

MODELING BEHAVIOR: BOYHOOD, ENGINEERING, AND THE MODEL  
AIRPLANE IN AMERICAN CULTURE

by

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For Karl



## TABLE OF CONTENTS

<b>LIST OF ILLUSTRATIONS</b>	<b>iv</b>
<b>ACKNOWLEDGEMENTS</b>	<b>vii</b>
<b>INTRODUCTION:      Making Models, Making Boyhood</b>	<b>1</b>
<b>CHAPTER ONE:      Inventing the Inventive Boy</b>	<b>19</b>
<i>“Our first began....”: The Origins of the         Wondrous Boyhood of Orville and Wilbur         Wright</i>	22
<i>The Inventor as Hero and the Mystique of         the Boy Inventor</i>	33
<i>Tom Swift and the Boy Inventor in Series         Fiction</i>	49
<i>Playing the Boy Inventor: Model Airplanes,         The Wright Boys, and the Public Domain         of Inventive Boy Discourse</i>	62
<b>CHAPTER TWO:      Putting the Boy Inventor in His Place</b>	<b>81</b>
<i>Boy Culture and the Ideology of         Independence</i>	85
<i>At Home and Tinkering</i>	99
<i>Workshops Outside the Home:         E. Lillian Todd and the Junior Aero         Club of America</i>	107

	<i>Space and Place: Percy Pierce and the Identity of the Boy Inventor</i>	123
	<i>Containing the Boy Inventor</i>	133
<b>CHAPTER THREE:</b>	<b>Packaging Modernity: Towards an Ecology of the Model Airplane Hobby</b>	<b>140</b>
	<i>“Purely Sporting Models”: Aeromodeling as Craft and Sport</i>	144
	<i>“Too Expensive for Schoolboys”?</i>	163
	<i>Boy Bricoleurs and Clever Tinkerers</i>	174
	<i>Construction Kits and the Rise of the Boy Engineer</i>	186
<b>CHAPTER FOUR:</b>	<b>Under Lindbergh’s Wing</b>	<b>204</b>
	<i>A Hero for a New Age</i>	207
	<i>Narrating the Boy Lindbergh: Popular Biography and Lore of Boyhood</i>	222
	<i>Commodifying “Lindy”: Lindbergh and Commercialized Boy Culture</i>	237
	<i>“America has found her wings...”</i>	253
<b>CHAPTER FIVE:</b>	<b>“The Modern Boy is Air-Minded”: Boy Consumers and the Airplane Model League of America</b>	<b>273</b>
	<i>Visions of an Air-minded Generation</i>	276
	<i>Making Ways for Boy Consumers</i>	288
	<i>The Airplane Model League of America and the Model Building Boy</i>	296
	<i>Children’s Experiences and Tournament Preparations—The Case of Detroit</i>	308

<i>The AMLA's Declining Fortunes and the Resilient Air-Minded Boy Consumer</i>	322
<b>CONCLUSION</b>	<b>333</b>
<b>BIBLIOGRAPHY</b>	<b>346</b>

## LIST OF ILLUSTRATIONS

<b>Figure 1:</b> Two views of boyhood	8
<b>Figure 2:</b> Alphonse Pénaud's <i>Hélicoptère</i> (1870) and <i>Planophore</i> (1871)	26
<b>Figure 3:</b> Christian Schussele, <i>Men of Progress</i> (1862)	34
<b>Figure 4:</b> Cromwell Dixon, photograph (ca. 1907)	47
<b>Figure 5:</b> <i>Tom Swift and His Motorcycle</i> (1910), cover	53
<b>Figure 6:</b> "Cecil Peoli" Racer (1912)	67
<b>Figure 7:</b> Dandrieux Butterfly Toy (1879)	72
<b>Figure 8:</b> Orville Wright, Sketch of Boyhood Toy (1929)	75
<b>Figure 9:</b> "Heroes of the Air: Orville and Wilbur Wright" (ca. 1935)	78
<b>Figure 10:</b> Drawing of "inexpensive 'American Boy' Workshop (1909)	96
<b>Figure 11:</b> Sperry Home Floor Plan, Brooklyn, NY	103
<b>Figure 12:</b> Franklin Experimental Club, ca. 1890-1892, photograph	108
<b>Figure 13:</b> Illustrations of E. L. Todd, <i>Washington Post</i> (1908)	114
<b>Figure 14:</b> "A Young Inventor in His Workshop," (1910)	125
<b>Figure 15:</b> "Percy Pierce Racer No. 68" (ca. 1912)	129
<b>Figure 16:</b> Lewis H. Hines, "Two Boys with Model Airplanes," (n.d.)	141
<b>Figure 17:</b> "Percy Pierce Flyer" (1910)	149
<b>Figure 18:</b> "'Ideal' Curtiss Hydroplane" (1912)	155

<b>Figure 19:</b> “Storing Energy For a Long Distance Flight” (1910)	157
<b>Figure 20:</b> “Nealey Racing Monoplane” (1912); “Selley Monoplane” (1912)	159
<b>Figure 21:</b> “Surini Model” (1913); “The California Racer” (1912)	160
<b>Figure 22:</b> A-frame pusher advertisements (1912)	162
<b>Figure 23:</b> Ripping Strips from a Pine Board (1912)	176
<b>Figure 24:</b> “Directions for Carving a Propeller” (1915)	184
<b>Figure 25:</b> Drawing and Photograph of Finished Model (1910)	193
<b>Figure 26:</b> Ideal Model Airplane advertisement (1921)	198
<b>Figure 27:</b> “‘Ideal’ De Havilland Battle Plane” (1926)	200
<b>Figure 28:</b> <i>Over the Ocean to Paris</i> (1927), frontispiece	232
<b>Figure 29:</b> “His Second Great Feat,” editorial cartoon (1927)	239
<b>Figure 30:</b> “Lone Eagle” Brand Fruit Packing Label (ca. 1928)	241
<b>Figure 31:</b> “The ‘MOCAR’ Monoplane,” (1928)	246
<b>Figure 32:</b> Merrill Hamburg, “Build a 24-inch ‘Spirit of St. Louis,’” (1928)	252
<b>Figure 33:</b> Harrison Cady, untitled illustration for <i>American Boy</i> , (1928)	256
<b>Figure 34:</b> “Dear Lindy”	258
<b>Figure 35:</b> National Playground Miniature Aircraft Tournament, (1927)	265
<b>Figure 36:</b> Harrison Cady, untitled illustration for <i>American Boy</i> , (1930)	281
<b>Figure 37:</b> “Win An Airplane Model Kit,” <i>American Boy</i> , (1928)	287
<b>Figure 38:</b> “Up in the CLOUDS...,” Cracker Jack Air Corps advertisement, (1930)	289
<b>Figure 39:</b> AMLA “Honor Certificate,” (1928)	298
<b>Figure 40:</b> Aram Abgarian, photograph, (1928)	317
<b>Figure 41:</b> “The A.M.L.A. Model Builder,” (ca. 1930)	326

<b>Figure 42:</b> Certificate, Gimpel Brothers Junior Aviation League, (n.d.)	327
<b>Figure 43:</b> Cover, <i>Toys and Novelties</i> , (1935)	328
<b>Figure 44:</b> Model-building instruction at “Camp Duncan Grant,” (1923)	336

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# Modeling Behavior: Boyhood, Engineering, and the Model Airplane in American Culture

Abstract

by

AARON L. ALCORN

In the first five decades of the twentieth century, millions of American boys took up the hobby of building and flying model airplanes. For these, mostly middle-class, white youth, aeromodeling became a means to channel their fascination with the recent revolutionary developments in aviation and to participate in modernity. Adults who praised their interests, by contrast, viewed aeromodeling as more than just a timely popular pastime for boys, but as a way to encourage early technological engagement in the young and to inspire a future generation of professional inventors, engineers, and scientists. Beneath these glowing predictions about the benefits of boys' technologically inspired play, however, lay a subtext that expressed a host of anxieties about the place of boys in modern America.

As a case study in the history of childhood, of technology, and of popular culture, this dissertation situates the development of the consumer craft hobby of aeromodeling against the backdrop of the long history of American enthusiasm for technology and the highly contested landscape of childhood in the early twentieth century. In the process, I find aeromodeling's many meanings bound to widespread anxieties about the pace of technological change, the rise of consumer-oriented society, and the status of boys. Technical craft hobbies like building model airplanes reinforced gendered norms of

technological engagement for boys and served as a cultural counterweight to the perception that boys risked becoming feminized by the allures of consumer culture. Ironically, these measures taken under the guise of cultivating masculine production also helped pave the way for the development of a vibrant consumer culture for children during the Great Depression. Aeromodeling, in short, provides an entry point into the history of the development of a specific consumer culture for children in the United States. In charting the social and cultural developments of this popular American pastime, this dissertation points to how middle-class Americans, old and young, negotiated the contested terrain of boyhood—as both a cultural ideal and a lived experience. In the process, this dissertation positions boys themselves—as consumers, as producers, and as users of model aircraft—as the co-creators of commercialized boy culture in the early twentieth century.

