31–32.
19. “Registre du Comité de défense. Séance du 18 août 1870,” in *La Guerre de 1870–71: l’investissement de Paris (Documents annexes)*, 56–57
20. Quoted in Paul Maincent, *Genèse de la Poste Aérienne du Siège de Paris* (Rouen: Bellanger, 1951), 40–41.
21. *La Guerre de 1870–71: L’investissement de Paris*, 214; Victor Debuchy, *Les Ballons du siège de Paris* (Paris: Editions France-Empire, 1973), 22.
22. “Notes personnelles: Siège de Paris,” BnF, NAF 25011, f. 293.
23. Nadar, “Mémoire adressé au général Trochu,” 21 August 1870, BHVP, MS-NA-474, f. 3–16.
24. Le colonel Usquin au Gouverneur de Paris, 22 August 1870, in *La Guerre de 1870–71: l’investissement de Paris (Documents annexes)*, 321–322.
25. Maincent, *Genèse*, 49–51.
26. “Notes personnelles: Siège de Paris,” BnF, NAF 25011, f. 275, 299, 300, 307.
27. “Des aérostats employés comme matériel de guerre,” *Le Gaulois*, 5 September 1870.
28. Wilfrid de Fonvielle, “Aérostation militaire,” *La Liberté*, 12 September 1870.
29. Nadar, *Les Ballons en 1870: Ce qu’on aurait pu faire, ce qu’on a fait* (Paris: Chatelain, 1870)
30. *La Guerre de 1870–71: L’investissement de Paris*, 215; Debuchy, *Les Ballons*, 28–30.
31. Maincent, *Genèse*, 66–84; Debuchy, *Les Ballons*, 43.
32. Articles in *Le Figaro*, 23 and 24 September 1870.
33. Later the rate was divided as 3,500 francs for the balloon, 300 francs for gas, and 200 francs for the aeronaut. *Journal officiel de la République française*, 2 March 1871.

34. L. Simonin, "L'Aérostation pendant le siège de Paris," *Revue des deux mondes* 90 (1870): 613–615.
35. Maincent, *Genèse*, 95–99.
36. André, "La Poste pendant le siège de Paris," *Le Figaro*, 25 September 1870.
37. André, "La Poste pendant le siège de Paris."
38. Maincent, *Genèse*, 104–108.
39. *Journal officiel de la République française*, 27 September 1870.
40. Ernest Saint-Edme, *La Science pendant le siège de Paris* (Paris: E. Dentu 1871), 64.
41. BHVP, MS-NA-471, f. 331–421.
42. Nadar, *Le guide de l'aéronaute par Nadar Tournachon* (n.d.), 4 (BHVP, 8-BRO-032615). In total, eighteen balloons were captained by professional aeronauts, seventeen by volunteers, and thirty by sailors. François Mallet, *Les Aéronautes, les colombophiles du siège de Paris* (Paris: F. Louis Vivien, 1909), 11.
43. Letters transported by the siege balloons were delivered all over Europe, the United States, Latin America, Africa, Asia, and Oceania. Gérard Lhéritier, *Les Ballons montés, boules de moulins, pigeongrammes, papillons de Metz: Historique, évaluation, classification, cotation* (Nice: Valeur philatélique, 1990), 209–220.
44. "Actes officiels," *Le Figaro*, 24 November 1870.
45. G. de Clerval, ed., *Les Ballons pendant le siège de Paris: Récits de 60 voyages aériens* (Paris: F. Watelier, 1871); Albert Fernique, *Un voyage en ballon pendant le siège de Paris: Novembre 1870* (Saint-Quentin: Imprimerie Jules Moureau, 1871); Alfred Martin, *Sept heures cinquante minutes en ballon: Souvenir du siège de Paris* (Paris: Lacroix, Verboeckhoven et Cie, 1871); Gaston Tissandier, *En ballon! pendant le siège de Paris: Souvenirs d'un aéronaute* (Paris: E. Dentu, 1871); Eugène Farcot, *Voyage du ballon le Louis-Blanc* (Paris: Le Chevalier, 1874).
46. Dabot, *Griffonages*, 75; Whitehurst, *My Private Diary*, 160; Rebecca L. Spang, "'And They Ate the Zoo': Relating Gastronomic Exoticism in the Siege of Paris," *MLN* 107, no. 4 (1992): 752–773.
47. Jules Claretie, *Paris assiégé: Tableaux et souvenirs* (Paris: A. Lemerre, 1871), 131.
48. Dabot, *Griffonages*, 100–101.
49. Spang, "'And They Ate the Zoo,'" 754.
50. Colin Foss, *The Culture of War: Literature of the Siege of Paris 1870–1871* (Liverpool: Liverpool University Press, 2020), 71–83.
51. Spang, "'And They Ate the Zoo,'" 760.
52. Goncourt, *Paris under Siege*, 80–82; Victor Debuchy, *La Vie à Paris pendant le siège 1870–1871* (Paris: L'Harmattan, 1999), 36; Denis Bingham, *Journal of the Siege of Paris* (London: Smith, Elder and Co., 1871), 7, 16.

53. "Paris in 1870: Letters of Mary Corinna Putnam," *The American Historical Review* 22, no. 4 (1917): 836–841.
54. Kranzberg, *The Siege of Paris*, 98–103; Goncourt, *Paris under Siege*, 114.
55. Press clippings in "Les Ballons pendant le Siège de Paris. Recueil factice de coupures de presse," BHVP, Actualités 27.
56. Nina Hesse to her mother, 25 September 1870, ANF, AB/XIX/43.
57. Stanley J. Pincetl, Jr. and Georges Clemenceau, "A Letter of Clemenceau to His Wife by Balloon," *French Historical Studies* 2, no. 4 (1962): 511–514.
58. Jacques-Henry Paradis, *Journal du siège, par un bourgeois de Paris, 1870–1871* (Paris: E. Dentu, 1872), 49–50.
59. *Journal officiel de la République française*, 16 October 1870.
60. Fulbert Dumonteil, "Nos lettres sont parties," *Le Gaulois*, 1 October 1870.
61. *La Guerre de 1870–71: L'investissement de Paris*, 27–28; *La Guerre de 1870–71: La Défense nationale en province. Mesures générales d'organisation* (Paris: Librairie Militaire R. Chapelot, 1911), 1–5; *Procès-verbaux des séances du Conseil publiés d'après les manuscrits originaux de M. A. Dréo, l'un des secrétaires du Gouvernement, avec préface et notes explicatives par Henri Des Houx* (Paris: Henri Charles-Lavauzelle, 1905), 180; *Dépêches, circulaires, décrets, proclamations et discours de Léon Gambetta (1 septembre 1870–6 février 1871)*, ed. Joseph Reinach, Vol. 1 (Paris: G. Charpentier et Cie, 1886), 34–35; *Audoin-Rouzeau, 1870*, 175–179.
62. See articles in *Le Figaro*, *Le Gaulois*, and *Le National* on 9 and 10 October 1870; *Dépêches, circulaires, décrets, proclamations et discours de Léon Gambetta*, 36–38.
63. "The War," *The New York Times*, 10 October 1870.
64. Timothée Trimm, "Depart en ballon du Ministre de l'Intérieur," *Le Petit Moniteur universel*, 10 October 1870.
65. Quinet, *Paris, journal du siège*, 105.
66. Gauthier and Deschamps, *Cours moyen d'histoire de France* (Paris: Librairie Hachette, 1908), 132–133. Other publications directed at the patriotic moral education of children, such as Edmond Pascal's *Journal d'un petit parisien pendant le siège (1870–1871)* (Paris: Alcide Picard et Kaan, 1893), prominently featured the event, while Paul Bert, one of the most ardent politicians in promoting free and mandatory secular education, highlighted it in his *L'Instruction civique à l'école (notions fondamentales)*, 11th edition (Paris: Picard-Bernheim, 1883), 167–171.
67. Karl Blind, "The Siege of Paris and the Air-Ships," *The North American Review* 166, no. 497 (1898): 484; Gaston Tissandier, "Le Voyage en ballon de Gambetta et le monument d'Épineuse," *La Nature*, 2 November 1889, 365–366.
68. Jean-Marie Mayeur, *Léon Gambetta, La Patrie et la République* (Paris: Fayard, 2008), 100.
69. Fonvielle, *Le siège de Paris vu à vol d'oiseau*, 153.

70. Fonvielle, *Le siège de Paris*, 94–95, 148–149.
71. Arnold Mortier, “Départ du Ballon le général Uhrich,” *Le Gaulois*, 20 November 1870.
72. “La Guerre et la science,” *La Cloche*, 5 December 1870; “Académie des Sciences,” *Journal officiel de la République française*, 9 December 1870. Archimedes had designed defensive weapons that helped protect Syracuse against the Romans in 213–214 BCE. The city ultimately fell, and the philosopher killed.
73. “Courrier de Paris,” *L’Illustration*, 3 December 1870.
74. Christophe Charle, ed., *Le Temps des capitales culturelles, XVIIIe–XXe siècles* (Seysel: Champ Vallon, 2009).
75. Théophile Gautier, *Tableaux de siège: Paris, 1870–1871* (Paris: Charpentier et Cie., 1871), 362–364.
76. Masson to Cassard Malleval, 10 October 1870, BHVP, MS-1113, f. 32.
77. 28 October 1870 letter to Alphonsine Vallé, SI-NPM, 0.260305.9.64.
78. Directeur Général des Postes report, 19 February 1880, ANF, F/90/19092.
79. Alençon, boule de Saint-Wandrille, 3 January 1871, MLP, Lettre boule de Moulins 1969.5.137. The “boules de Moulins” were a method those outside of Paris tried to get letters back into the city. They were insulated metal balls designed to be filled with mail and thrown into the Seine, where they would then make their way downstream rolling on the riverbed to avoid Prussian detection. However, the system never worked.
80. Little scholarly work has tackled the massive correspondence created during the siege. For a rare exception, see Foss’s analysis of siege diaries and unsent correspondence in *The Culture of War*, 119–161. The lack of curated archives constitutes the major challenge in studying correspondence transported by balloons during the siege, and a historian must search for idiosyncratic collections at different repositories. To make matters even more difficult, the “balloon letters” are highly valued by private collectors and objects of intense financial speculation. In fact, in 2015 French authorities shut down Aristophil, the leading dealer in this genre of correspondence, and charged its owner, Gérard Lhéritier, with organizing a billion-dollar rare manuscript Ponzi scheme. David Segal, “A Billion-Dollar Scandal Turns the ‘King of Manuscripts’ into the ‘Madoff of France,’” *The New York Times*, 21 February 2020, <https://www.nytimes.com/2020/02/21/business/aristophil-lheritier-rare-books.html>.
81. 1 October 1870 letter to Madame Madier, SI-NPM 0.260305.9.51.1; Charles Dujardin, 22 November 1870, MLP, 2006.132.14.
82. Victor Duruy to Hélène Duruy, 18 November 1870, BHVP, MS-3053.
83. Charles Dujardin, 29 October 1870, MLP, 2006.132.7.
84. Dominique Gautron, “Relation épistolaire d’un officier vendéen (Louis de Chasteigner) à sa famille, 13 septembre—30 novembre 1870,” *Cercle généalogique vendéen*, no. 82 (2001): 52.