## INTRODUCTION

### Model Airplanes and the Making of Modern Boyhood

*Soon after the first man-carrying flights...boys invented the sport of model aeronautics. Youths sought to emulate their flying heroes and seized upon model airplanes as the way in which they could imitate the flying feats which filled the world with wonder.*

Paul Edward Garber, 1928<sup>1</sup>

On July 30, 1927—just two months after Charles A. Lindbergh’s historic transatlantic solo flight had awakened American enthusiasm for aviation—Smithsonian Institution curator Paul Edward Garber treated primetime listeners to Washington’s WMAL radio to a talk entitled “Model Aeronautics.” Building and flying models airplanes, he admitted, was a “now and faddish” pastime among American children, but Garber reminded listeners that the activity presented a unique educational opportunity for the nation’s boys. Aeromodeling, Garber suggested, required manual dexterity, mental acumen, and—because of the need to chase down errant craft—physical exertion, making it an ideal pursuit for boys interested in aviation. While Garber praised model airplanes for providing “interesting work for the hands, instructive study for the mind, and pleasant outdoor exercise for the body,” he reserved his greatest admiration for aeromodeling’s

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<sup>1</sup> Paul Edward Garber, *Building and Flying Model Aircraft* (New York: Ronald Press, 1928), 11.

seemingly limitless potential in sparking the “remarkable ingeniousness of boyhood.” By building a model that was capable of taking flight, Garber concluded, boys would be lead “unconsciously” towards the “absorbing study of elementary engineering and the reasons for flight.”<sup>2</sup>

Garber’s ideas about model airplanes, as it turned out, were well within the mainstream. In 1911, one model airplane supplier asserted that models provided the “young men of to-day” a means “to become the great men of to-morrow.” Building models, this manufacturer argued in one product catalog, would “set the brain working, the plans forming, and finally bring forth an advanced type of [full-scale] Aeroplane or an important accessory.” A rival model airplane maker observed in 1915 that as “real flying models...obey the same laws and principles as the man-carrying machines,” boys who constructed model airplanes gained access to “study the fascinating science of aviation.”<sup>3</sup> A guide entitled *How to Build and Fly a Model Aeroplane* (1927) promised constructors “valuable knowledge” about aviation, adding, “Many prominent aviators and aeroplane builders started their careers by flying model planes.”<sup>4</sup> Years later, the director of research at the National Advisory Committee for Aeronautics similarly praised aeromodeling as the “most immediate, practical access to aviation” wherein boys would find “recreational adventure” and also discover an “open door to” a field that could become their “life’s work.”<sup>5</sup> In 1944, the head of the National Aeronautic Association

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<sup>2</sup> Garber, “Model Aeronautics,” typescript of radio talk broadcast on WMAL, Washington, DC, 30 July 1927, V0000100, Articles, Models, Vertical Files, National Air and Space Museum Archives, Smithsonian Institution, Washington, DC.

<sup>3</sup> Ideal Aeroplane & Supply, Co. [New York], “‘Ideal’ Model Aeroplane Supplies, 1911-1912,” 1, (1911), and Walter H. Phipps, foreword, Model Supply House [New York], “Model Aeroplane Handbook,” (1915), trade catalogs housed in the general collections, Library of Congress.

<sup>4</sup> Fred O. Armstrong, *How to Build and Fly a Model Aeroplane* (Elizabeth, NJ: Practical Arts Publishing, 1927), 1.

<sup>5</sup> George W. Lewis, “Youth Learns with Models,” *Horizons*, January 1941, 3-4

echoed the assessment that an avocational boyhood pursuit could later become a vocational calling in adulthood largely because of the fact that the “unseen ingredients” of model airplanes made from wood and glue and tissue paper were boys’ “understanding, conception, imagination, concentration and analysis.”<sup>6</sup> Never before had consensus been so quickly reached about the lasting influence of a popular boys’ pastime. The business of play, it seems, had clearly become serious work.

Adult observers in the early twentieth century viewed the popularity of model airplanes as a wholly positive craft hobby pursuit that allowed boys to learn the habit of tinkering with technology. Model airplanes were seen, accordingly, not as toys, but serious physical expressions of technoscience: objects that imparted technical knowledge about flight technology, but also reinforced the idea that aviation would act as a revolutionary force for technological progress.<sup>7</sup> While such a perspective was most pronounced among those Americans who saw the airplane as the source and symbol of modernity, this view about the importance of boys’ early technological engagement also reflected the influence of emerging ideas about the formative nature of children’s play in the early twentieth century. According to this instrumentalist view of playthings, model airplanes were three-dimensional tools that allowed the young a way to engage tactilely,

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<sup>6</sup> William R. Enyart, “Air Youth,” *Education*, June 1944, 610-612.

<sup>7</sup> On the role of models for knowledge creation, see Eugene Ferguson, *Engineering and the Mind’s Eye* (Cambridge, MA: MIT Press, 1992); Anthony F.C. Wallace, *Rockdale: The Growth of an American Village in the early Industrial Revolution* (New York: W.W. Norton, 1972), 237-8; Brooke Hindle, *Emulation and Invention* (New York: New York University Press, 1981), 142; Edward W. Stevens, Jr., *The Grammar of the Machine: Technical Literacy and early Industrial Expansion in the United States* (New Haven: Yale University Press, 1995), 46; Soraya de Chadarevian and Nick Hopwood, ed., *Models: The Third Dimension of Science* (Stanford: Stanford University Press, 2004). On theoretical models in science, see Evelyn Fox Keller, “Models of and Models for: Theory and Practice in Contemporary Biology,” *Philosophy of Science* 67, Supplement (September 2000): S72-S86; Mary S. Morgan and Margaret Morrison, ed. *Models as Mediators: Perspectives on Natural and Social Science* (Cambridge: Cambridge University Press, 1999).

cognitively, and emotionally with flight. Moreover, model airplanes provided boys—in their leisure—the means with which they themselves could sow the seeds for their own growth into successful, technologically oriented men in modern society. In this respect, the boy who built model airplanes was not playing frivolously as a child, but rather was reinventing himself for the future. And just as the miniature airplane in the wind tunnel provided clues to professional engineers about how a larger machine would operate in the air, so too might the homemade production of miniature airplanes provide clues to how boys, as men, might behave in the future. Beneath these glowing predictions about the benefits of boys’ technologically inspired play, however, lay a subtext that expressed a host of tensions and anxieties about the place of boys in modern America.

In linking the cultural histories of childhood and aviation, this study seeks to provide a fresh perspective on the period aerospace historians refer to colloquially as the ‘Golden Age of Flight,’ and to reconceptualize the understanding of popular expressions of ‘airmindedness’ by arguing for the centrality of consumption and consumer culture.<sup>8</sup> While this dissertation recognizes model aviation as an aspect of the history of flight barely touched upon by previous scholars, it does not merely seek to fill a neglected area of scholarship.<sup>9</sup> Rather, my cultural story of this popular consumer hobby in the years before the Second World War positions aeromodeling at the intersections of several areas

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<sup>8</sup> Joseph Corn’s *Winged Gospel: America’s Romance with Aviation, 1900-1950* (New York: Oxford University Press, 1981) is the fullest treatment of airmindedness to date. On airmindedness and educational policy, see Dominick Pisano, *To Fill The Skies with Pilots: The Civilian Pilot Training Program, 1939-1946* (Urbana: University of Illinois Press, 1993).

<sup>9</sup> Corn, *Winged Gospel*, 113-133; Richard Butsch, “The Commodification of Leisure: The Case of the Model Airplane Hobby and Industry,” *Qualitative Sociology* 7 (September 1984): 217-235; Thomas Dietz, *On Miniature Wings: Model Aircraft of the National Air and Space Museum* (Charlottesville, VA: National Air and Space Museum, Smithsonian Institution in association with Thomasson-Grant, 1995); Fred Erisman, *Boys’ Books, Boys’ Dreams, and the Mystique of Flight* (Forth Worth, TX: Texas Christian University Press, 2006), 125-127. On the aeromodeling craze in general histories of aviation, see Roger Bilstein, *Flight in America: From the Wrights to the Astronauts* (Baltimore: Johns Hopkins University Press, 2001), 18-20; Tom D. Crouch, *Wings: A History of Aviation from Kites to the Space Age* (New York: W.W. Norton, 2003), 312-315.



of inquiry—including the history of childhood, masculinity, and consumption—and aims to reorient the role of culture in our historical understanding of the popular responses to aviation. Indeed, aside from a few notable recent exceptions—such as Robert Wohl’s multipart investigation on aviation in the Western imagination—scholarship in the history of aviation has operated with a flat understanding of culture, casting society in a passive role of reacting to the airplane’s appearance, rather than actively shaping its meaning. Such a view fails to explain the motivations—many of which had little to do with the airplane itself—for why the American public invested so much meaning in the airplane as a cultural symbol.<sup>10</sup> In short, it is no longer adequate to treat the airplane in American culture without also allowing a role for American culture in the airplane. With respect to the aeromodeling hobby, this dissertation sees Americans in the early twentieth century wrestling with the very meanings of boyhood as a cultural ideal and a lived experience.

As a case study in the history of childhood, of technology, and of aviation, “Modeling Behavior” situates the development of this popular hobby against the backdrop of the long history of American enthusiasm for technology and the highly contested landscape of childhood at the turn of the twentieth century. In highlighting the conditions that framed this popular consumer craft hobby in the years before the Lindbergh-inspired model airplane craze attracted millions of American children at the end of the 1920s, my study exposes the hopes and anxieties of a society coming to terms with modernity. As a result, even while this popular pastime placed at its center one of

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<sup>10</sup> Robert Wohl, *A Passion for Wings: Aviation and the Western Imagination, 1908-1918* (New Haven: Yale University Press, 1996) and *The Spectacle of Flight: Aviation and the Western Imagination, 1920-1950* (New Haven: Yale University Press, 2007). One might also include David T. Courtwright’s *Sky as Frontier: Adventure, Aviation, and Empire* (College Station, TX: Texas A&M University Press, 2004). For a fascinating study of the cultural responses to new technologies, see Carolyn Marvin, *When Old Technologies were New: Thinking about Electric Communication in the Late Nineteenth Century* (New York: Oxford University Press, 1990).

the twentieth century's most dominant symbols of modernity—the airplane—I find its many meanings intimately bound to widespread apprehensions about the pace of technological change, the rise of a consumer-orientated society, and the status of boys.<sup>11</sup>

The early decades of the twentieth century indeed witnessed fantastic developments and progress in flight technology, but this period also saw a fundamental reorientation of the meaning and experience of childhood. The vast structural transformations of industrial America at the end of the nineteenth century—the shift towards a consumer-orientated society, the rise of large corporations, and the steady migration of Americans to cities—inspired a perceived crisis, which historian Robert Wiebe characterizes as “search for order,” for a new, more bureaucratic, middle class.<sup>12</sup> While this ‘search’ occurred throughout American society, these changes allowed middle class Americans to restructure the meaning—and experience—of childhood and especially of boyhood.

In the early twentieth century, Progressive-era reformers and child-saving advocates responded to the threat of a widespread ‘boy problem’ wrought by fears of the dangers posed by juvenile delinquency with legal measures that aimed to remove children

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<sup>11</sup> Despite the popularity of aeromodeling, precise numbers of how many children participated in the hobby are elusive. Some early contemporary estimates guessed that as many as 10,000 or so hobbyists by 1910, a figure which ballooned to several million at the end of the 1920s. As can be imagined, these estimates are nearly impossible to verify. A Department of Interior report in 1936 guessed at least half-a million boys were building models that year, but this figure was likely too conservative. A consumer market survey released in 1944 found that nearly twenty-one percent of adult respondents admitted to having built a model airplane in the past, in itself a remarkably high figure. For estimates, see A. Neely Hall, *Handicraft for Handy Boys* (Boston: Lothrop, Lee, & Shepard, 1911), 300; Francis A. Collins, *The Boys' Book of Model Aeroplanes* (New York: Century Co., 1910), 4; Robert W. Hambrook, *Aviation in Public Schools* (Washington: United States Department of the Interior, Office of Education, 1936), 35-6; and Crowell-Collier Publishing Co., *Tomorrow's Customers for Aviation* (New York: Crowell-Collier Publishing, 1944), 5.

<sup>12</sup> Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill and Wang, 1967). See also Samuel P. Hays, *The Response to Industrialism, 1885-1914*, 2d ed. (Chicago: University of Chicago Press, 1995) and more recently Steven J. Diner, *A Very Different Age: Americans of the Progressive Era* (New York: Hill and Wang, 1998).

from the workforce and mandate their regular attendance at schools. Meanwhile members of an emerging child study movement, emboldened by the theories of pioneering child psychologist G. Stanley Hall, pointed to a new scientific understanding of the formative nature of children's play. Established groups like the Young Men's Christian Association (formed in 1844) and newer ones like the Boy Scouts of America (established in 1910) spearheaded interventions into popular understandings of the nature of boyhood by popularizing the notion that craft hobbies, coupled with outdoor exercise, were essential for making boys into men. At the same time, entrepreneurs of commercialized children's culture encouraged adults to embrace a more indulgent form of parenting characterized chiefly through the purchase of store-bought amusements and playthings. Taken together, these developments aimed to universalize middle-class views of childhood as a period of life liberated from the adult responsibilities, but not, as it turned out, from adults' concerns.<sup>13</sup>

If middle-class ideals at the turn of the twentieth century cast boyhood as a period of freedom from work—wherein boys were to lay the foundations for their ultimate development into men—boys' removal from the labor market did not entirely shelter them from the world of work. The conflict between boys' freedom to act out their desires and the imperatives that they channel their energies into work-like pursuits was readily apparent in the pages of popular magazines like the *American Boy*, whose first issue appeared in 1899. An advertisement for the International Correspondence School (ICS)

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<sup>13</sup> For recent attention to the history of childhood, see Steven Mintz, *Huck's Raft: A History of American Childhood* (Cambridge, MA: Harvard University Press, 2004); David I. Macleod, *The Age of the Child: Children in America, 1890-1920* (New York: Twayne Publishers, 1998) and *Building Character in the American Boy: The Boy Scouts, YMCA, and Their Forerunners, 1870-1920* (Madison: University of Wisconsin Press, 1983); Viviana A. Zelizer, *Pricing the Priceless Child: The Changing Social Value of Children* (New York: Basic Books, 1985).



**Figure 1:** Two views of boyhood. On the left, an International Correspondence School advertisement from 1911, and another from 1913 promoting the *American Boy* magazine’s view of middle-class boyhood..

published in the *American Boy* in 1911 carried dire warnings of being a boy too long (fig. 1, left). Some boys, it read, “are men when they are twelve or younger,” while, conversely, “Some men are boys where they are fifty, or over.” Being a boy, in other words, was as much a matter of attitude as it was a stage of life. The advertisement—featuring an image of an adolescent boy over the pointed question “When Will This Boy Become a Man?”—pleaded: “Don’t be a boy all your life! Manliness is the one great step toward success. Confidence is the first step toward manliness. Knowledge is the first step toward confidence.” The advertisement, which promoted the company’s correspondence courses in fields like electricity, civil engineering, mechanical drafting, as well as home study aids for the development of skills like stenography and bookkeeping that were more fitting white-collar office jobs, promised that studying at

home would enable the boy, “If he is playing,” to someday transform his “play into profit.”<sup>14</sup>

Compared with the ICS advertisement, an image accompanying an *American Boy* magazine advertisement in 1913 emphasized not the dangers of a prolonged period of boyhood, but the glories of its freedoms (fig. 1, right). The fanciful illustration depicts an adolescent boy reclining in a chair with his copy of the *American Boy* and imagines an abundant world filled with numerous boy sports and pursuits, including fishing, hunting, and camping, team sports like football and baseball, and—in the upper left hand corner—flights of airplanes and dirigibles. The meaning, both explicit and implied, was that boys were to revel in the opportunities for adventure afforded by the institution of middle-class boyhood, a view celebrated by the editors of the *American Boy*. Beneath the illustration, editors defined the values of boyhood (“Adventure—Achievement—Courage—Character—Business—Brains”) as attributes that would, in time, provide for boys’ eventual success as productive men.<sup>15</sup>

At first glance, the views expressed in these two advertisements—the joys of play honored by the *American Boy* and those spelled out in ICS’s advertisement that boys’ activities should impart skills of value to some future labor market—seem hopelessly divergent. In truth, these ideas shared a common origin in adults’ concerns about how the young spend their free time. Barring the clear financial motives of selling correspondence courses and subscriptions to a popular middle-class magazine, both advertisements asked, in essence, the same fundamental question: should boys’ play be

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<sup>14</sup> International Correspondence School [Scranton, PA], advertisement, “When Will this Boy Become a Man?” *American Boy*, 11 July 1911, 25.

<sup>15</sup> Advertisement, “The American Boy will bring them all before your eyes,” *American Boy*, December 1913, 23.

celebrated in its own right, or should it serve some larger purpose? Perhaps not surprisingly, adults' questions about the ultimate goals of children's activities in leisure struck at the very heart of the very meaning of aeromodeling. For those adults who cast the hobby as a potentially serious venture through which boys could act out the role of the adult engineer and develop crucial skills of use to some still-to-be-determined future career, the answer to this essential question was, well, both.