85. Georges Beringier, *Série de correspondances adressées jour par jour de Paris à Bruxelles pendant le siège et insérées au fur et à mesure dans un grand journal de cette ville* (Bruxelles: Ch. Sacré-Duquesne, 1871), iii-v.
86. "Direction générale des postes," *Le Figaro*, 23 September 1870; "La Poste pendant le siège de Paris," *Le Figaro*, 2 October 1870; Untitled press clipping, *La Cloche*, 4 October 1870, in BHVP, Actualités 27.
87. *Le Ballon poste: Journal du siège de Paris*, 18 December 1870.
88. 26 October 1870 *Gazette des absents* addressed to Madame Méliissent, USAFA-CRGAHC, DC/311/A2.
89. 26 October 1870 *Gazette des absents* addressed to Madame Lascols, USAFA-CRGAHC, DC/311/A2.
90. Saint-Michel, boule de Saint-Wandrille, 5 January 1871, MLP, Lettre boule de Moulins 1969.5.130.
91. Letters quoted in Henri Vignes, "Aristide Couteaux (1835–1906) ou la république des paysans," (Master's thesis, Université de Paris IV, 1990), Annex V.
92. Charles Dujardin, 2 January 1871, MLP, 2006.132.20.
93. 15 December 1870 letter to Monsieur Doriot, SI-NPM, 0.260305.10.11.1; 1 January 1871 letter to Jules Lindet, SI-NPM, 0.260305.10.19.2.
94. BHVP, MS-1075.
95. Charles Dujardin, 17 November 1870, MLP, 2006.132.13.
96. 30 December 1870 *Dépêche-Ballon* addressed to Lydia Roumeguère, SI-NPM, 0.260305.10.19.1.
97. Valentin Costallat to Emma Costallat, 8 October 1870, BHVP, MS-1213, f. 719.
98. Pierre Urien, "Alfred Roseleur et la collection des Gravilliers," *Mémoires de la société des sciences naturelles et archéologiques de la Creuse* 45 (1994): 316–327.
99. 26 October 1870 *Gazette des absents* addressed to Madame Méliissent, and 26 October 1870 *Gazette des absents* addressed to Madame Lascols, USAFA-CRGAHC, DC/311/A2; 28 October 1870 letter addressed to Alphonsine Vallé, SI-NPM, 0.260305.9.64.1.
100. 1 October 1870 letter to Madame Madier, SI-NPM, 0.260305.9.51.1; 10 October 1870 letter to Monsieur Marchet, SI-NPM, 0.260305.9.54.1.
101. Undated letter addressed to Monsieur Louis Beauvais, USAFA-CRGAHC, DC/311/A2.
102. 4 October 1870 letter to Madame Maria Teiller, quoted in *Les Ballons de l'espoir dans le siège de Paris (sept. 1870—jan. 1871)*, ed. Henri Azeau (Paris: Éditions Robert Laffont, 1987), 127.
103. Steenackers, *Les Télégraphes*, 176–182.

104. Dagron, *La Poste par pigeons voyageurs: Souvenir du siège de Paris* (Tours-Bordeaux: 1870–1871).

105. The telegrams are collected in *Recueil des dépêches télégraphiques reproduites par la photographie et adressées à Paris au moyen de pigeons-voyageurs pendant l'investissement de la capitale* (Tours—Bordeaux: 1870–1871).

106. Directeur Général des Postes Report, 19 fevrier 1880, ANF, F/90/19092.

107. Saint-Edme, *La Science pendant le siège*, 83.

108. Susanna I. Barrows, “Pigeons into Frenchmen,” in *For Want of a Horse: Choice and Chance in History*, ed. John M. Merriman (Lexington, MA: Stephen Greene Press, 1985), 13–24.

109. “La Poste pendant le siège de Paris,” *Le Figaro*, 30 December 1870; Bingham, *Journal of the Siege*, 120.

110. Achille-J. Dalsème, *Paris pendant le siège et les soixante-cinq jour de la Commune* (Paris: E. Dentu, 1871), 196–197; Claretie, *Paris assiégé*, 197–198; Steenackers, *Les Télégraphes et les postes*, 195.

111. Paul de Saint-Victor, “L’Art pendant le siège,” *La Liberté*, 26 December 1870.

112. “Les Pigeons de la République,” *Gazette des Absents*, 31 December 1870. Victor Hugo also penned a poem to the bird, who was like an “atom that comes to the aid of the colossus.” Victor Hugo, “Le Pigeon,” in *L’Année terrible* (Paris: E. Hugues, 1879 [1872]), 98–100.

113. See Hollis Clayson’s nuanced analysis of these paradoxically “real allegories” in *Paris in Despair: Art and Everyday Life under Siege (1870–71)* (Chicago: University of Chicago Press, 2002), 144–162.

114. Caroline Chaumorot, BHVP, MS-1074, f. 95.

115. Édouard Manet, *Correspondance du siège de Paris et de la Commune, 1870–1871*, ed. Samuel Rodary (Paris: L’Échoppe, 2014), 87.

116. 12 January 1870 letter to Madame Chênôt, SI-NPM, 0.260305.10.23.1.

117. 27 December 1870 letter addressed to Madame Lebaigue, USAFA-CRGAHC, DC/311/A2.

118. Maurice Crosland, “Science and the Franco-Prussian War,” *Social Studies of Science* 6, no. 2 (1976): 186.

119. Crosland, “Science and the Franco-Prussian War,” 196.

120. Bingham, *Journal of the Siege*, 309.

121. Commandant de Brunet, *Le Feu grégeois, Paris sauvé: Conférence et rapport sur la découverte de MM. Decanis et Beaume* (Paris: Châtelain, 1871); Police Report, 9 December 1870, BHVP, MS-1083, f.76.

122. Crosland, “Science and the Franco-Prussian War,” 187.

123. *L'Aéronaute* complained that the Academy of Sciences only included a brief note on the reception of such projects in its *Comptes rendus*, not even offering a general description. "Bulletin de l'Académie des Sciences," *L'Aéronaute*, December 1870, 189–190. For discussion of the proposals, see *Journal officiel de la République française* 3 and 11 January 1871. The Scientific Committees for the Defense of the Arrondissements of Paris were also flooded with designs, but according to its secretary none seemed feasible, and it had no money to finance any type of trial. Saint-Edme, *La Science pendant le siège*, 59–60.

124. Dupuy de Lôme even hired one of the manufacturers of Giffard's 1852 balloon, Gabriel Yon. Dupuy de Lôme, "Projet d'aérostat dirigé, muni d'un propulseur," "Sur les aérostats dirigés (deuxième Note faisant suite à la Communication du 10 Octobre)," and "Sur les aérostats dirigés. 3e Note," in *Comptes rendus hebdomadaires des séances de l'Académie des Sciences* 71 (July–December 1870) (Paris: Gauthier-Villars, 1870), 502–521, 545–549, 549–550.

125. *Procès-verbaux des séances du Conseil publiés*, 243. Dréo incorrectly states that the amount was 45,000 francs.

126. For praises see *Le Temps*, 12 and 13 October 1870.

127. Félix Caron, "Projet de M. Dupuy de Lôme," *L'Aéronaute*, October 1870, 155–159.

128. Nadar, "Protestation," *L'Aéronaute*, November 1870, 165–167.

129. Gaston Tissandier, *Les Ballons dirigeables: Expériences de M. Henri Giffard en 1852 et en 1855 et de M. Dupuy de Lôme en 1872* (Paris: E. Dentu, 1872), 25–30.

130. Bingham, *Journal of the Siege*, 232.

131. Nadar, *Sous l'incendie*, (Paris: G. Charpentier, 1882), 37–38. Two volumes of Nadar's papers in the BHVP (MS-NA-470 and MS-NA-471) feature proposals he received during the siege, most involving lighter-than-air navigation.

132. S. Martin to Nadar, 23 September 1870, BHVP, MS-NA-471, f. 143.

133. Léon Brin to Nadar, 9 September 1870, BHVP, MS-NA-471, f. 110.

134. Pitet to Nadar, 8 October 1870, BHVP, MS-NA-471, f. 234.

135. Anonymous and undated letter, BHVP, MS-NA-471, f. 201.

136. "Une mère" to Nadar, 7 September 1870, BHVP, MS-NA-471, f. 203.

137. Nadar, *Sous l'incendie*, 38–42.

138. *Procès-verbaux des séances du Conseil*, 237.

139. See the untitled press clippings from *Le Rappel*, 10 September 1870, *Le Siècle*, 19 September 1870, and *Le Figaro*, 24 September 1870, in BHVP, Actualités 27.

140. Assemblée générale des Comités scientifiques de défense des arrondissements de Paris, 28 September 1870, BHVP, MS-1085.

141. *Procès-verbaux des séances du Conseil*, 341.
142. Untitled press clipping, *La Patrie*, 16 December 1870, in BHVP, Actualités 27.
143. The jurist gave examples of shipwreck victims that had been honorably released by their enemies. Steenackers, *Les Télégraphes et les postes*, 513–516.
144. Charles Calvo, *Le Droit international théorique et pratique précédé d'un exposé historique des progrès de la science du droit des gens*, vol. III, 3rd ed. (Paris: Guillaumin et Cie, G. Pedone-Laurier, E. Thorin, A. Rousseau, 1880), 162–163; A. Wilhelm, “De la situation juridique des aeronauts en Droit international,” *L’Aéronaute*, August 1892, 171–183; “Declaration (IV, 1), to Prohibit, for the Term of Five Years, the Launching of Projectiles and Explosives from Balloons, and Other Methods of Similar Nature. The Hague, 29 July 1899,” *International Committee of the Red Cross*, <https://ihl-databases.icrc.org/en/ihl-treaties/hague-decl-iv-1-1899/declaration>; “Convention (II) with Respect to the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land. The Hague, 29 July 1899,” <https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-ii-1899/regulations-art-29>.
145. L. E. Dentas, “La Revanche fantastique,” *Le XIXe, siècle* 17 October to 1 November 1872.
146. On Regnault’s career as an engraver, see Henri Beraldi, *Les Graveurs du XIXe siècle: Guide de l’amateur d’estampes modernes*, Vol. 11 (Paris: L. Conquet, 1891), 181–184.
147. Thomas-Casimir Regnault, “Véritable portrait de la République,” MC, Collection Nadar.
148. Thomas-Casimir Regnault to Madame Louis Blanc, 16 October 1870, MC, Collection Nadar, D.16197.
149. Thomas-Casimir Regnault, “1789 Lumière,” 22 October 1870, D.16932; “Une Seule Patrie,” 28 October 1870, D.16933 (both in MC, Collection Nadar).
150. Thomas-Casimir Regnault, “Délivrance de Paris,” 25 November 1870, BHVP, Actualités 27.
151. Thomas-Casimir Regnault, “Poste Éolienne T. C. Regnault,” MC, Collection Nadar.
152. Untitled scrap, MC, Collection Nadar.
153. Kranzberg, *The Siege of Paris*, 90.
154. As Claude Digeon explains in *La Crise allemande de la pensée française (1870–1914)*, 2nd ed. (Paris: Presse Universitaires de France, 1992), anxieties concerning Germany were prominent in all French intellectual life.
155. This summary cannot do justice to the complexity of the Paris Commune. For an accessible introduction, see John M. Merriman, *Massacre: The Life and Death of the Paris Commune* (New York: Basic Books, 2014).
156. Nadar to Félix Pyat, undated, BnF, NAF 25011, f. 421–422.

157. "Partie Officielle," *Journal officiel de la République française sous la Commune de Paris*, 25 May 1871.
158. Rapport, 16 December 1873, APP, BA 916.
159. The number of Communard casualties is still the subject of intense debate. For a summary see Robert Tombs, "How Bloody Was *La Semaine Sanglante*? A Revision," *Historical Journal* 55, no. 3 (2012): 679–704.
160. Rapports, 7 June 1871, 21 September 1871, and 27 May 1873, APP, BA 916.
161. Nadar also claimed that Duruof vehemently avoided being recruited by the Commune (a disingenuous statement, given that Nadar recommended him to Pyat). Rapport, 24 January 1874, and Note, 6 February 1875, APP, BA 916; Nadar to Usquin, 20 December 1873, BnF, NAF 25011, f. 453–454.
162. "Partie Officielle," *Journal officiel de la République française*, 24 October 1872.
163. Maurice Agulhon, "La 'Statuomanie' et l'histoire," *Ethnologie française* 8, no. 2 (1978): 145–172.
164. Janice Best, *Les Monuments de Paris sous la Troisième République: Contestation et commémoration du passé* (Paris: L'Harmattan, 2010), 103.
165. Best, *Les Monuments de Paris*, 108.
166. Best, *Les Monuments de Paris*, 110; Agulhon, "La 'Statuomanie,'" 151.
167. The institutionalization of aeronautics within the state after the war began with the creation of a Commission des Communications par Voies Aériennes in 1874. For more information on the birth of Chalais-Meudon, see G. Béthuys [pseudonym of Georges Espitallier], *Les Aérostats militaires* (Paris: H. Lecène et H. Oudin, 1889), 188–210.
168. Charles Renard, "Notice sur les progrès de l'aérostation depuis 1870 (applications militaires)," 26 March 1890, SHD, DE 2012 ZL 243/3.
169. This is what comes through in the official correspondence in SHD, DE 2012 ZL 243/6.
170. Gaston Tissandier, "Les Aérostats militaires et les armées européennes," *La Nature*, 8 January 1887, 87–90.
171. Ch. Renard et A. Krebs, "L'Aérostat dirigeable électrique de MM. Ch. Renard et A. Krebs," *La Nature*, 30 August 1884, 193–195; Gaston Tissandier, "L'Aérostat dirigeable électrique de MM. Ch. Renard et A. Krebs. Deuxième expérience du 12 Septembre 1884" *La Nature*, 20 September 1884, 241–243; Gaston Tissandier, "L'Aérostat dirigeable électrique de MM. Ch. Renard et A. Krebs. Nouvelles expériences du 8 Novembre 1884," *La Nature*, 15 November 1884, 374–375.
172. Michèle Martin and Christopher Bodnar, "The Illustrated Press under Siege: Technological Imagination in the Paris Siege, 1870–1871," *Urban History* 36, no. 1 (2009): 67–85.