Adult praise of aeromodeling in the first decades of the twentieth century followed the excitement created by the development of the airplane, but also a constellation of concerns for boys that accompanied the shift to a modern industrial society, including fears of the dangers of unsupervised, unstructured play and the place of recreation and consumption in a society steadfastly committed to the cultural values of work.<sup>16</sup> As a result, a seemingly motley coalition of adults and adult-run institutions—including parents, advice writers, educators, representatives of the model and full-scale aviation industry, and leaders of youth-orientated groups like the Young Men's Christian Association and the Boy Scouts of America—cast aeromodeling and other technical hobbies as a way of promoting purposeful (i.e. masculine), rather than frivolous, play. Technical craft hobbies like building model airplanes reinforced accepted gendered norms of technological engagement for boys and became one strategy to enable the young a way to develop an appreciation of the importance of possessing a healthy work

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<sup>16</sup> On hobbies, see, for example, Steven Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999), 250-254; Kristen Haring, *Ham Radio's Technical Culture* (Cambridge, MA: MIT Press, 2007), and "The 'Freer Men' of Ham Radio: How a Technical Hobby Provided Social and Spatial Distance," *Technology and Culture* 44 (October 2003): 734-761; Robert Post, *High Performance: The Culture and History of Drag Racing, 1950-2200* (Baltimore: Johns Hopkins University, 2001); Rachel Maines, "Hedonizing Technologies, or Why Tatting and Cake Decorating are like Ham Radio and Paintball," paper presented at the Annual Meeting of the Society for the History of Technology, Washington, DC, 18-21 October 2007.

ethic.<sup>17</sup> Aeromodeling, as an activity, consequently served as a cultural counterweight to the widespread perception of the feminizing influence of consumer culture, a masculine hobby that would help to create a future generation of manly producers.<sup>18</sup> Ironically, these measures taken under the guise of cultivating masculine production also helped pave the way for the development of a maturing consumer culture for children during the Great Depression.

While adults viewed production and consumption in constant tension, boys, by contrast, saw in their model building ways to emulate their heroes, imagine a future free of adult control, and participate in modernity. Far from being at the mercy of the market, boys were instead at the vanguard of its creation. Indeed, some of the most popular model airplanes sold in the United States before the 1930s were created—and occasionally peddled—by adolescents, not adults. For adults and children, aeromodeling seemed to serve as the nexus for several contradictory aims: ones that celebrated the freedoms of childhood and expressed the imperatives to contain it; others that critiqued an emerging social order, but also reinforced it. The fad for model building following

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<sup>17</sup> On toys and socialization, see Carroll W. Pursell, Jr., “Toys, Technology, and Sex Roles in America, 1920-1940,” in *Dynamos and Virgins Revisited: Women and Technological Change in History*, ed. Martha Moore Trescott (Metuchen, NY: Scarecrow Press, 1979), 252-67; Ruth Oldenziel, “Boys and Their Toys: The Fischer Body Craftman’s Guild, 1930-1968, and the Making of a Male Technical Domain,” *Technology and Culture* 38 (January 1997): 60-96; Stephen Kline, “Toys, Socialization, and the Commodification of Play,” in *Getting and Spending: European and American Consumer Societies in the Twentieth Century*, ed. Susan Strasser, Charles McGovern, and Matthias Judd (New York: Cambridge University Press, 1998), 339-358; Miriam Formanek-Brunell, *Made to Play House: Dolls and the Commercialization of American Girlhood* (New Haven: Yale University Press, 1993), 161-166. On the toy industry generally, see Gary Cross, *Kids’ Stuff: Toys and the Changing World’s American Childhood* (Cambridge, MA: Harvard University Press, 1997).

<sup>18</sup> On gendered views of consumption, see Victoria de Grazia and Ellen Furlough, ed., *The Sex of Things: Gender and Consumption in Historical Perspective* (Berkeley: University of California Press, 1996) and Roger Horowitz and Arwen Mohun, ed., *His and Hers: Gender, Consumption, and Technology* (Charlottesville: University of Virginia Press, 1998). On the development of youth consumer culture, see Lisa Jacobsen, *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004); Kelly Schrum, *Some Wore Bobby Sox: The Emergence of Teenage Girls’ Culture, 1920-1945* (New York: Palgrave Macmillan, 2004); and Daniel Thomas Cook, *The Commodification of Childhood: The Children’s Clothing Industry and the Rise of the Child Consumer* (Durham: Duke University Press, 2004).

Lindbergh's historic transatlantic flight, therefore, was not merely the product of a spontaneous cultural celebration, but rather the result of nearly three decades of social formation. Ultimately, what the Lindbergh phenomena unleashed was the emergence of a new regime—one in which children were viewed not merely as future adults, but were also celebrated as a vast and potentially commercially exploitable market segment in the present. Aeromodeling, in short, provides an entry point into the history of the development of commercialized boy culture in the United States in the twentieth century and provides a welcome opportunity for analyzing how middle-class Americans, old and young, negotiated the contested terrain of boyhood.

In charting the development of this specific consumer culture for children in the first half of the twentieth century, my work aims to elevate the utility of age as a category of analysis alongside race, class, and gender as a way of understanding the past.<sup>19</sup> The young actors at the center of my study faced rather fluid definitions of “model” and “modeling”—terms that described both the objects they built, the exemplary behavior they were to emulate, and the processes in which they were molded into men. This flexibility in the very idea of “model”—and of “boy” generally—did not determine individual boys' behavior, but it nevertheless framed its meanings. As a result, my study seeks to balance the middle-class cultural ideal of boyhood and the individual experiences of children themselves, striving for a nuanced picture of boyhood that allows for individual agency, while at the same time recognizing the centrality of societal norms and expectations that structured children's experiences. In returning young historical actors to the center of this study, I argue that boyhood itself—as a cultural construct and

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<sup>19</sup> See, for example, the special section on “Age as a Category of Historical Analysis,” in the *Journal of the History of Childhood and Youth* 1, no. 1 (Winter 2008): 87-124.



as lived experience—was being remade in the early decades of the twentieth century. Moreover, the cultural ideal of boyhood proved so central to popular presentations of aviation that it shaded how aviation luminaries, from Orville and Wilbur Wright, Charles A. Lindbergh, and others, were presented in American popular culture.

In tracing the contours of boys' aeromodeling culture, I chart the emergence of an 'inventive boy discourse' at the turn of the twentieth century, its meteoric rise in ensuing decades and its eventual unraveling in the mid-1930s. The inventive boy, which descended from celebrations of inventors generally, reigned supreme in juvenile series fiction and children's periodicals, saturated discussions of boys' technological play, and became a recognizable trope in media coverage of real-life boy tinkerers at the start of the twentieth century. This inventive boy discourse celebrated the pursuits of adolescent male technologists and served as a counter narrative to the perceived dangers facing boys that stemmed from the structural shifts in American society at the turn of the twentieth century. As an imaginative (and, at times, wholly imaginary) cultural figure, the inventive boy reinforced the notion that the freedoms offered by the institution of middle-class boyhood provided the opportunity for boys to prepare themselves for the future. The popularity of inventive boy discourse served as a way for Americans to reimagine the play of boys as a form of industrial education and provided the foundation for adults' pronouncements that building model airplanes would allow boys to assume their future roles as manly producers. Ultimately, inventive boy discourse provided a means in which boys' roles as consumers became more palatable to a middle-class audience.

Contrary to many histories of aviation, my dissertation's first chapter, "Inventing the Inventive Boy," starts not with the Wrights' flights in 1903 at Kitty Hawk, North

Carolina, nor with the first public demonstration of their Flyer in 1908, but with stories about a gift they received as children. In tracing the deployment, circulation, and reception of mythical tales about Bishop Milton Wright's 1878 gift of a flying toy to his boys, Orville and Wilbur, in the early twentieth century, this chapter connects the origins of this anecdotal story to the Wrights' efforts to fortify their priority as inventors and the wider influence of an emerging inventive boy discourse. Inventive boy discourse, as expressed in specialized periodicals such as the *Youth's Companion* and the *American Boy*, the national press, and the enormously popular Tom Swift novels, celebrated the elusive character trait of inventiveness for boys. In retrospect, the story of the Wrights' 1878 toy served as a powerful parable for modern boyhood that stressed the centrality of material culture for imparting technical literacy in the young. This story, in all its forms, aimed to inspire boys' tinkering with technology, but, interestingly, also prescribed roles for parents as purchasers of playthings for children.

The dissertation's next two chapters shift from the level of narrative to that of practice. Chapter two, "Putting the Boy Inventor in his Place," demonstrates how workshops and adult-sanctioned technical spaces fostered boys' experimentation with technology and allowed boys to forge their identities as technologists. In highlighting a small group of model builders in and around New York City between 1906 and 1914, this chapter sees the struggle over the control of space as an expression of the intermediary status of adolescence generally. Adolescence, in itself a relatively new cultural concept at the time, was positioned between the near-total dependency of young children and the imagined freedoms of adulthood. Workshops, I argue, served as sites where adults and children navigated the contested terrain of boyhood and tested its boundaries. In drawing

attention to the places that were set aside for boys' tinkering—and those that boys claimed for themselves—this chapter charts the often-wide gulf between boys' desires for independence and autonomy, and adults' imperatives to restrict it.