173. Divonne, boule de Saint-Wandrille, 5 January 1871, MLP, Lettre boule de Moulins 1969.5.122.

174. Clayson, *Paris in Despair*, 362–363.

175. Saint-Edme, *La Science pendant le siège*, 222.

### CHAPTER 3

1. Observations made by the author on 22 February 2015.

2. Venita Datta, *Heroes and Legends of Fin-de-Siècle France: Gender, Politics, and National Identity* (Cambridge: Cambridge University Press, 2011); Edward Berenson, *Heroes of Empire: Five Charismatic Men and the Conquest of Africa* (Berkeley: University of California Press, 2010). As we will see in chapter five, some aeronauts also became colonial heroes.

3. Fox, *The Savant and the State*, 227–273. The transformation of scientists and inventors into heroes was also a Europe-wide phenomenon that emerged in the long nineteenth century and gained momentum after 1850. See Christine MacLeod, *Heroes of Invention: Technology, Liberalism, and British Identity, 1750–1914* (Cambridge: Cambridge University Press, 2007).

4. Paul, *The Sorcerer's Apprentice*; Crosland, “Science and the Franco-Prussian War”; Fox, *The Savant and the State*, 227–273.

5. Fabien Locher, *Le Savant et la tempête: Étudier l'atmosphère et prévoir le temps au XIX siècle* (Rennes: Presses Universitaires de Rennes, 2008), 181–184.

6. Tucker, “Voyages of Discovery on Oceans of Air.”

7. Fox, *The Savant and the State*, 195–201; Fabien Locher, “De nouveaux territoires pour la science: Les voyages aériens de Camille Flammarion,” *Sociétés & Représentations* 21 (2006): 157–173. In French one refers to *la vulgarisation de la science*, but since the English homonym carries a more negative connotation, I have chosen to use popularization and its derivations.

8. *Société Aérostatique et Météorologique de France. Rapport (Exercice 1866–1867)* (Paris: Au Siège de la Société, 1867), MAE-CD, Écoles, Associations, Liges 7 (Société Aérostatique et Météorologique de France).

9. Camille Flammarion, *Mémoires Biographiques et Philosophiques d'un Astronome* (Paris: Ernest Flammarion, 1912), 369–374.

10. Locher, “De nouveaux territoires pour la science.”

11. Locher, *Le Savant et la tempête*.

12. James Glaisher, Camille Flammarion, Wilfrid de Fonvielle and Gaston Tissandier, *Travels in the Air*, ed. James Glaisher, trans. T. L. Phipson, 2nd rev. ed. (London: Richard Bentley & Son, 1871), 238–250.

13. Gaston Tissandier, *Histoire des mes ascensions. Récit de quarante-cinq voyages aériens (1868–1888)*, 9th edition (Paris: Maurice Dreyfous, 1890).
14. James Glaisher, Camille Flammarion, Wilfrid de Fonvielle, and Gaston Tissandier, *Voyages aériens* (Paris: Hachette, 1870). Editions in English and in German soon followed.
15. Glaisher et al., *Travels in the Air*, 396–398.
16. Wilfrid de Fonvielle, *La Science en ballon* (Paris: Gauthier-Villars, 1869), xi–xiii, 6–12.
17. Account book in MAE-CD, Écoles, Associations, Ligues 7 (Société Aéronautique & Météorologique de France).
18. On Villeneuve's wealth, see "Rapport," 26 December 1872, and "Rapport," 19 August 1881, APP, BA/1122.
19. Maurice du Boisrouvray, "Compte rendu des travaux aéronautiques exécutés en 1868," *L'Aéronaute*, July 1869, 99–106.
20. "Faits divers," *L'Aéronaute*, May 1869, 79.
21. Glaisher et al., *Travels in the Air*, 397
22. Félix Caron, "A nos lecteurs," *L'Aéronaute*, January 1870, 1–2.
23. "Ambulance de la Société Aéronautique de France," *L'Aéronaute*, September 1870, 133–134.
24. "De Paris à Christiania en Ballon," *L'Aéronaute*, March 1871, 42–45.
25. "Notre quatrième année," *L'Aéronaute*, January 1871, 1–2.
26. "Statuts de la Société Française de Navigation Aérienne," *L'Aéronaute*, October 1872, 167.
27. "Discours de M. Hureau de Villeneuve," *L'Aéronaute*, October 1872, 164–165; "Règlement de la Société Française de Navigation Aérienne," *L'Aéronaute*, October 1872, 170–180.
28. Robène, *L'Homme à la conquête*, vol. 2, 137–140.
29. Marie-Laure Aurenche, "La Presse de vulgarisation ou la médiation des savoirs," in *La Civilisation du journal: Histoire culturelle et littéraire de la presse française au XIXe siècle*, ed. Dominique Kalifa, Philippe Régnier, Marie-Ève Thérenty, and Alain Vaillant (Paris: Éditions Nouveau Monde, 2012), 404; Manuel Chemineau, *Fortunes de "La Nature," 1873–1914* (Vienna: Lit, 2012), 116–119, 131–137.
30. Lisa Andries, "Vulgarisation scientifique et naissance de la culture générale," in *La Civilisation du journal*, 1467–1475; Fox, *The Savant and the State*, 217.
31. A document in the SFNA's archives lists about a dozen aeronautical societies in France in the last third of the nineteenth century. MAE-CD, Écoles, Association, Ligues 8 (Société Française de Navigation Aérienne, I).

32. “Séance générale solennelle du 27 Novembre 1874,” *L’Aéronaute*, January 1875, 6; Robène, *L’Homme à la conquête*, vol. 2, 141.
33. “Discours de M. Crocé-Spinelli,” *L’Aéronaute*, October 1872, 162.
34. Anonymous, 21 April 1875, APP, BA/1023.
35. “Rapport,” 19 May 1873, APP, BA/1023. Crocé-Spinelli wrote to Villeneuve early in 1874 expressing concern for the stability of the republican alliance and yearning for the Duke de Chambord’s death. Crocé-Spinelli to de Villeneuve, 17 January 1874, MAE-CD, SFNAé C9, (Crocé-Spinelli, 1).
36. J. L. Hunt, “James Glaisher FRS (1809–1903) Astronomer, Meteorologist and Pioneer of Weather Forecasting: ‘A Venturesome Victorian,’” *Quarterly Journal of the Royal Astronomical Society* 37 (1996): 332–333.
37. Reports in APP, BA/1082.
38. “Rapport,” 12 February 1873, APP, BA/1082.
39. “Discours de M. Crocé-Spinelli,” *L’Aéronaute*, October 1872, 163.
40. “Assemblée générale du 26 Novembre 1873,” *L’Aéronaute*, February 1874, 45–58.
41. Paul Bert, *La Pression barométrique. Recherches de physiologie expérimentale* (Paris: G. Masson, 1878); John B. West, “Early History of High-Altitude Physiology,” *Annals of the New York Academy of Sciences* 1365, no. 1 (2016): 33–42.
42. Rebecca Herzig, *Suffering for Science: Reason and Sacrifice in Modern America* (New Brunswick, NJ: Rutgers University Press, 2005); Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007); Erika Lorrain Milam and Robert A. Nye, eds., “Scientific Masculinities,” *Osiris* 30 (2015).
43. C.-M. Félix Pétard, “Observations physiologiques faites à bord de l’aérostat l’Étoile polaire le 26 avril 1873,” *L’Aéronaute*, June 1873, 117–122.
44. Questionnaires in MAE-CD, Écoles, Associations, Liges, 8 (Société Française de Navigation Aérienne, II).
45. “Questionnaire 15,” 15 April 1875, MAE-CD, Écoles, Associations, Liges, 8 (Société Française de Navigation Aérienne, II).
46. “Expériences aérostatiques année 1894” scrapbook, ACF, Fonds Besançon.
47. Susan Leigh Star and James R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Ecology, 1907–1939,” *Social Studies of Science* 19, no. 3 (1989): 393.
48. “Séance du 7 Janvier 1874,” *L’Aéronaute*, March 1874, 100–106; “Séance du 14 Janvier 1874,” *L’Aéronaute*, April 1874, 115–126.
49. “Faits divers,” *L’Aéronaute*, April 1874, 139–141.
50. Gaston Tissandier, “Observations météorologiques en ballon,” *L’Aéronaute*, November 1873, 197–200.

51. Invitations in MAE-CD, Écoles, Associations, Ligues 8 (Société Française de Navigation Aérienne II).
52. Coverage in *Le Petit Journal*, *Le Figaro*, *Le Temps*, and *Le XIXe siècle* from 24 to 29 March 1875.
53. Th. Sivel, Crocé-Spinelli, Gaston Tissandier, Jobert and Albert Tissandier, “Ascension scientifique de longue durée des 23–24 mars 1875,” *L’Aéronaute*, May 1875, 140–149; “Ascension scientifique de longue durée; par MM. Sivel, Crocé-Spinelli, A. et G. Tissandier et Jobert,” *Comptes rendus hebdomadaires des séances de l’Académie des Sciences*, tome 80, January–June 1875 (Paris: Gauthier-Villars, 1875), 866–871.
54. Gaston Tissandier, “L’Ascension de longue durée du ballon ‘le Zénith,’” *La Nature*, 10 April 1875, 293–298.
55. Wilfrid de Fonvielle, “L’Ascension du ‘Zénith,’” *Le Monde illustré*, 3 April 1875, 215–218.
56. Tucker, “Voyages of Discovery,” 148.
57. Locher, “De nouveaux territoires,” 160.
58. Vanessa Heggie, “Why Isn’t Exploration a Science?,” *Isis* 105, no. 2 (2014): 318–334.
59. “Informations,” *Le Figaro*, 17 April 1875.
60. Tissandier relayed this information to the SFNA in a letter the next day. “L’ascension du 15 avril 1875,” *L’Aéronaute*, May 1875, 150–152. My description of the ascent is based on information conveyed in that letter and Tissandier’s article “Le Voyage à grande hauteur du ballon ‘Le Zénith,’” *La Nature*, 1 May 1875, 337–344.
61. Bert, *La Pression barométrique*, 1083, 106–1061.
62. Gustave Le Bon letter, 19 April 1875, MAE-CD, Écoles, Associations, Ligues 8 (Société Française de Navigation Aérienne II).
63. “Informations,” *Le Figaro*, 17 April 1875.
64. See coverage in *Le Rappel*, *Le Petit Journal*, *Le Figaro*, *Le XIXe siècle*, *Le Gaulois*, *Le Temps*, and the *Journal officiel de la République française*.
65. Félix Caron, “Les Obsèques des victimes du Zénith,” *L’Aéronaute*, June 1875, 185–186.
66. Avner Ben-Amos, *Funerals, Politics, and Memory in Modern France, 1789–1996* (New York: Oxford University Press, 2000). On the Enlightenment origins of the cult of the great men as a form of “patriotic pedagogy,” see David A. Bell, *The Cult of the Nation in France: Inventing Nationalism, 1680–1800* (Cambridge, MA: Harvard University Press, 2003).
67. Ben-Amos, *Funerals*, 131.

68. Christiane Sinding, "Claude Bernard and Louis Pasteur: Contrasting Images through Public Commemorations," *Osiris* 14 (1999): 61–85.
69. Dide was a leading figure of the "liberal pastorate," an important group in the construction of the democratic civil society that shaped Third Republic political culture. Nord, *The Republican Moment*, 108.
70. Ben-Amos, *Funerals*, 117.
71. "Rapport," 20 April 1875, APP, BA/1023.
72. "La Catastrophe du Zénith," *Le Figaro*, 21 April 1875.
73. "Les Obsèques des aéronautes," *Le Petit Journal*, 22 April 1875.
74. For an example of "reading" a parade, see Robert Darnton, *The Great Cat Masseur and Other Episodes in French Cultural History* (New York: Basic Books, 1984), 107–144.
75. Caron, "Les Obsèques des victimes du Zénith," *L'Aéronaute*, June 1875, 186.
76. "La Catastrophe du Zénith," *Le Rappel*, 22 April 1875.
77. "Rapport," 20 April 1875, APP, BA/1023.
78. "Les Obsèques des victimes du Zénith," *Le Temps*, 21 April 1875.
79. "Rapport, 20 April 1875," APP, BA/1023; "Les Obsèques des aéronautes," *Le Petit Journal*, 22 April 1875.
80. "La Catastrophe du Zénith," *Le Figaro*, 21 April 1875.
81. "La Catastrophe du Zénith," *Le Rappel*, 22 April 1875.
82. Caron, "Les Obsèques des victimes du Zénith," *L'Aéronaute*, June 1875, 185–186.
83. "Rapport," 20 April 1875, APP, BA/1023.
84. "Les Obsèques des aéronautes," *Le Petit Journal*, 22 April 1875.
85. "Commission d'études et de contrôle pour la souscription en faveur des familles de Mm. Crocé-Spinelli et Sivel" scrapbook, MAE-CD, SFNAé C9 (Crocé-Spinelli, Catastrophe du Zénith, 2).
86. Press clippings in MAE-CD, SFNAé C9 (Crocé-Spinelli, Catastrophe du Zénith, 1 and 2).
87. *Le Rappel's* subscription lists run from the 23 April 1875 to the 19 June 1875.
88. *Le Temps's* subscription lists run from the 20 April 1875 to the 28 April 1875.
89. "Petites nouvelles," *Le Petit Journal*, 29 May 1875.
90. Pledges are in MAE-CD, SFNAé C9 (Crocé-Spinelli, Catastrophe du Zénith, 1 and 2). Quote from "Rapport de la Commission chargée de la Répartition des Fonds de la Souscription du ZÉNITH," LoC-TC, 10/27.

91. "La Catastrophe du Zénith," *Le XIXe siècle*, 20 April 1875.
92. Robert Planquette, "Le Zénith," lyrics by Adolphe Perreau (Paris: L. Bathlot, 1875).
93. Jules Jacob, "Les Martyrs du 'Zénith,'" lyrics by Julien Fauque (Paris: L. Bathlot, 1875).
94. *Le Figaro*, 6 and 13 May 1875.
95. "La Catastrophe du Zénith," *Le Rappel*, 22 April 1875.
96. "La Catastrophe du Zénith," *Le Figaro*, 21 April 1875.
97. "Les On-dit," *Le Rappel*, 23 April 1875.
98. Gaston Jollivet, "La Science et les Radicaux," *Le Gaulois*, 24 April 1875.
99. "Séance du mercredi 5 mai 1875," in *Conseil Municipal de Paris, Procès-Verbaux. Année 1875* (Paris: Typographie Lahure, 1876), 286–287.
100. Ministre de l'Intérieur, "Note," 17 June 1875, ANF, F/1Ci/168.
101. Ministre de l'Intérieur to Préfet de la Seine, 23 October 1875, ANF, F/1Ci/168.
102. "Inauguration du Monument élevé à la mémoire de Crocé-Spinelli et de Sivel," *L'Aéronaute*, April 1881, 73–79.
103. Ben-Amos, *Funerals*, 229.
104. *Le Petit Parisien*, 3 November 1881, 3 November 1883, and 2 November 1896; *Le Rappel*, 4 November 1882.
105. Paul Roussette to Gaston Tissandier, 4 May 1875, "Le Zénith," LoC-TC, 19/6.
106. F. Habert to Gaston Tissandier, 13 March 1880, "Ascension du Zénith," and G. Pierre to Gaston Tissandier, April 1875, "Les Martyrs de la Science," LoC-TC, 19/6.
107. Ch. Hacken, "A la mémoire de MM. Crocé-Spinelli et Sivel," 17 Avril 1875, MAE-CD, Écoles, Association, Lignes 8 (Société Française de Navigation Aérienne II).
108. T. Véron, "À Crocé, Sivel et Tissandier. La catastrophe du Zénith," 21 April 1875, MAE-CD, Écoles, Association, Lignes 8 (Société Française de Navigation Aérienne II).
109. Louis Baué to Gaston Tissandier, 15 May 1875, LoC-TC, 19/6.
110. "À la mémoire de Sivel et Crocé-Spinelli," 15 June 1875, LoC-TC, 19/6.
111. Saint-Albin Gimet to Gaston Tissandier, 27 April 1875, "Le Ballon le Zénith," LoC-TC, 19/6.
112. Emile Moreau, "Le Zénith," LoC-TC, 19/6.
113. F. Habert to Gaston Tissandier, 13 March 1880, "Ascension du Zénith," LoC-TC, 19/6.
114. "Le Zénith" was first published in *Le Parnasse contemporain. Recueil de vers nouveaux*, (Paris: Alphonse Lemerre, 1876), 393–404.

115. Camille Hémon, *La Philosophie de M. Sully Prudhomme* (Paris: Félix Alcan, 1907), 38.
116. Hémon, *La Philosophie*, 13.
117. Fox, *The Savant and the State*, 270.
118. Tresch, *The Romantic Machine*, 253–286.
119. Thébaud-Sorger, *Une histoire des ballons*, 34.
120. Wilfrid de Fonvielle, *Aventures aériennes et expériences mémorables des grands aéronautes* (Paris: E. Plon et Cie., 1876), 15.
121. Gaston Tissandier, *Les Martyrs de la science* (Paris: Maurice Dreyfous, 1879).
122. Of the 126 individuals in the index, sixty-nine are French. The review can be found in *Le National*, 21 November 1879.
123. Lecocq, *Étude sur les faïences*, 21.
124. “Le Centenaire Montgolfier,” *Le Nouvelliste de Lyon*, 12 October 1883.
125. Speech transcripts in LoC-TC, 7/7.
126. Thébaud-Sorger, *Une histoire des ballons*, 11.

## CHAPTER 4

1. “Recensement du matériel et du personnel aérostatique des associations civiles,” 12 April 1888, ANF, F/7/12650.
2. “Matériel aérostatique existant dans le ressort de la Préfecture de Police,” 2 August 1888, ANF, F/7/12650.
3. The number of total ascents was substantially more, for the report features several entries where the only information provided is that the aeronaut had made many ascents, as in the case of Eugène Godard (who himself would have had a couple of thousands of ascents under his belt). “Personnel d’aéronautiques qu’on pourrait trouver dans le ressort de la Préfecture de Police,” 2 August 1888, ANF, F/7/12650.
4. Gaston Tissandier, “Une fabrique d’aérostats,” *La Nature*, 29 September 1883, 280–282.
5. Édouard Surcouf, “Serrons les rangs!” *L’Aérophile*, April 1893, 60–61.
6. Emmanuel Aimé, “Le Tour du monde aérien,” *L’Aérophile*, May 1894, 113.
7. Alice Bravard, *Le Grand monde parisien 1900–1939. La persistance du modèle aristocratique* (Rennes: Presses Universitaires de Rennes, 2013), 88. Bravard’s work and my own are indebted to Arno J. Mayer’s iconoclastic *The Persistence of the Old Regime: Europe to the Great War* (New York: Pantheon Books, 1981), even if he paints the picture of an aristocracy much more entrenched in the past.

8. Anne Martin-Fugier, *La Vie élégante: Ou la formation du Tout-Paris (1815–1848)* (Paris: Librairie Arthème Fayard, 1990).
9. Cyril Grange, *Les Gens du Bottin mondain: Y être, c'est en être* (Paris: Fayard, 1996); Anne Martin-Fugier in *Les Salons de la Troisième République: Art, littérature, politique* (Paris: Perrin, 2003).
10. Eugen Weber, *Peasants into Frenchmen: The Modernization of Rural France, 1870–1914* (Stanford, CA: Stanford University Press, 1976); *France, Fin de Siècle* (Cambridge, MA: Belknap Press, 1986).
11. Michael Miller, *The Bon Marché: Bourgeois Culture and the Department Store* (Princeton, NJ: Princeton University Press, 1981); Schwartz, *Spectacular Realities*.
12. Thorstein Veblen, *The Theory of the Leisure Class: An Economic Study in the Evolution of Institutions* (New York: Macmillan, 1899).
13. Alain Corbin, ed., *L'Avènement des loisirs: 1850–1960* (Paris: Aubier 1995).
14. Eugen Weber, "Pierre de Coubertin and the Introduction of Organized Sport in France," *Journal of Contemporary History* 5, no. 2 (1970): 3–26; Weber, "Gymnastics and Sports in Fin-de-Siècle France: Opium of the Classes," *The American Historical Review* 76, no. 1 (1971): 70–98; Monique de Saint Martin, "La Noblesse et les 'sports' nobles," *Actes de la recherche en sciences sociales* 80 (1989): 22–32.
15. Christopher S. Thompson, "Bicycling, Class, and the Politics of Leisure in Belle Epoque France," in *Histories of Leisure*, ed. Rudy Koshar (New York: Berg, 2002), 132.
16. Luc Robène, Dominique Bodin, and Stéphane Héas, "Le Bonheur est dans les airs. L'aérostation: 1888–1914," *Terrain*, no. 46 (2006): 124.
17. Gaston Tissandier, "Ascension à grande hauteur de MM. Jovis et Mallet," *La Nature*, 3 September 1887, 213–214; Guy de Maupassant, "Dans les nuages," *L'Illustration*, 30 June 1888.
18. "Records et voyages," *L'Aérophile*, April 1893, 65. See also Georges Bans, "Records et voyages," *L'Aérophile*, January–February–March 1893, 32–33.
19. "Une promenade aérienne," *Le Monde illustré*, 14 August 1887, 102.
20. Wilfrid de Fonvielle, "Le Tour de France en Ballon," *Journal des voyages*, 21 and 28 October 1894, 4, 11, 18 and 25 November 1894, 2, 9, 16, 23 and 30 December 1894.
21. Robène, Bodin, and Héas, "Le Bonheur," 133.
22. Emmanuel Aimé, "Portrait d'aéronautes contemporaines," *L'Aérophile*, May 1894, 97–98.
23. Wilfrid de Fonvielle, "Portraits d'aéronautes contemporaines," *L'Aérophile*, October 1899, 109–111; Georges Besançon, "Portraits d'aéronautes contemporaines," March 1900, 29–31; Emmanuel Aimé, "Portraits d'aéronautes contemporaines," June 1901, 125–126; Georges Besançon, "Portraits d'aéronautes contemporaines," October 1899, 121–123.

24. Albert de Masfrand, "Portraits d'aéronautes contemporains," *L'Aérophile*, March 1904, 49.

25. See endnote 25 in the introduction.

26. Christophe Studeny, *L'Invention de la vitesse. France, XVIIIe–XXe siècles* (Paris: Gallimard, 1995); Jean Ollivro, "Celui qui court plus vite avance-t-il davantage? Vitesse, mobilité, et inégalités sociales," in *De l'histoire des transports à l'histoire de la mobilité? État des lieux, enjeux et perspectives de recherche*, ed. Mathieu Flonneau and Vincent Guigueno (Rennes: Presses Universitaires de Rennes, 2009), 103–116.

27. Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century* (Berkeley: University of California Press, 1986); Christophe Studeny, "La Révolution des transports et l'accélération de la France (1770–1870)," in *De l'histoire des transports à l'histoire de la mobilité?*, 117–133; Hugh Dauncey, *French Cycling: A Social and Cultural History* (Liverpool: Liverpool University Press, 2012), 75–101.

28. "Le Tour du monde aérien," *L'Aérophile*, August–September 1894, 168.

29. Henry de La Vaulx, *Seize mille kilomètres en ballon* (Paris: Hachette, 1903).

30. Veblen, *The Theory of the Leisure Class*.

31. Maurice Agulhon, *Le Cercle dans la France bourgeoise, 1810–1848: Etude d'une mutation de sociabilité* (Paris: Armand Colin, 1977).

32. Alice Bravard, "Le Cercle aristocratique dans la France bourgeoise 1880–1939," *Histoire, Économie et Société* 30, no. 1 (2011): 85–99.

33. Robène, *L'Homme à la conquête*, vol. 2, 281.

34. Edmond Petit, *La Vie quotidienne dans l'aviation en France au début du XXe siècle (1900–1935)* (Paris: Hachette, 1977), 31.

35. Robène, *L'Homme à la conquête*, vol. 2, 280.

36. "Règlement du Parc (1er mai 1902)," in *Aéro-Club de France, Société d'Encouragement à la Locomotion Aérienne: Annuaire 1905* (Paris: 1905), 48. Exemplar found in ACF.

37. François Peyrey, *L'Oeuvre de l'Aéro-Club de France et l'aéronautique contemporaine* (Paris: H. Dunod & E. Pinat, 1909), 37.

38. "Matériel des ascensions de l'Aéro-Club de France," and "Membres Sociétaires Propriétaires de Ballons," in *Aéro-Club de France: Annuaire 1905*, 53, 92–95.

39. F. P. Lahm, "Ballooning and Aërial Navigation," *The Outing Magazine*, October 1907, 34–43.

40. Lebon had invented the gas à éclairage. Commission Histoire, Arts et Lettres de l'Aéro-Club de France, *Cent ans avec l'Aéro-Club de France* (Paris: Addim, 1998), 34–37.