This theme of enclosure continues in the third chapter, “Packaging Modernity,” which reconstructs what I term the ‘ecology of practice’ in the home-based production of model aircraft in the 1910s and 1920s. In shifting from what young hobbyists built to how they worked, this chapter reveals the technical and social challenges faced by aspiring technologists interested in model airplanes. In raising the possibilities of consumer acts like shopping for provisions as a technical skill, this chapter highlights the numerous strategies in which young users plied their energies into the production of model airplanes against the backdrop of an emerging consumer culture for children. Far from being pawns in the consumer marketplace, I find instead adolescent experts setting the pace of technical developments and shaping commercial practices. Aeromodelers, for example, routinely rejected expensive—and poorly flying—scale miniatures of real airplanes, in favor of the speedy flights of a class of racing models that little resembled any existing full-scale aircraft. The small firms making up the nascent model aviation industry saw no clear alternative, so they acquiesced to boys' collective desires and licensed the production rights to promising model airplane designs invented by enterprising young hobbyists to produce as commercially available construction kits. As a consumer product, the construction kit served as the ultimate form of enclosure—by the marketplace and the rational industrial order—because kits focused constructors' energies solely on the process of production. In the process, these products also partially

deskilled the recreational production of model airplanes by eliminating the necessity for key technical skills like shopping for provisions.

The hobby culture of aeromodeling thrived in the United States in the 1910s and 1920s, but it took Lindbergh's transatlantic flight to unite the preexisting local and regional aeromodeling communities into a burgeoning national consumer market. While this shift is reminiscent of Robert Wiebe's explanation of the shift away from "island communities," the organizational developments at work in the final two chapters were patterns of consumption. Chapter four, "Under Lindbergh's Wing," looks to the famous aviator's celebrity and status as a role model. For children, Lindbergh represented heroism personified, but for a growing model and full-scale aviation industry, he was also heroism commodified. In keeping my focus on boyhood and material culture, I avoid pitfalls of characterizing the various industries Lindbergh's celebrity inspired as merely an example of crass commercialism. Rather, in arguing for the centrality for material culture to understanding the mass cultural phenomena that greeted Lindbergh's triumphant return to the United States, this chapter sees consumer goods—from popular biographies to model airplanes—as an essential (and heretofore largely ignored) aspect of how Lindbergh materialized as a hero for children. By consuming the 'commodified Lindy,' children transformed the real Lindbergh into an object they could control.

The links between popular air-mindedness and consumption are more fully explored in the final chapter "The Modern Boy is Air-minded." This chapter highlights the attempts by newspapers, magazines and department stores to cultivate the air-minded boy consumer through the creation of commercial model airplane clubs. In charting the short history of the Airplane Model League of America (1928-1932), and its successors,

this chapter describes the AMLA's successful campaign to lure hundreds of thousands of children to join the League with promises of exciting model airplane tournaments complete with valuable prizes (including trips to Europe) and opportunities to meet famous aviation personalities. In appealing to boys as air-minded citizens and as consumers, youth-orientated clubs proved a revolutionary development in the history of marketing and offered visions of abundance as the country slid into economic depression. Interestingly, with the boy consumer ascendant, invocations of the boy inventor soon faded. In the end, the inventive boy, who paved the way for a more explicitly commercial form of boys' material culture, proved a victim of his own success and was soon discarded by the very consumer culture that helped create him.

In widening the social and cultural context in which to understand the model airplane phenomena, my dissertation provides a unique opportunity to bridge several heretofore seemingly unrelated areas of scholarship. In reconstructing the worlds that children and adults created, my work draws on the traditional kinds of sources long used by historians, including published and unpublished textual sources—such as periodicals and prescriptive literature, advertising and popular fiction, diaries and scrapbooks, correspondence and archival material—and oral histories. In addition to these types of primary evidence, I also make wide use of the material culture of aeromodeling, looking to objects like construction kits and model airplane plans, assembled models and the tools and knowledge required to complete them. The resulting efforts complicate the heretofore simplistic view common in aviation historiography that the fad for aeromodeling in the early twentieth century merely sprung out of the commercial opportunities created in Lindbergh's wake. Moreover, this dissertation also points to the

role of boys themselves—as consumers, as producers, and as users of model aircraft—as the co-creators of commercialized boy culture in early twentieth century.

Historians of technology have long been emboldened by the idea that things—from computers to automobiles and suburban kitchens—have a history and are worthy the attention of scholars interested in seeking answers to questions about how popular culture has historically expressed and shaped ideas about technology and society. Model airplanes, in this respect, prove no different. This dissertation finds in miniature flying models the field wherein the contested meanings of technological change took place. In placing boyhood at the center of inquiry, moreover, this dissertation sees in a popular consumer craft hobby the evidence of a society attempting to come to terms with a period of tumultuous social and technological change. Model airplanes alone, of course, did not create the tensions between traditionalism and modernity in American culture, nor did it invent the anxieties over the meaning of modern boyhood; nor, of course, did it resolve them. Instead, model airplanes served as one of the fields of play in which middle-class Americans struggled with these conditions. While this dissertation sees in popular aeromodeling attempts by Americans to wrestle with the meanings of the development of a modern consumer-orientated society, it ultimately confirms the validity of seeing the importance of everyday objects for understanding the past. If, indeed, things matter, then some things—no matter how small—matter a great deal.

## CHAPTER ONE

### Inventing the Inventive Boy

*History tells us—what some of us luckier ones heard the Wright Brothers themselves tell—that the Wrights’ active work in aëronautics was a result of the interest aroused by a toy helicopter presented to them by the Reverend Bishop Milton Wright, their father.*

Henry Woodhouse, 1917<sup>1</sup>

*I wish I was an inventor.*

Victor Appleton, [pseud.], 1910<sup>2</sup>

“Great inventions and marvelous discoveries,” one *Popular Mechanics* writer declared in 1926, can be “traced back to the formative influence of a childhood toy.” As boys, readers were reminded, Orville and Wilbur Wright received a “whirligig, propelled by a rubber band” which led the pair to imagine “how fine it would be to have a big whirligig large enough to carry them up into the air.” Uniting ideation and invention into one awe-inspiring moment, from “that thought came the airplane.” John Ericsson—the nineteenth century inventor credited with developing the modern screw propeller and the first ironclad battleship, the *Monitor*—too was fond of mechanical models as a boy, as was

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<sup>1</sup> Henry Woodhouse, introduction to *Model Aeroplanes and Their Engines* by George A. Cavanaugh (New York: Moffard, Yard & Company, 1917), ix.

<sup>2</sup> Victor Appleton [pseud.], *Tom Swift and His Motor Boat*, (New York: Gross & Dunlap, 1910), 165.

William Stout, head of Ford Motor's aviation division in 1926, who apparently got his start in engineering and invention by building toys pictured in a magazine. Seeing future screw propellers in the boy Ericsson's toy windmills and flying machines in the Wrights' "whirligig"—or vice versa—provided one writer's proof for the claim that the part boys' toys "have played in changing the world is beyond estimate." And with "modern" children choosing the latest in model railroads, construction outfits, and chemistry sets over "old-fashioned tin soldiers, clock-spring locomotives, jumping jacks and similar things" the future seemed even brighter. Modern toys, the writer concluded, encouraged boys to "make something," shaped the "child's mind for success," and promised to provide the "modern boy" with more knowledge about the technological world "than his father ever knew."<sup>3</sup>

By the end of the nineteenth century, Americans fascinated with the pace of technological change seized upon "the Inventor" as the figure most responsible for ushering in the modern world. As embodiments of self-made success and iconic masculine figures, celebrated inventors such as Thomas Edison and the Wright brothers permeated all aspects of popular culture and transformed the inventor into one of the most enduring and powerful images in the popular imagination. If the *Popular Mechanics*' article on "How Toys Are Changing the World" was rooted in this tradition, it also signaled a slight variation by recognizing inventors in their boyhood. Such

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<sup>3</sup> "How Toys Are Changing the World," *Popular Mechanics*, December 1926, 946-950. On popular enthusiasm for technology, see Thomas P. Hughes, *American Genesis: A History of the American Genius for Invention* (New York: Penguin Books, 1989); John L. Wright, ed., *Possible Dreams: Enthusiasm for Technology in America* (Dearborn, MI: Henry Ford Museum & Greenfield Village, 1992); Joseph Corn's *Winged Gospel: America's Romance with Aviation, 1900-1950* (New York: Oxford University Press, 1983), his edited collection, *Imagining Tomorrow: History, Technology, and the American Future* (Cambridge, MA: The MIT Press, 1986), and his (co-authored with Brian Horrigan) *Yesterday's Tomorrows: Past Visions of the American Future*, ed. Katherine Chambers (New York: Summit Books, 1984). On world's fairs see Robert W. Rydell, John E. Findling, and Kimberly D. Pelle, *Fair America: World's Fairs in the United States* (Washington, DC: Smithsonian Institution Press, 2000).



portrayals, common in the early-twentieth century, honored boy tinkerers of the day as the future sources for technological development. In highlighting the early achievements of heroic inventors of the past, examples of youthful tinkering culled from the biographies of famous inventors encouraged a collective national identity rooted in technological ingenuity and recast inventors as role models for children. Moreover, recognition of boyhood inventors of the past simultaneously drew attention to the potential of those aspiring technologists of the present who might one day shape the future.