41. Exposition Universelle Internationale de 1900, *Concours internationaux d'exercices physiques et de sports. Section X: Aérostation et Colombophilie* (Paris: Imprimerie Nationale, 1900).

42. Peyrey, *Louvre de l'Aéro-Club*, 39.
43. "Note pour Monsieur le Directeur de la Police Municipale," 12 October 1905, APP, DA/298.
44. Benoît Lenoble, "L'Aéroplane et le ballon vus par le journal: Technique aérienne et imaginaire médiatique en France (de 1906 au début des années 1920)," *Hypothèses* 9, no. 1 (2006): 209–220.
45. Henry de La Vaulx, "L'Aéro-Club," *La Vie au grand air*, 8 April 1899, 357–358.
46. George de Geofroy, "Ballooning as a Sport," *The Century Magazine* (September 1904), 713–719.
47. "Cost of Living," *Bulletin of the Bureau of Labor*, no. 49 (November 1903), 1138.
48. G. Espitallier, "Les Femmes aéronautes," *L'Aéronautique*, 1 January 1905, 2.
49. Crafty, "Le Ballon captif," *Le Journal de la jeunesse*, 5 October 1878, 296.
50. Sarah Bernhardt, *Ma double vie: Mémoires* (Paris: E. Fasquelle, 1907), 372. Given the popularity of Giffard's balloon, the police stationed officers to preserve order in the vicinity. "Rapport," 31 July 1878, APP, BA/1023.
51. "Echos de Paris," *Le Gaulois*, 22 August 1878.
52. Bernhardt, *Ma double vie*, 373–379.
53. Sarah Bernhardt, *Dans les nuages: Impressions d'une chaise* (Paris: Charpentier, 1875).
54. Bernhardt, *Dans les nuages*, 34.
55. "Faits divers," *L'Aéronaute*, January 1879, 30.
56. Mary Louise Roberts, *Disruptive Acts: The New Woman in Fin-de-Siècle France* (Chicago: University of Chicago Press, 2002), 165–219.
57. Mary Louise Roberts, "Rethinking Female Celebrity: The Eccentric Star of Nineteenth-Century France," in *Constructing Charisma: Celebrity, Fame, and Power in Nineteenth-Century Europe*, ed. Edward Berenson and Eva Giloi (New York: Berghan Books, 2010), 103–116.
58. G. Espitallier, "Les Femmes aéronautes," *L'Aéronautique*, 1 January 1905, 2. There are parallels between the female vanguard vis-à-vis turn-of-the-century ballooning and the female vanguard vis-à-vis automobiles. See Alexandre Buisseret, "Les Femmes et l'automobile à la Belle Époque," *Le Mouvement social*, no. 192 (2000): 41–64.
59. According to a biographical article on her in *L'Aérophile*, Marie Surcouf made her first ascent, which lasted nine hours, in 1895. By October 1908 she had partaken in twenty-two ascents, guiding six of them and bringing other women along in some. Georges Besançon, "Portraits de Femmes Aéronautes," *L'Aérophile*, 1 October 1908, 373.

60. "Bulletin Officiel," *L'Aéronautique*, 1 January 1904, 4; "Bulletin Officiel," *L'Aéronautique*, 1 January 1905, 17.
61. "La Fête du Comité des Dames de l'Aéronautique-Club," *L'Aéronautique*, 1 November 1907, 86.
62. M. Surcouf, "Pilote!," *L'Aéronautique*, 1 October 1906, 169–170.
63. "Banquet du Comité des Dames de l'A.-C.D.F. 31 Janvier 1907," *L'Aéronautique*, 1 April 1907, 27; "Bulletin Officiel," *L'Aéronautique*, 1 January 1907, 21.
64. "Bulletin Officiel," *L'Aéronautique*, 1 July 1906, 163.
65. "Les Femmes s'en mêlent," *L'Aéro*, 28 January 1909.
66. Germaine de Serpigny, "Les Débuts d'une aéronaute," *La Vie au grand air*, 17 December 1899, 161.
67. Quoted in Robène, *L'Homme à la conquête*, vol. 2, 353.
68. "Les Aéronautes de la 'Stella,'" *L'Aérophile*, 15 November 1911, 520.
69. "Après le record du monde en ballon," *L'Aérophile*, 1 May 1913, 215–216.
70. Lenard R. Berlanstein, "Selling Modern Femininity: *Femina*, a Forgotten Feminist Publishing Success in Belle Epoque France," *French Historical Studies* 30, no. 4 (2007): 623–649; Rachel Mesch, *Having It All in the Belle Epoque: How French Women's Magazines Invented the Modern Woman* (Stanford, CA: Stanford University Press, 2013).
71. The series featured more than forty portraits of contemporary women aeronauts. François Peyrey, "Les Femmes en ballon libre," *La Vie au grand air*, 6 November 1903, 826–827; 13 November 1903, 847; 3 December 1903, 898; 31 December 1903, 983–984; 11 February 1904, 118; 10 March 1904, 192.
72. B. de Fontenelles, "Les Femmes aéronautes," *Femina*, 15 October 1901, 340–341.
73. Marie Surcouf, "Mon premier voyage comme pilote," *Femina*, 1 October 1906, 429.
74. Collete, "La Bulle," in *Dans la Foule* (Paris: Georges Crès, 1918), 103–113. Originally published in *Le Matin*, 12 September 1912.
75. French feminists during the Third Republic articulated the case for women's rights in relation to their normative social role as mothers (Offen, "Depopulation, Nationalism, and Feminism in Fin-de-Siècle France"). Although I have not identified any kind of significant political activism by the Stelliennes, they certainly negotiated a more active role as aeronauts through a similar relational dynamic.
76. Michael S. Reidy, "Mountaineering, Masculinity, and the Male Body in Mid-Victorian Britain," *Osiris* 30 (2015): 158–181.
77. "En ballon": *Impressions de voyage d'une carte postale* [Published by the *Aéro-Club Féminin Stella* in 1911], BHVP, Actualités 125.
78. Form letter, 1 March 1909, SI-NASM, Technical Files, DS-819100-01.

79. “Échos du banquet du 11 décembre 1913,” *L’Aérophile*, 1 February 1914, 70–71; “Assemblée générale du 17 mars 1914,” *L’Aérophile*, 15 April 1914, 192.
80. “Assemblée générale statutaire du 17 mars 1910,” *L’Aérophile*, 15 April 1910, 190–192; “Grand Banquet Annuel,” *L’Aérophile*, 1 January 1913, 22–25.
81. “Fête enfantine du 18 mai 1911,” *L’Aérophile*, 15 June 1911, 264; “Pour le Prix Militaire et Max Brodsky,” *L’Aérophile*, 1 October 1912, 456.
82. G. Espitallier, “Les Femmes aéronautes,” *L’Aéronautique*, 1 January 1905, 10.
83. “Séance du 14 décembre 1914,” *L’Aérophile*, 424.
84. Henri Deutsch de la Meurthe, who established “usines de pétrole” across Europe, was labeled by the press the “Mécène de l’aérostation.” See J. A., “Un Généreux Donateur,” *La Vie au grand air*, 8 April 1900, 377. Coming from a Jewish family with ties to Lorraine, Deutsch de la Meurthe’s philanthropy can be understood as a strategy to deal with the current of anti-Semitism in turn-of-the-century France. Lavish donations to scientific and technological causes were supposed to express his loyalty to the Republic while simultaneously offering a legitimate path to his integration into the *haute bourgeoisie*. See Sophie Mouton, “De l’aviation à la Cité universitaire. Philanthropie et patriotisme chez les Deutsch de la Meurthe,” *Archives Juives* 42, no. 1 (2009): 105–117.
85. *La Civilisation du journal: Histoire culturelle et littéraire de la presse française au XIXe siècle*, ed. Dominique Kalifa, Philippe Régnier, Marie-Ève Thérénty, and Alain Vaillant (Paris: Éditions Nouveau Monde, 2012); Dominique Kalifa, *La Culture de masse en France* (Paris: Découverte, 2001), 7–28.
86. Dauncey, *French Cycling*, 52.
87. One exception is Dauncey and Hare, “Cosmopolitanism United,” 40. The only substantial biography on Bennett is Richard O’Connor’s *The Scandalous Mr. Bennett* (Garden City, NY: Doubleday & Company, 1962), which lacks scholarly rigor.
88. James L. Crouthamel and Andrew Jackson, “James Gordon Bennett, the ‘New York Herald’, and the Development of Newspaper Sensationalism,” *New York History* 54, no. 3 (1973): 294–316.
89. Mike Sowell, “The Birth of National Sports Coverage: An Examination of the *New York Herald’s* Use of the Telegraph to Report America’s First ‘Championship’ Boxing Match in 1849,” *Journal of Sports Media* 3, no. 1 (2008): 51–75.
90. “Bennett, James Gordon,” in *Dictionary of American Biography*, vol. 2, ed. Allen Johnson (New York: Charles Scribner’s Sons, 1929), 199–202.
91. Berenson, *Heroes of Empire*, 22–48. Bennett also sponsored trips to explore the Arctic, such as John Franklin’s ill-fated expedition in 1873, and was a forerunner in encouraging modern war correspondence.
92. Dauncey and Hare, “Cosmopolitanism United,” 41; O’Connor, *The Scandalous Mr. Bennett*, 171–178; Charles L. Robertson, *The International Herald Tribune: The First Hundred Years* (New York: Columbia University Press, 1987), 16.

93. Accounts varied on whether he urinated into the grand piano or the fireplace. O'Connor, *The Scandalous Mr. Bennett*, 132–137.
94. Dauncey and Hare, “Cosmopolitanism United,” 46.
95. *New York Herald*, 8 December 1899.
96. *New York Herald* (European Edition), 18 August 1890, quoted in Dauncey and Hare, “Cosmopolitanism United,” 39.
97. O'Connor, *The Scandalous Mr. Bennett*, 191.
98. Dauncey and Hare, “Cosmopolitanism United,” 39.
99. “Balloons Start for Great Race in Fine Weather,” *The Philadelphia Inquirer*, 1 October 1906.
100. Participants came from France (3), Germany (3), the United States (2), Belgium (1), Spain (3), Italy (1), and Great Britain (3).
101. Thierry Gervais, “Illustrating Sports, or the Invention of the Magazine,” in *Getting the Picture: The Visual Culture of the News* (London: Bloomsbury Academic, 2015), ed. Jason E. Hill and Vanessa R. Schwartz, 131–138. See also Thierry Gervais, “L’Invention du magazine: La photographie mise en page dans ‘La Vie au grand air’ (1898–1914),” *Études photographiques*, no. 20 (2007): 50–67.
102. Pierre Lafitte, “La Vie au grand air,” *La Vie au grand air*, 1 April 1898, 4.
103. “La Première ascension du ‘Touring-Club,’” *La Vie au grand air*, 1 May 1898, 29–31.
104. Jacques Faure, “1,400 kilomètres en ballon,” *La Vie au grand air*, 10 November 1905, 937–938.
105. “Automobiles contre aérostats,” *La Vie au grand air*, 19 June 1903, 402.
106. “Aérostation cycle-militaire,” *L’Illustration*, 8 May 1897, 363.
107. Tournanchon dit Nadar, “Brévet d’inventions no. 38509,” 31 October 1858, MAE-CD, SFNAé, N1 (Nadar Photographe).
108. Félix Nadar, *When I Was a Photographer*, trans. Eduardo Cadava and Liana Theodoratou (Cambridge, MA: MIT Press, 2015), 57–72.
109. BHVP, MS-NA-472ter, f. 1.
110. Paul Desmarests, “Photographie instantanée en ballon libre,” *La Nature*, 20 November 1880, 391–394. See also the series of articles “La Photographie en ballon” that Gaston Tissandier published in *La Nature* on 4 July 1885, 17 July 1886, 4 December 1886, 29 November 1890, and 11 January 1896.
111. “Commission d’aérostation scientifique,” *L’Aérophile*, March 1905, 61.
112. “Paris en ballon,” *L’Illustration*, 25 May 1907, 341–345.
113. See the classified by Paul Pacheco, from São Paulo, put out in the 11 August 1901 edition of *La Vie au grand air* searching for people to exchange postcards.