In highlighting one episode alluded to above, namely the gift of a flying toy in 1878 to a young Orville and Wilbur Wright, this chapter considers how this anecdotal event was used—first by the Wrights and then by others—in the early decades of the twentieth century. Discussion of the Wrights’ boyhood appeared in a host of sources, but can only be understood within the context of a series of overlapping—and occasionally diverging—legal, social, and cultural discourses that positioned inventors as heroic role models for boys. In tracing the contours of the narrative construction of the “inventive boy”—an imaginative (and often imaginary) cultural figure present in periodicals, series fiction, and throughout early twentieth century consumer culture generally—this chapter sees in the often fantastic tales of boy inventors the conditions that transformed an anecdotal story about a father’s gift to his young sons into a modern allegory for promoting boys’ technologically-inspired play. Perhaps not surprisingly, inventive boy discourse reveals far more about early twentieth century concerns than the actual conditions of inventors’ upbringings, but in piecing together threads of memory and biography, fiction and legend, this chapter draws attention to the role of objects in

cementing wider cultural discourse and the role of culture in forging new meanings for boys' material culture.<sup>4</sup>

***“Our first interest began...”: The Origins of the Wondrous Boyhood of Orville and Wilbur Wright***

Material culture has long played a key role in American myths about technology—particularly in those stories created for children. The place of Benjamin Franklin’s kite, John Henry’s hammer, and Thomas Edison’s light bulb in American popular culture transcend the circumstances of their creation, reinforcing a common national identity based upon hard work, ingenuity, or technical acumen, while in turn creating residual meanings for kites, hammers, and light bulbs.<sup>5</sup> The story of the Wrights’ “whirligig” toy operates in much the same way and has become a standard element of treatments of the Wright brothers that has added to their mystique as inventive folk heroes. From popular online websites to the most painstakingly researched monographs, this anecdotal story of a father’s gift to his two young sons in the fall of 1878 has served—and indeed continues to serve—as an amusing illustration of future inventors at play, a lesson about the potential of encouraging early technological engagement, and a case study in the lasting importance of inspiration for future invention.<sup>6</sup>

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<sup>4</sup> On material culture, see Leora Auslander, “Beyond Words,” *American Historical Review* 110 (October 2005): 1015-1045; Steven Lubar and W. David Kingery, eds. *History From Things: Essays on Material Culture* (Washington: Smithsonian Institution Press, 1993); and Sherry Turkle, ed. *Evocative Objects: Things We Think With* (Cambridge, MA: MIT Press, 2007).

<sup>5</sup> Tom Tucker, *Bolt of Fate: Benjamin Franklin and His Electric Kite Hoax* (New York: Public Affairs, 2003); Scott Reynolds Nelson, *Steel Driving Man: John Henry, The Untold Story of an American Legend* (New York: Oxford University Press, 2006). Although not specifically about the iconic status of Edison’s light bulb, in many ways Thomas P. Hughes’ focus on electrification systems is a direct refutation of its symbolic power. See his *Networks of Power: Electrification in Western Society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1983).

<sup>6</sup> For other such founding myths focusing on boys, see Carolyn C. Cooper, “Myth, Rumor, and History: The Yankee Whittling Boy as Hero and Villain,” *Technology and Culture* 44 (January 2003): 82-96, and

For Fred C. Kelly, a close associate of Orville Wright and the Wrights' official biographer, the simple toy helicopter "first stirred the Wrights' interest in flying machines." Another Wright biographer likened the toy to "a baptism of sorts" converting the boys to the gospel of flight. According to aviation historian Tom D. Crouch, author of what many consider the definitive treatment of the Wrights, Orville and Wilbur Wrights' father, Bishop Milton Wright, "was a firm believer in the educational value of toys, and took genuine delight in selecting things that would stimulate the imagination of his children and inspire their curiosity." "One such gift," Crouch continues, "purchased during the course of a church trip and presented to Wilbur, then eleven, and Orville, seven, soon after the family's move to Cedar Rapids, Iowa, would prove particularly significant. It was a toy helicopter designed by the French aeronautical experimenter Alphonse Pénaud." Although Crouch estimates their father paid "perhaps 50 cents" for the "mechanical toy," it is clear this small investment, as the story goes, paid a remarkable dividend.<sup>7</sup>

Given the attention this story has received, surprisingly little has been given to its origins. Evidence for the toy, while extant, is also quite thin, consisting primarily of reminiscences from the brothers and their close associates. Perhaps the most persuasive evidence appears in a letter Wilbur Wright wrote to the Smithsonian Institution in 1899 requesting information related to research in aeronautics. In the letter Wright described

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David Philip Miller, "True Myths: James Watt's Kettle, His Condenser, and His Chemistry," *History of Science* 42 (September 2004): 333-360.

<sup>7</sup> Fred C. Kelly, "Introduction," *How We Invented the Airplane: An Illustrated History*, by Orville Wright, ed. Fred C. Kelly (New York: David McKay, 1953; reprint, Mineola, NY: Dover Publications, 1988), 2; Fred Howard, *Wilbur and Orville: A Biography of the Wright Brothers* (New York: Alfred A. Knopf, 1987), 4; Tom D. Crouch, *The Bishop's Boys: A Life of Wilbur and Orville Wright* (New York: W. W. Norton, 1989), 56-57. On the links between flight and the divine, see Joseph Corn, *Winged Gospel* and Bayla Singer, *Like Sex with Gods: An Unorthodox History of Flying* (College Station, TX: Texas A&M University Press, 2003).

himself as “an enthusiast” hoping “to avail myself of all that is already known,” and mentioned he had “been interested in the problem of mechanical and human flight ever since as a boy I constructed a number of bats of various sizes after the style of [Sir George] Cayley’s and [Alphonse] Pénaud’s machines.” This early play and subsequent “observations,” he continued, “have only convinced me more firmly that human flight is possible and practical.”<sup>8</sup> Other sources include the reminiscences of the Wrights’ nephew Milton, who remembered playing with simple toy helicopters made “out of bamboo, paper, cork, and rubber bands” that his uncles built for him while they were engaged in their airplane experiments, and those of a school teacher named Ida Palmer, who recollected catching a young Orville playing with a toy helicopter instead of completing his schoolwork. These accounts, however, appeared long after the Wrights—and their toy—had become famous and should be viewed with at least some skepticism; as should Palmer’s claim that upon catching Orville, the boy predicted that one day he and his brother would fly in a much larger version.<sup>9</sup>

While it is impossible to know with any degree of certainty if the Wrights received a Pénaud helicopter when they were children, simple flying toys based upon those constructed by Alphonse Pénaud were available in toyshops and department stores in the late nineteenth century. What became a common plaything for children began, in 1870, as a serious instrument of science. Pénaud, who was crippled by what one late nineteenth century source described only as a “painful hip disease,” abandoned his plans

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<sup>8</sup> Wilbur Wright to the Smithsonian Institution, 30 May 1899, *The Papers of Wilbur and Orville Wright, Volume I, 1899-1905*, ed. Marvin W. McFarland (New York: McGraw-Hill, 1953; reprint 2001), 4-5.

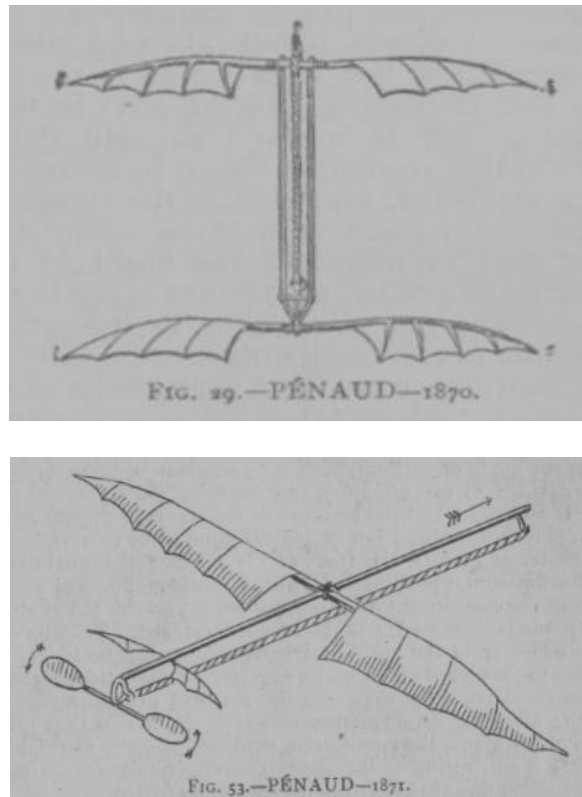
<sup>9</sup> Milton Wright, press release, Smithsonian Institution, 17 December 1948, in *Wright Reminiscences*, ed. Ivonette Wright Miller ([s.n.], 1978), 68-71; Grace Boston, “Wright Boys Interested in Aviation When They Were School Boys in This City,” *Cedar Rapids Evening Gazette*, 19 September 1928, as quoted in Crouch, *Wings: A History of Aviation From Kites to the Space Age* (New York: W. W. Norton & Company, 2003), 26.

to follow his father into the French navy and focused his energies instead on studying the mechanics of flight. In the 1870s, before his death by suicide in 1880 at the age of thirty, Penaud was perhaps *the* central figure in French aeronautics. In 1874, T. J. Bennett, a representative from the Aeronautical Society of Great Britain, praised Pénaud as the “most prominent” aeronautics experimenter in France whose various working models demonstrated three different principles of propulsion—vertical flight (his *hélicoptère*, 1870), horizontal flight (his *planophore*, 1871), and, with a model ornithopter, flapping-wing flight (1872). Of these, the *planophore* (and his subsequent paper on the subject) proved the most influential for subsequent experimenters for its demonstration of inherent stability in airplanes, but his contemporaries also admired his *hélicoptère* and built replicas of their own. French toy manufacturers too recognized its potential, not as a scientific instrument, but as a profitable amusement for young children (fig. 2).<sup>10</sup>

Pénaud, of course, was not the first to experiment with vertically-flying screws, but his *hélicoptère* proved unique for its use of rubber strand skeins, rather than clockwork springs or other actuating schemes, for power. Bennett marveled at the simplicity of the rubber torsion motor’s operation, for the user need only hold one screw while rotating the other, so that “When the rubber is sufficiently twisted, it is only necessary to abandon the apparatus to itself.” Upon release, the “apparatus” would “rise like an arrow to the height of 50 ft.; glide obliquely in describing large circles, or else, after having mounted to the height of 8 or 9 yards, hover in the same place for 15 or 20

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<sup>10</sup> Octave Chanute, *Progress in Flying Machines* (New York: *American Engineer and Railroad Journal*, 1894; reprint, Mineola, New York: Dover Publications, 1997), 48-72, 117-119 (quoted on p. 119); T. J. Bennett, “Notes From France,” *Ninth Annual Report of the Aeronautical Society of Great Britain* (1874): 49-64 (quoted on p. 50); Alphonse Pénaud, “Laws Relating to Planes Gliding in the Air,” *Eleventh Annual Report of the Aeronautical Society of Great Britain* (1876): 45-59; Ladislav d’Orsy, “Pioneers of Aviation; VI. Alphonse Pénaud,” *Aircraft*, December 1913, 221-222. On nineteenth century experimental communities devoted to aeronautics, see Crouch, *Dream of Wings: Americans and the Airplane, 1875-1905* (New York: W. W. Norton, 1981).



**Figure 2:** Alphonse Pénaud's *hélicoptère*, above, and his *Planophore*. Images from Chanute, *Progress in Flying Machines* (1894), 55, 117.

seconds, and even for 26 seconds.”<sup>11</sup> According to Octave Chanute, a French-born engineer who became the leading figure in American aeronautical circles in the late nineteenth century, Pénaud's *hélicoptère* proved “simple, cheap, efficacious, and not easily broken.” Still, he admitted in 1894, Pénaud's *hélicoptère* “has remained” by and large “a toy, which has been varied in many ways” by Parisian or Japanese toymakers and was, by the time he was writing, commonly found in American toyshops.<sup>12</sup> While far from conclusive, it is possible that Bishop Wright picked up a *Pénaud* toy, or something very close to it, for his sons during his travels for the evangelical Church of the United

<sup>11</sup> Bennett, “Notes From France,” 52-53.

<sup>12</sup> Chanute, *Progress in Flying Machines*, 55-56.

Brethren in Christ. Unfortunately, no sources survive in the historical record that can positively document the purchase.<sup>13</sup>

While gaps in the historical record are a common frustration for historians generally, for historians of childhood this challenge proves particularly vexing because children tend to produce less of the sort of written material (letters, diaries, articles in contemporary periodicals, etc.) used to reconstruct the past. Lack of contemporary sources is further complicated by the fact that children's voices are too often silenced by adults who claim to speak for them. As a result, scholars interested in the lived experiences of childhoods long past are forced to rely upon published or unpublished memoirs, even if these reminiscences offer imperfect glimpses of the past filtered through the lens of the present.

It is probable the Wrights received some kind of flying toy from their father in 1878, but their discussions of this gift—and its significance—can only be understood by placing them within the context of their attempts to establish and protect their priority rights as inventors. As a rhetorical strategy, the Wrights described this toy while detailing their inventive process in the early twentieth century, and in so doing located the origins of their interest in flight (and their identities as inventors) in a distant past where it was safe from contemporary scrutiny. Referencing the toy they received as children allowed the Wrights to speak about their long-standing interest in the problems of mechanical flight and suggested to their contemporaries the continuity of an idea. While, admittedly, this move proved more culturally than legally significant, their story remained difficult to dispute and served only to enhance their reputations as inventors.

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<sup>13</sup> Bishop Milton Wright, *Diaries, 1857-1917* (Dayton, OH: Wright State University Libraries, 1999), 75-78.

The first public mention of the episode dates to an article attributed to Orville and Wilbur Wright published in 1908 in *Century Magazine*. Up to this time, the pair shied away from the press, limiting comments to, in the words of the magazine's editor, "brief statements of bare accomplishments," which only shroud their work in mystery. Clearly proud of his achievement, the editor was quick to note the significance of publishing the "first popular account of their experiments prepared by the inventors."<sup>14</sup> The initial idea for the article came to Wilbur while he was in New York preparing for a trip to France, where constant attention from the press led him to rethink his and his brothers' steadfast avoidance of publicity. In New York, Wilbur met with the *Century*'s editor and agreed to produce an article describing his own and Wilbur's accomplishments "in simple, straightforward terms." After the meeting, Wilbur wrote his brother instructing Orville to prepare "our true story told in an authentic way at once," adding, "let it be known that we consider ourselves fully protected by patents." Realizing that Orville too would be busy, Wilbur encouraged his brother to consider hiring a "stenographer and dictate an article," adding that their younger sister Katherine might "assist in getting it in shape if you are too busy." The article's publication in the *Century*'s September issue corresponded with Orville's planned flying exhibition before army officials at Fort Myer, Virginia to meet the terms of a contract for the sale of their Wright Flyer. Orville, according to Tom Crouch, was so "uncertain" about the article that he purportedly "offered to return part of the \$500 fee paid by the *Century*," but Crouch asserts the article "remains one of the best short descriptions of the birth of powered flight."<sup>15</sup>

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<sup>14</sup> Orville and Wilbur Wright, "The Wright Brothers' Aeroplane," *Century*, September 1908, 641.

<sup>15</sup> Wilbur Wright to Orville Wright, New York, 20 May 1908, *The Papers of Wilbur and Orville Wright, Volume II, 1906-1948*, ed. Marvin W. McFarland (New York: McGraw-Hill, 1953; reprint 2001), 882-883; Crouch, *Bishop's Boys*, 360-62.



Overall, the article provided a succinct account of the Wrights' inventive process from the toy helicopter they received as children to their present accomplishments. "Our personal interest" in flying, Orville began,

dates from our childhood days. Late in the autumn of 1878, our father came into the house one evening with some object partly concealed in his hands, and before we could see what it was, he tossed it into the air. Instead of falling to the floor, as we expected, it flew across the room till it struck the ceiling, where it fluttered awhile, and finally sank to the floor. It was a little toy, known to scientists as a '*hélicoptère*,' but which we, with sublime disregard for science, at once dubbed a 'bat.'