114. Emile Straus, “L’aérostation et la carte postale illustrée,” *L’Aérophile*, April 1900, 51–53; “Le Ballon captivé de Barcelone,” *La Nature*, 16 March 1889, 249–250.
115. Guillaume de Syon, “La Grande nouvelle aérienne. Passion et peur de l’aviation au travers de la carte postale (1890–1914),” in *L’Emprise du vol*, 89–102.
116. Straus, “L’Aérostation et la carte postale illustrée.”
117. Francois Peyrey, *Au fil du vent* (Paris: Henri Guiton, 1909), 189.
118. *Aéro-Club de France: Annuaire 1905*, 59.
119. As Bravard explains, aristocrats suffered a disproportionate share of losses during the war, which led to a demographic decline but allowed their prestige to persevere a little longer. *Le Grand monde Parisien*, 183–356.
120. *Aéro-Club de France: Annuaire pour 1910*, 7–8.
121. Crouch, *The Eagle Aloft*, 531–534; *The Aero Club of America, Navigating the Air: A Scientific Statement of the Progress of Aeronautical Science up to the Present Time* (New York: Doubleday, 1907), ix–x.
122. Edward Berenson, “American Perspectives on the French Republic,” in *The French Republic: History, Values, Debates*, ed. Edward Berenson, Vincent Duclert, and Christophe Prochasson (Ithaca, NY: Cornell University Press, 2011), 359–366.
123. George Henry Payne, “The Balloon Club of Paris,” *Ainslee’s Magazine* 4, no. 5 (1899), 574.
124. See an expression of this vision in Albert De Dion’s presidential speech at the “Assemblée Générale du 14 Février 1901,” *L’Aérophile*, February 1901, 27–28.

## CHAPTER 5

1. Jules Verne et al., *Correspondance inédite de Jules Verne et de Pierre-Jules Hetzel, 1863–1886*, vol. 1 (Geneva: Slatkine, 1999), 7.
2. A survey conducted with schoolteachers in the department of Haute-Vienne in 1877 revealed that Verne’s debut was by far the most popular novel among students. Alain Corbin, *Les Conférences de Morterolles (hiver 1895–1896). À l’écoute d’un monde disparu* (Paris: Flammarion, 2013), 65–67.
3. Only *Le Tour du monde en quatre-vingts jours* sold more during his lifetime, with 108,000 copies. Sylvain Venayre, *La Gloire de l’aventure: Genèse d’une mystique moderne 1850–1940* (Paris: Aubier, 2002), 44–45.
4. Here I draw from Dominique Kalifa’s theorization of the “social imaginary.” As he explains, “Social imaginaries describe the way in which societies perceive their components—groups, classes, and categories—and hierarchize their divisions and elaborate their evolutions. Thus they *produce and institute* the social

more than they reflect it,” *Vice, Crime, and Poverty: How the Western Imagination Invented the Underworld*, trans. Susan Emanuel (New York: Columbia University Press, 2019), 7.

5. William H. Schneider, *An Empire for the Masses: The French Popular Image of Africa* (Westport, CT: Greenwood Press, 1982); Tony Chafer and Amanda Sackur, eds., *Promoting the Colonial Idea: Propaganda and Visions of Empire in France* (New York: Palgrave, 2002); Pascal Blanchard and Sandrine Lemaire, eds., *Culture coloniale: La France conquise par son empire, 1871–1931* (Paris: Autrement, 2003); Venayre, *La Gloire de l’aventure*; Martin Evans, *Empire and Culture: The French Experience, 1830–1940* (New York: Palgrave Macmillan, 2004); Edward Berenson, “Making a Colonial Culture? Empire and the French Public, 1880–1940,” *French Politics, Culture and Society* 22, no. 2 (2004): 127–149; J. P. Daughton, *An Empire Divided: Religion, Republicanism, and the Making of French Colonialism, 1880–1914* (Oxford: Oxford University Press, 2006); Berenson, *Heroes of Empire*.

6. On civilization as an orienting principle in Third Republic imperial ideology, see Alice Conklin’s *A Mission to Civilize: The Republican Idea of Empire in France and West Africa, 1895–1930* (Stanford, CA: Stanford University Press, 1997) and “The Civilizing Mission,” in *The French Republic*, 173–181.

7. Daniel R. Headrick, *Power over Peoples: Technology, Environments, and Western Imperialism* (Princeton, NJ: Princeton University Press, 2010), 306.

8. Philip Dine, “The French Colonial Empire in Juvenile Fiction: From Jules Verne to Tintin,” *Historical Reflections/Réflexions Historiques* 23, no. 2 (1997): 177–203; Martyn Cornick, “Representations of Britain and British Colonialism in French Adventure Fiction, 1870–1914,” *French Cultural Studies* 17, no. 2 (2006): 137–154.

9. James C. Scott, *Seeing Like a State: How Certain Conditions to Improve the Human Condition Have Failed* (New Haven, CT: Yale University Press, 1998); Peter Adey, Mark Whitehead, and Alison J. Williams, eds., *From above: War, Violence, and Verticality* (Oxford: Oxford University Press, 2013).

10. Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981); Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, NY: Cornell University Press, 1989).

11. Jules Verne, “Un voyage en ballon,” *Musée des familles*, August 1851, 329–336.

12. Ernest Gervais, “Cinq semaines en ballon,” *Le Petit Journal*, 24 April 1863.

13. William Butcher, *Jules Verne Inédit: Les Manuscrits Décryptés* (Lyon: ENS éditions, 2015), 87.

14. Rosalind Williams, *The Triumph of Human Empire: Verne, Morris, and Stevenson at the End of the World* (Chicago: University of Chicago Press, 2013), 65–74.

15. Maurice Crosland, "Popular Science and the Arts: Challenges to Cultural Authority in France under the Second Empire," *The British Journal for the History of Science* 34, no. 3 (2001): 301–322.
16. Harold H. Scudder, "Poe's 'Balloon Hoax,'" *American Literature* 21, no. 2 (1949): 179–190.
17. Jules Verne, "Edgar Poe et ses œuvres," in *Textes oubliés* (Paris: Union Générale d'Éditions, 1979), 11–53.
18. Quoted in Jacques Noiray, *Le Romancier et la machine: L'image de la machine dans le roman français (1850–1900)*, vol. 2 (Paris: Librairie José Corti, 1982), 28.
19. F. Camus, "Cinq semaines en ballon," *Journal des débats politiques et littéraires*, 12 February 1863.
20. Noiray, 46; Marie Thébaud-Sorger, "L'Aérostat au service de l'espace temps de Jules Verne dans son premier roman, *Cinq semaines en ballon*," *Revue Jules Verne*, no. 25 (2007): 51–57. In the novel, Dr. Samuel Fergusson calls the idea of steering a balloon utopian and derides attempts to do so.
21. Williams, *The Triumph of Human Empire*, 62.
22. Hetzel rejected the manuscript Verne proposed to be published after his debut success for being too negative in its predictions about technological change. Titled *Paris au XXe siècle*, Verne abandoned the project, which only saw publication in 1994.
23. Matthieu Letourneux, *Le Roman d'aventures, 1870–1930* (Limoges: Presses Universitaires de Limoges, 2010).
24. As various critics argue, it is ahistorical and unproductive to frame Verne's novels as speculative "science fiction" that tried to foresee the future. See Arthur B. Evans, *Jules Verne Rediscovered: Didacticism and the Scientific Novel* (New York: Greenwood Press, 1988); Michel Serres, *Jouvenances sur Jules Verne* (Paris: Éditions de Minuit, 1974); Timothy Unwin, *Jules Verne: Journeys in Writing* (Liverpool: Liverpool University Press, 2005); Jean Chesneau, *Jule Verne: Un regard sur le monde* (Paris: Bayard, 2001).
25. G. Lefèvre to Hetzel, 25 July 1868, BnF, NAF 17004.
26. Williams, *The Triumph of Human Empire*, 9.
27. Jules Verne, *Cinq semaines en ballon: Voyage de découvertes en Afrique par trois Anglais* (Paris: J. Hetzel, 1863), 20–21.
28. Quoted in Lionel Dupuy, "Les *Voyages extraordinaires* de Jules Verne ou le roman géographique au XIXe siècle," *Annales de géographie* 690, no. 2 (2013): 131–150.
29. See endnote 9 in this chapter.
30. Jean-Marie Seillan, "Réflexions sur un genre mineur: Le 'roman aérostatique' de Léo Dex," in *Libres horizons, Pour une approche comparatiste. Lettres francophones. Imaginaires*, ed. Mircéala Symington and Béatrice Bonhomme (Paris: L'Harmattan, 2008), 423–434.

31. Jean Bruno, *Aventures de Paul enlevé par un ballon* (Paris: Bernardin-Béchet, 1875).
32. Beyond the ones discussed in this section, Dex published at least three other “aerostatic novels”: *Sur la route du Pôle, voyage et aventures de l’aéronaute Gradnier* (Tours: Mame et Fils, 1897), a tale of arctic exploration picking up on the attention given to S. A. Andrée’s tragic attempt to reach the North Pole by balloon in 1897; the blatantly Vernian *Le Record du tour de la terre en vingt-neuf jours, une heure, dix minutes* (Paris: Combet, 1899); and *Les Aventures scientifiques. Trois reporters à Fachoda* (Paris: Combet, 1901), a reimagining of the Fashoda Incident in which three airborne journalists (a French, an American, and a Russian) play a key role.
33. Léo Dex and M. Dibos, *À travers Madagascar insurgée* (Tours: Mame et Fils, 1895).
34. Léo Dex, *Vers le Tchad, roman aérostatique* (Paris: Librairie Hachette, 1895).
35. Léo Dex, *Du Tchad au Dahomey en ballon* (Paris: Hachette, 1903 [1897]).
36. On the transnational tensions engendered by the complex legal jurisdictions that made up the Tunisia protectorate, see Mary Dewhurst Lewis, *Divided Rule: Sovereignty and Empire in French Tunisia: 1881–1938* (Berkeley: University of California Press, 2013).
37. Dex, *À travers Madagascar*, 227.
38. Maïke Thier, “The View from Paris: ‘Latinity,’ ‘Anglo-Saxonism,’ and the Americas, as discussed in the *Revue des Races Latines*, 1857–64,” *International History Review* 33, no. 4 (2011): 627–644; Christina Carroll, “Imperial Ideologies in the Second Empire: The Mexican Expedition and the *Royaume Arabe*,” *French Historical Studies* 42, no. 1 (2019): 67–100.
39. Dex, *Vers le Tchad*, 42.
40. Dex, *Vers le Tchad*, 174.
41. An almost identical dehumanization is featured in Verne’s *Cinq semaines en ballon*. At one point Fergusson’s two companions—Dick Kennedy and Joe—go hunting while Fergusson stays with the balloon attached to a tree. Upon their return, Kennedy and Joe think a band of “nègres” is trying to seize the balloon, but as they get closer, they realize it is a troop of monkeys. “There isn’t much of a difference from a distance,” Kennedy states. “Not even from up close,” Joe replies.
42. Matthieu Letourneux, “Géographie, idéologie et logique romanesque dans les romans d’aventures géographiques du *Journal des voyages*,” in *L’empire des géographes: Géographie, exploration et colonisation, XIXe–XXe Siècle*, ed. Pierre Singaravélou (Paris: Belin, 2008), 188–199.
43. E. Deburaux, *De la possibilité des voyages aériens au long cours* (Paris: Berger-Levrault, 1891), 3.
44. Léo Dex and Maurice Dibos, “Les Aérostats et l’exploration du continent Africain,” *Revue maritime et coloniale*, vol. 113 (1892): 234–296, 498–523; vol. 114 (1892): 155–168, 228–249, 502–541; vol. 115 (1892), 39–70, 232–259. See also Léo Dex

and Maurice Dibos, "Les Aérostats et la traversée de l'Afrique australe," *Revue maritime et coloniale*, 122, (1894): 404–425.

45. The most famous and tragic of these was S. A. Andrée, Knut Frænkel, and Nils Strindberg's attempt to reach the Arctic by balloon in 1897. The explorers disappeared, and their bodies were only found in 1930. Although a Swedish expedition, the initiative relied on significant logistical and technical support from the French aeronautical community (the balloon, for instance, was manufactured by Henri Lachambre). See correspondence between Andrée and Gaston Tissandier in LoC-TC, 1/2. For a narrative history of the Andrée expedition, see Alex Wilkinson, *The Ice Balloon: S. A. Andrée and the Heroic Age of Arctic Exploration* (New York: Vintage Books, 2012).

46. Dex and Dibos, "Les Aérostats et l'exploration du continent Africain," *Revue maritime et coloniale*, vol. 114 (1892): 228–249.

47. Dex and Dibos, "Les Aérostats et l'exploration du continent Africain," *Revue maritime et coloniale*, vol. 113 (1892): 517.

48. Dex and Dibos, "Les Aérostats et l'exploration," vol. 113, 533.

49. Ch. Formentin, "À travers le Sahara en ballon," *Le Figaro*, 2 July 1898; Emile Gautier, "Le Kanguroo," *Le Matin*, 12 August 1898; G. B., "La Traversée de l'Afrique en ballon," *L'Aérophile*, no. 6-7-8 (June-July-August, 1898): 109.

50. E. Deburaux, "Dernier essai préliminaire aux voyages aériens d'exploration," *Revue du génie militaire* 23 (1902): 37–62, 175–198, 265–288, 363–388.

51. Georges Blanchet, "La Traversée du Sahara par ballons-pilotes," *L'Aérophile*, January 1903, 13–15; François Peyrey, "Les Ballons au Sahara," *La Vie au grand air*, 7 February 1903, 84–85.

52. Articles in *Le Temps*, 7 and 27 June 1902.

53. Léo Dex, "Peut-on et doit-on traverser le Sahara central en ballon?," *Revue scientifique*, 20 August 1898, 230.

54. "Les Expériences aérostatiques sahariennes," *Le Petit Journal*, 29 January 1903.

55. "Le Premier Essai de traversée saharienne en ballon non monté," *Le Temps*, 1 February 1903.

56. "Au Sahara en ballon," *La Dépêche Tunisienne*, 21 July 1898; Deburaux, "Dernier essai préliminaire aux voyages aériens d'exploration," *Revue du génie militaire* 23 (1902): 386.

57. "Le Premier Essai de traversée Saharienne en ballon non monté," *Le Temps*, 1 February 1903.

58. "Nécrologie," *L'Aérophile*, March 1904, 72.

59. "Dix semaines en ballon à travers le Sahara," *Le Journal de la jeunesse*, 1 January 1898, 314; "Cinq semaines en ballon," *La Science française*, 5 August 1898, 48.

60. Émile Gautier, “Par-dessus le Sahara,” *La Science française*, 18 January 1901, 289–290.
61. Venayre, *La Gloire de l’aventure*.
62. Luc Robène, “Naissance et structuration du vol sportif: Le rôle du comte H. de la Vaulx (1870–1930),” *Sport History Review* 32, no. 2 (2001): 126–129.
63. Jacques de La Vaulx, “Henri de la Vaulx, précurseur de l’aéronautique,” *Miroir de l’histoire*, no. 73 (1956): 85–90.
64. La Vaulx, *Seize mille kilomètres*, 307.
65. Henry de La Vaulx, “De France en Russie en ballon,” *L’Aérophile*, December 1900, 164–174.
66. E. Deburax, “Les Communications entre la France et la Russie en cas de guerre européenne,” *Revue du génie militaire* 8 (1894): 5–29.
67. Patricia M. E. Lorcin and Todd Shepard, eds., *French Mediterraneans: Transnational and Imperial Histories* (Lincoln: University of Nebraska Press, 2016); John Perry, “From Sea to Lake: Steamships, French Algeria, and the Mediterranean, 1830–1940,” PhD diss. (Ohio State University, 2019).
68. David Todd, *A Velvet Empire: French Informal Imperialism in the Nineteenth Century* (Princeton, NJ: Princeton University Press, 2021), 72–122.
69. Comte de Castellane, “La Méditerranée,” *L’Écho de Paris*, 14 July 1901.
70. Henry de La Vaulx, “La Traversée de la Méditerranée en ballon,” *L’Écho de Paris*, 1 September 1901.
71. Henri de Vèze, “De France en Afrique en ballon,” *La Vie au grand air*, 20 October 1901, 614–616.
72. “La Tentative du ‘Méditerranéen,’” *Le Petit Journal*, 16 October 1901.
73. “La Descente du Méditerranéen,” *La Vie au grand air*, 27 October 1901, 639.
74. “La Traversée de la Méditerranée et l’aérostation,” *La vie illustrée et l’univers illustré réunis*, 18 October 1901.
75. Berenson, *Heroes of Empire*.
76. The notion of “heroic failure” and its relationship to empire is developed by Stephanie Barczewski in *Heroic Failure and the British* (New Haven, CT: Yale University Press, 2016).
77. Pierre Borcheux and Daniel Hémerly, *Indochina: An Ambiguous Colonization, 1854–1954*, trans. Ly Lan Dill-Klein, Eric Jennings, Nora Taylor, and Noemi Toussignant (Berkeley: University of California Press, 2009); Michel Bodin, *Les Français au Tonkin, 1870–1902: Une conquête difficile* (Paris: Soteca, 2012).
78. Sources pertaining to the *aérostiers* section role during the Tonkin Campaign can be found at SHD, GR.10.H.20. Extracts from the regimental journal kept by

Jullien were published in the *Revue du génie militaire* 1 (1887): 390–408, and subsequently reproduced in other publications. Jullien's correspondence with his parents is collected in *La Chefferie du génie de Hué à ses origines: Lettres du Général Jullien (Annam, Tonkin, 1884–1886)* (Hanoi: Imprimerie d'Extrême-Orient, n.d.).

79. Adas, *Machines as the Measure of Men*.

80. Béthuys, *Les Aéroliers militaires*, 240–242. The Annamite visit is also present in Jullien's notes, although there is much less embellishment regarding their responses. "Notes sur l'emploi de la section d'aéroliers pendant la Campagne du Tonkin—1884–1895," in SHD, GR.10.H.20.

81. Godechot, "L'aérostation militaire," 224.

82. Quoted in Baron Marc de Villiers du Terrage, *Les Aéroliers militaires en Egypte: Campagne de Bonaparte, 1798–1891* (Paris: G. Camproger, 1901), 13–14.

83. Abdurrahman Gabarti, *Journal d'Abdurrahman Gabarti pendant l'occupation française en Égypte*, trans. Alexandre Cardin (Paris: 1838), 58–59, 73.

84. Jules Verne et al., *Correspondance Inédite de Jules et Michel Verne avec l'éditeur Louis-Jules Hetzel, 1886–1914*, vol. 1 (Geneva: Slatkine, 2004), 249–250.

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## CHAPTER 6

1. "Steerable Balloon Circles Eiffel Tower," *New York Herald*, 19 November 1899.

2. My exploration of Frenchness and cosmopolitanism here owes a significant debt to Vanessa Schwartz's *It's So French!* Her insight that the transatlantic film industry in the 1950s and 1960s rendered Frenchness and cosmopolitanism codependent has shaped my own understanding of how Santos-Dumont's celebrity circulated across the turn-of-the-century Atlantic World.

3. Graeme Turner, *Understanding Celebrity* (London: Sage Publications, 2004), 5. The foundational text for contemporary celebrity studies is Richard Dyer, *Stars*, New Edition (London: BFI Publishing, 1998). For trends in the field, see recent issues of *Celebrity Studies*.

4. Early biographers tended to idealize Santos-Dumont and sought to affirm his priority as the first person to fly an airplane in 1906 against the growing consensus that the Wright Brothers had achieved the feat three years earlier (Valdir Ramalho, "As biografias históricas de Santos Dumont," *Scientiae Studia* 11, no. 3 [2013]: 687–705). Peter Wykeham's *Santos-Dumont: A Study in Obsession* (London: Putnam, 1962).

5. Margaret C. Jacob, "The Cosmopolitan as Lived Category," *Daedalus* 137, no. 3 (2008): 18.

6. Judith R. Walkowitz, "The 'Vision of Salome': Cosmopolitanism and Erotic Dancing in Central London, 1908–1918," *The American Historical Review* 108,

no. 2 (2003): 338. See also her *Nights Out: Life in Cosmopolitan London* (New Haven, CT: Yale University Press, 2012).

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9. Pierre Birnbaum, *La France imaginée: Déclin des rêves* (Paris: Fayard, 1998); Naomi Schor, “The Crisis of French Universalism,” *Yale French Studies*, no. 100 (2001): 43–64; Jennings, “Universalism,” 145–153.

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11. Edward Berenson and Eva Giloi, “Introduction,” in *Constructing Charisma, 2*. For a dissenting view arguing that the modern celebrity originated with the emergence of new forms of *publicité* in the eighteenth century, see Antoine Lilti, *Figures publiques: L’invention de la célébrité, 1750–1850* (Paris: Fayard, 2014).

12. Charle, *Le Temps des capitales culturelles*.

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14. Robert and Isabelle Tombs, *That Sweet Enemy: The French and the British from the Sun King to the Present* (London: Random House, 2006), 293–294.

15. See David Todd’s “A French Imperial Meridian, 1814–1870,” *Past & Present* 210, no. 1 (2011): 155–186 and *A Velvet Empire*.

16. Walter Mignolo, *The Idea of Latin America* (Oxford: Blackwell, 2005); Thier, “The View from Paris.”

17. Mario Carelli, *Cultures croisées: Histoire des échanges culturels entre la France et le Brésil de la Découverte aux Temps modernes* (Paris: Éditions Nathan, 1993).

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34. Wykeham, *Santos-Dumont*, 23–24.
35. A. Santos-Dumont, *Dans l’air* (Paris: Charpentier et Fasquelle, 1904), 30–32.
36. “Les Sports,” *Gil Blas*, June 17, 1898.
37. *Paris-Mondain: Annuaire du grand monde parisien et de la colonie étrangère* (Paris: A. Saint-Martin, 1908), 303.
38. A. Santos-Dumont, *My Airships* (New York: The Century Co., 1904); A. Santos Dumont, *Os meus balões* (Rio de Janeiro: Biblioteca de Divulgação Aeronáutica, 1938).
39. Santos-Dumont, *Dans l’air*, 14–28.
40. Needell, *A Tropical Belle Epoque*; Lilia Moritz Schwarcz, *The Spectacle of the Races: Scientists, Institutions, and the Race Question in Brazil, 1870–1930*, trans. Leland Guyer (New York: Hill and Wang, 1993); Thomas E. Skidmore, *Black into White: Race and Nationality in Brazilian Thought*, New Edition (Durham, NC: Duke University Press, 1993). Arguably the most infamous episode in the effort to control the memory of Brazil’s slaveholding past came in 1890, when the minister of finance Rui Barbosa ordered that all of his Ministry records concerning slavery be burned.
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42. Jacques Offenbach, *La Vie parisienne*, paroles Henri Meilhac and Ludovic Halévy (Paris: Michel Lévy Frères, 1867), 17.
43. “Ascension du ballon le ‘BRAZIL,’” *Le Sport universel illustré*, 23 July 1898, 480–482; Santos-Dumont, “Une ascension au Jardin d’Acclimation,” *L’Aérophile*, June–August 1898, 103–105.
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49. Shinya Sugiyama, *Japan’s Industrialization in the World Economy, 1859–1899: Export Trade and Overseas Competition* (London: Bloomsbury, 2012); Nancy L. Green, *Ready-to-Wear and Ready-to-Work: A Century of Industry and Immigrants in Paris and New York* (Durham, NC: Duke University Press, 1997).
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52. Gustave Eiffel, *La Tour Eiffel en 1900* (Paris: Masson et Cie., 1902), 263; Peter Soppelsa and Blair Stein, “Santos-Dumont’s Blimp Passes the Eiffel Tower,” *Technology and Culture* 54, no. 4 (2013): 942–946.
53. “Bulletin officiel de l’Aéro-Club,” *L’Aérophile*, September 1901, 225.
54. Santos-Dumont preserved 12,628 clippings from 1899 to 1903. The archive’s current iteration is smaller, since much of the material was damaged. Bárbara Cristina B. P. da Silva, “A questão da memória no arquivo pessoal de Santos Dumont,” *LexCult* 4, no. 1 (2020): 34–44.
55. Hoffman, *Wings of Madness*, 220–224.
56. Eug. Lericolais, “La Navigation aérienne,” *La Vie populaire*, 26 May 1903, 1029.
57. Roberts, “Rethinking Female Celebrity,” 110.
58. Ana I. Oancea, “The Fate of Invention in Late 19th Century French Literature,” PhD diss. (Columbia University, 2015). Bruno César Brulon Soares provocatively argues that Santos-Dumont’s eccentricity allowed him to negotiate his own complicated relationship with the normative values of masculinity. “O peso da leveza:

A Invenção de Alberto Santos Dumont,” PhD diss. (Universidade Federal Fluminense, 2019).

59. “Les Femmes,” *La Vie parisienne*, 11 April 1903, 213.

60. “Mr. Santos Dumont,” *The English and American Gazette*, 23 August 1901.

61. “Santos Dumont,” *The Sketch*, 28 January 1903, 58.

62. H. de V., “Jouets sportifs,” *La Vie au grand air*, 8 December 1901, 735. A collection of press clippings concerning the first Concours Lepine can be found in APP, DB/425.

63. “Booths on the Boulevard,” *New York Herald* (European Edition), 22 December 1901.

64. “M. Santos-Dumont Very Popular,” *New York Herald*, 17 November 1901; “Les Rosiéristes français,” *L’Écho de Paris*, 19 May 1902; *Chicago Sunday Times*, 7 May 1903; “Anúncio de produto commercial usando um dos balões de Santos Dumont,” BNB, ARM.23.3.16 (44); “Sabonete Santos Dumont,” BNB, ARM.35.6.2 (100).

65. An exception is a satirical postcard by B. Lavigne attacking the Aéro-Club’s decision to grant Santos-Dumont the Deutsch Prize (“Alliance Franco-Brésilienne,” undated, BHVP [CPA-0639-013]). The postcard features Santos-Dumont in his airship, his caricatured head on the body of a monkey. The other figure in the postcard is Deutsch de la Meurthe himself, awkwardly depicted as the airship’s guide-rope (his German ancestry is highlighted by the helmet in his right hand, and the Pernod bottle in his left hand is an allusion to Deutsch being delirious for giving Santos-Dumont the prize). While the simian depiction of Santos-Dumont can be read as an offensive reference to his Brazilian origins, one should bear in mind that the press compared the kind of acrobatic feats the aeronaut made while in the air to the agility of monkeys in an admiring manner. According to one reporter, Santos-Dumont practiced a kind of “gymnastique simiesque” (Lericolais, “La Navigation aérienne,” 1029).

66. BILL, “Cauchemar,” *Le Bon Vivant*, 2 December 1901.

67. “Men of Science and Invention. No. III. The Wizard of the Air Santos Dumont,” *The Phrenological Journal* 114, no. 5 (1902): 341–344.

68. Lyneise E. Williams, *Latin Blackness in Parisian Visual Culture, 1852–1932* (New York: Bloomsbury, 2019).

69. Adas, *Machines as the Measure of Men*.

70. By and large, although members of the French aristocracy engaged in technological pursuits could show skepticism toward liberal democracy, they were not reactionary to such an extent as to fully reject Enlightenment values. As such, I hesitate in applying Jeffrey Herf’s concept of “reactionary modernism.” *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1986).

71. Antônio Miranda, “Santos Dumont e a Cartofilia,” A. Santos-Dumont, *Os Meus Balões (“Dans l’air”)*, trans. A. de Miranda Santos, Edições do Senado Federal, Vol. 198 (Brasília: Senado Federal, 2016), 245–343.
72. James M. Laux, “Heroic Days in the French Automobile Industry,” *The French Review* 37, no. 3 (1964): 352. George Henry Payne reported on anti-Dreyfusardism in the Aéro-Club in “The Balloon Club of Paris,” *Ainslee’s Magazine* 4, no. 5 (1899), 574. On Santos-Dumont’s presence at royalist meetings see “Rapport,” 5 August 1901; “Rapport,” 13 August 1901; and “Extrait d’un rapport 2e brig., classé au dossier No. 340700-39,” 26 December 1908 (all in APP, BA/2028).
73. H. de Vèze, “Santos-Dumont à Monaco,” *La Vie au grand air*, 9 February 1902, 88.
74. Alberto Santos-Dumont, “Ce que je ferai ce que l’on fera,” *Je sais tout*, 15 February 1905, 105–114.
75. Jean Jaurès, “Truth or Fiction?,” in *Studies in Socialism*, trans. Mildred Minturn (New York and London: G. P. Putnam’s Sons, 1906), 176–183.
76. Jaurès, “Truth or Fiction?,” 178–179.
77. Ironically, the aristocrat La Vaulx also made a connection between aeronautics and socialism, albeit in a way that depoliticized socialism. “Socialism—and I do not speak of that which is unfortunately used for all kinds of shameful political trafficking, but socialism in all its beauty and nobleness, that is to say the union of all men in the same language and same harmony of thought and fraternity—will be the consequence of the progress in aerial sciences,” La Vaulx wrote in *Seize mille kilomètres*, iv.
78. Nye, *American Technological Sublime*, xiii.
79. Schwartz, *Spectacular Realities*; Jean-Yves Mollier, “Un parfum de la Belle Époque,” in *La Culture de masse en France de la Belle Époque à aujourd’hui*, ed. Jean-Pierre Rioux and Jean-François Sirinelli (Paris: Fayard, 2002), 72–115; Gregory Shaya, “The Flaneur, the Badaud, and the Making of a Mass Public in France, circa 1860–1910,” *The American Historical Review* 109, no. 1 (2004): 41–77.
80. “Parisians Out to See Airship,” *New York Herald*, 22 July 1901; “Echos & Nouvelles,” *Gil Blas*, 3 August and 16 October 1901.
81. Articles in *Le Figaro*, 17 and 19 October 1901.
82. Shaya, “The Flaneur,” 55–67.
83. “Journaux de ce matin,” *Le Matin*, 7 February 1902.
84. “Paris to New York by Balloon in Two Days,” *New York Herald*, 17 November 1901.
85. Letter copy, CENDOC, SDA-718.
86. See, for example, the *New York Herald’s* 10 December 1899 edition, which featured side-by-side the headlines “Paris Wearied by Noisy Nationalists,” and “M. Santos-Dumont in His Balloon.”

87. Fernand Fos, “M. Santos-Dumont raconté par lui-même,” *Le Monde illustré*, 17 August 1901, 128–129.
88. “A Wondrous Airship,” *The Baltimore Sun*, 13 July 1901.
89. W. L. McAlpin, “Santos Dumont and His Air Ship,” *Munsey’s Magazine*, December 1901, 422.
90. “Edison Talks of Flying,” *New York Sun*, May 4, 1902.
91. “Airship Man Is Here,” *The Washington Post*, April 17, 1902.
92. Dyer, *Stars*, 1–3.
93. Henrique Lins de Barros and Renato Vilela Oliveira de Souza, “Santos-Dumont e a solução do vôo dirigido: Releituras e interpretações da imagem pública de um inventor,” *Revista Brasileira de História da Ciência* 4, no. 2 (2011): 239–256.
94. “O balão dirigível Santos Dumont,” “O balão dirigível Santos Dumont,” *Ilustração Brasileira*, October 1901, 51–54. The final construction, “*nunca dantes navegados*,” comes from the first canto of Luís de Camões’s *Os Lusíadas* (1572), an epic poem that celebrated the Portuguese voyages of discovery.
95. Alfredo Maia, 16 July 1901, CENDOC, SDA-510; Arcebispo do Clero do Rio de Janeiro, 20 July 1901, CENDOC, SDA-675.
96. C. H. Gibbs-Smith, “Father Gusmão: The First Practical Pioneer in Aeronautics,” *Journal of the Royal Society of Arts* 97, no. 4803 (1949): 822–830; Richard P. Hallion, *Taking Flight: Inventing the Aerial Age from Antiquity through the First World War* (Oxford: Oxford University Press, 2003), 30–34.
97. “Atas das sessões de 17/07, 18/07, 21/10 e 24/10/1901 sobre Santos-Dumont,” CENDOC, SD1-276.
98. “4a Sessão Extraordinária, 23 de Setembro de 1903,” *Revista do IHGB*, Tomo 66, Parte II, vol. 108 (1903): 250.
99. Eduardo das Neves, “A Conquista do Ar” (Rio de Janeiro: Quaresma, 1909).
100. Skidmore, *Black into White*, 100–102.
101. Mario Paulo de Araújo Lima Barbosa to Santos-Dumont, 17 July 1901, CENDOC, SDA-752.
102. “A Chegada de Santos Dumont,” *Jornal do Brasil*, 7 September 1903. For photos of his arrival see *Revista da Semana*, 13 September 1903, 748–749.
103. “Documento—1903,” CENDOC, SD3-396. Also see the exhaustive coverage by *O Paiz* and *Jornal do Brasil* from 8 to 29 September 1903.
104. Martha Abreu, “O ‘crioulo Dudu’: Participação política e identidade negra nas histórias de um músico cantor,” *Topoi* 11, no. 20 (2010): 92–113; “Conexões atlânticas da música negra no pós-abolição—Brasil e Estados Unidos (1890 e 1920),”

in *Escravidão e subjetividades no Atlântico luso-brasileiro e francês (Séculos XVII-XX)*, ed. Myriam Cottias and Hebe Mattos, (Marseille: OpenEdition Press, 2016), 245–265; Marc A. Hertzman, *Making Samba: A New History of Race and Music in Brazil* (Durham, NC: Duke University Press, 2013), 80–83.

105. Paul Gilroy, *The Black Atlantic: Modernity and Double Consciousness* (Cambridge, MA: Harvard University Press, 1993).

106. João do Rio, “A musa das ruas,” in *A alma encantadora das ruas*, ed. Raúl Antelo (São Paulo: Companhia das Letras, 2008), 241–244.

107. José Murilo de Carvalho, *Os bestializados: O Rio de Janeiro e a república que não foi* (São Paulo: Companhia das Letras, 1987).

108. Styliane Philippou, “Modernism and National Identity in Brazil, or How to Brew a Brazilian Stew,” *National Identities* 7, no. 3 (2005): 246.

109. Edith Wolfe, “Paris as Periphery: Vicente do Rego Monteiro and Brazil’s Discrepant Cosmopolitanism,” *The Art Bulletin* 96, no. 1 (2014): 98–119.

110. Tarsila do Amaral, “França, eterna França,” *Revista Acadêmica*, November 1946, 74–75.

111. Claudia Musa Fay, “Santos Dumont e a conquista do ar: Uma nova forma de ver o mundo,” *Estudos Ibero-Americanos* 31, no. 2 (2005): 134–141.

112. “The Current State of the Arts in Europe: The Fascinating Brazilian Artist Tarsila do Amaral Gives Us Her Impressions,” *Correio da Manhã*, 25 Decembr 1923, trans. Stephen Berg, in *Tarsila do Amaral: Inventing Modern Art in Brazil*, ed. Stephanie d’Alessandro and Luis Pérez-Oramas (New Haven, CT: Yale University Press, 2017), 155–156.

113. Stephanie d’Alessandro, “*A Negra, Abaporu*, and Tarsila’s Anthropophagy,” in *Tarsila do Amaral: Inventing Modern Art in Brazil*, 38–43.

114. Michele Greet, *Transatlantic Encounters: Latin American Artists in Paris between the Wars* (New Haven, CT: Yale University Press, 2018), 122–126.

115. Fay, “Santos Dumont e a conquista do ar.”

116. Tarsila do Amaral, “Pintura Pau-Brasil e Antropofagia,” *Revista Anual do Salão de Maio*, no. 1 (1939): 31–35.

117. Rafael Cardoso, “The Problem of Race in Brazilian Painting, c. 1850–1920,” *Art History* 38, no. 3 (2015): 488–511.

118. Petrine Archer Straw, *Negrophilia: Avant-Garde Paris and Black Culture in the 1920s* (London: Thames & Hudson, 2000); Greet, *Transatlantic Encounters*, 126.

119. Lisa Shaw, “Afro-Brazilian Popular Culture in Paris in 1922: Transatlantic Dialogues and the Racialized Performance of Brazilian National Identity,” *Atlantic Studies* 8, no. 4 (2011): 393–409.

120. “Torre Eiffel de Madureira: instituto do Irajá desvenda mistério,” *Veja Rio*, 12 March 2014, <http://vejario.abril.com.br/blog/rj450/uncategorized/torre-eiffel-de-madureira-instituto-do-iraja-desvenda-misterio>.
121. Wohl, *A Passion for Wings*, 5–29.
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#### CONCLUSION

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## ARCHIVES AND LIBRARIES CONSULTED

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ACF	Archives Privées de l'Aéro-Club de France, Paris.
AMCR	Archives municipales et communales de Reims, Reims.
CNAM	Archives historiques du Conservatoire national des arts et métiers, Paris.
ANF	Archives nationales de France, Paris.
APP	Archives de la Préfecture de Police, Paris.
BHVP	Bibliothèque Historique de la Ville de Paris, Paris.
BM	Bibliothèque Reims.
BnF	Bibliothèque nationale de France, Paris.
MC	Musée Carnavalet, Paris.
MAE-CD	Musée de l'Air et de l'Espace, Centre de Documentation, Le Bourget.
MLP	Musée de La Poste, Paris
SHD	Service Historique de la Défense, Vincennes.

### UNITED STATES

FL-PU	Firestone Library, Princeton University, Princeton, New Jersey
HL	The Huntington Library, San Marino, California.
LHL	Linda Hall Library, Kansas City, Missouri.
LoC-TC	Library of Congress, Tissandier Collection, Washington, D.C.
SI-NASM	Smithsonian Institution, National Air and Space Museum, Washington, D.C.
SI-NPM	Smithsonian Institution, National Postal Museum, Washington, D.C.
USAFA-CRGAHC	United States Air Force Academy Library, Colonel Richard Gimbel Aeronautics History Collection, Colorado Springs, Colorado.

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