Orville described the 'bat' as a "light frame of cork and bamboo, covered with paper, which formed two screws, driven in opposite directions by rubber bands under torsion." Carefully (even affectionately) described, he noted the delicate toy lasted a "short time in the hands of small boys, but its memory was abiding." "Several years later" the pair apparently returned to the toy, "building these *hélicoptères* for ourselves, making each one larger than that preceding. But, to our astonishment, we found that the larger the 'bat,' the less it flew." Only with the benefit of hindsight—and years of study—would they come to realize that "a machine having only twice the linear dimensions of another would require eight times the power." As boys discouraged, the pair "returned to kite-flying, a sport to which we had devoted so much attention that we were regarded as experts. But as we became older, we had to give up this fascinating sport as unbecoming to boys of our ages."<sup>16</sup>

This published account fused the Wrights as an inseparable pair possessing not only a capacity for self-directed play, but also a powerful ability to retain visual knowledge. As a temporal distinction, Orville's mention of "several years later," as

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<sup>16</sup> Wright, "The Wright Brother's Aeroplane," 641-642. Aside from gaining a local reputation for kite flying, Orville noted that serious interest in flight waned until he read reports of German glider experimenter Otto Lilienthal's death in 1896.

opposed to something like ‘some time later,’ or ‘soon after,’ set the faculties—for these particular seven and eleven year-olds—to visualize, recall, and physically replicate technology at a level that seemed preternaturally developed. Compared with the 1908 narrative, Orville’s description of the same event in a 1920 deposition for a patent dispute case shortened the original, but nonetheless faithfully adhered to its basic narrative arc. Responding to the question of when he and his brother “first became interested in the problem of flight,” Orville replied,

Our first interest began when we were children. Father brought home to us a small toy actuated by a rubber spring which would lift itself into the air. We built a number of copies of this toy, which flew successfully. By ‘we’ I refer to my brother and myself. But when we undertook to build the toy on a much larger scale it failed to work so well. The reason for this was not understood by us at the time, so we finally abandoned the experiments.<sup>17</sup>

Compared to the first passage, this version failed to distinguish a lapse in time between receiving the gift and their efforts to reproduce and enlarge the toy. Also gone was the reference to calling the toy a ‘bat.’

The reference to building ‘bats’ in the 1908 *Century* article, and its absence from the 1920 testimony, makes perfect sense given the rhetorical situation—providing a deposition in a patent infringement suit—where adopting the language of a serious inventor might have been more advantageous to the case. As the stories relayed in 1908 and 1920 served to illustrate a long-standing fascination with the problem of flight, this purpose also seems convincing, especially as his testimony carried important legal implications.<sup>18</sup> Moreover, in mentioning the story of the toy, Orville did more than

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<sup>17</sup> Orville Wright, deposition, 13 January 1920, *Wright Papers*, vol. 1, p. 3.

<sup>18</sup> The case was Regina C. Montgomery *et al. vs.* The United States. Orville Wright gave two depositions on behalf of the Wright-Martin Co., one in 1920 and another in 1921. Montgomery and her family dropped the case later in 1921. See, Crouch, *Bishop’s Boys*, 497. Fred C. Kelly, Orville’s friend and authorized

construct a historical narrative. After encountering problems with scaling up the toy, he stated, “we finally abandoned the experiments.” In responding to a legal question of when the two brothers became interested in flight, Orville framed their boyhood activities as “experiments,” thus strengthening the connections between Orville and Wilbur as children and their later role of inventors of an airplane. The resulting testimony, thus, reinforced Orville’s claim to an inventive boyhood and fused his and his brothers’ individual identities as cooperative inventors and co-creators of their airplane; a fact ultimately central to their legacy.

Shortly after the publication of the 1908 article, interest in the Wrights’ boyhood was pronounced and immediate. The *New York Times*, borrowing heavily from the *Century* account, echoed the story of the toy in spirit, if not verbatim. The pair’s initial interest in flight—as “[i]t is related”—was sparked when “Orville was stricken with a fever” and his faithful brother read to him from a “treatise which told in simple words the story of the air cushion which envelops the earth.” Within days their father arrived home to present the now famous helicopter to his sons, and they immediately set to playing with it. “Boylike, they took the toy apart, [and] discovered what it was that had made it go.” Problems constructing larger ones, as Orville relayed before, led the pair to kite-flying. “Gifted with much ingenuity and with a natural bent in this direction....the more kites they flew, the more they studied the action of the air on the planes, the more primitive knowledge they gained. And more and more the idea of some day solving the problem of flight grew upon their youthful minds.”<sup>19</sup>

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biographer, later edited Wright’s depositions into a slim volume published in 1953 to mark the fiftieth anniversary of the Wrights’ first flight. See, Orville Wright, *How We Invented the Airplane*.

<sup>19</sup> “How the Wrights Developed Their Aeroplane,” *New York Times*, 20 September 1908. According to Bishop Wright’s diaries, Orville, and his older brothers Reuchlin and Lorin, fell ill with diphtheria during

In 1909 the early aeronautics magazine *Fly* referred to the increasingly mythical episode in an attempt to elicit parents' support for the Junior Aero Club, an organization designed, in the editor's words, to encourage "youthful aspirations in aeronautics" through kite-flying and model building. In referring to the gift, editors mused counterfactually, "Had Bishop Milton Wright, when a more or less obscure clergyman, frowned upon the interested displayed by his boys...it is probable that flight would not now be in its present stage of development. The aeroplane of to-day," the editors continued, "is undoubtedly the result of the encouragement given these boys when they were building models." Optimistic about the future, *Fly*'s editors proclaimed, "and there is still a big field of development awaiting the youth of to-day who give thought and experiment in this line."<sup>20</sup> Reinforcing the emphasis on the formative nature of their play, Bishop Wright's gift emerged as an essential part of the collective mythology of the Wrights' invention; so important that, as *Fly* suggested, without it the Wrights might never have invented their airplane. Enlisting parents' support for the Junior Aero Club invited parents of 1909 to see the potential in boys' technological play, just as Bishop Wright apparently had. The resulting call thrust sympathetic parents in the early twentieth century into the elder Wright's role as the impetus for the future success of their own Wilburs and Orvilles.

The accounts of the Wright story in both *Fly* and the *New York Times* anticipated the elaborations of subsequent decades that were used to encourage boys' participation in the model airplane hobby. Before turning to how the Wrights' boyhood was repurposed in service of boys in the early twentieth century, however, it is essential to place these

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the week November 3, 1878, which means that if the *New York Times* article is correct, the brothers likely received the toy later that month. See Wright, *Diaries*, 76.

<sup>20</sup> Junior Club Editor, "Junior Aero Club Inaugurated," *Fly*, December 1909, 15.

discussions within the broader context of inventive boy discourse. Stories about boy inventors appeared in the popular press and series fiction, and were the combined products of longstanding praise of inventors, recent emphasis on the idea of boys' purposeful play, and a vibrant consumer culture for children. Together these influences created a widespread celebration of boy inventors and recast boys' ordinary and extraordinary play as industrial training.

### ***The Inventor as Hero and the Mystique of the Boy Inventor***

Inventors, of course, were already celebrated cultural figures in the United States long before the Wrights made their work public. In the nineteenth century, ideas about technological development fused with ideas about social progress emerging from the vibrant public culture of republicanism following the American Revolution. The result, as John Kasson observes, allowed Americans to view technological development in terms of national achievement, social betterment, and evidence of the continuing realization of the founding generation's republican ideology. Early Americans' ideas about technological change cast inventors as national heroes and invention as the touchstone of personal and national wealth creation—an emphasis that conformed neatly with the praise of individualism in American culture and the spread of liberal capitalism. These ideas, codified in the patent system, allowed Americans in the nineteenth century to view inventors as progress personified.<sup>21</sup>

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<sup>21</sup> Lawrence A. Peskin, *Manufacturing Revolution: The Intellectual Origins of Early American Industry* (Baltimore: Johns Hopkins University Press, 2003); John F. Kasson, *Civilizing the Machine: Technology and Republican Values in America, 1776-1900* (New York: Penguin Books, 1976). On republican ideology generally, see Bernard Bailyn, *The Ideological Origins of the American Revolution* (Cambridge, MA: Belknap Press of Harvard University Press, 1967); Gordon S. Wood, *The Creation of the American Republic, 1776-1787* (Chapel Hill: University of North Carolina Press, 1969) and *The Radicalism of the American Revolution* (New York: Knopf, 1991); Linda Kerber, *Women of the Republic: Intellect and*



**Figure 3:** Christian Schussele, *Men of Progress* (1862), National Portrait Gallery, Smithsonian Institution, Washington, DC.

Perhaps nowhere was this emphasis more clearly expressed than in the American painter Christian Schussele's portrait *Men of Progress* (1862) (fig. 3). Schussele received the commission in 1857 to portray the major figures in American invention and industry from Jordon Mott, who was credited with inventing the coal-burning stove. The final version included Mott and seventeen other notable inventors and, soon after it was presented, *Men of Progress* was widely reproduced as a popular engraving and displayed in many middle-class Victorian homes.<sup>22</sup> In the painting, Samuel F. B. Morse sits

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*Ideology in Revolutionary America* (Chapel Hill: University of North Carolina Press, 1980); Joyce Appleby, *Capitalism and a New Social Order* (New York: New York University Press, 1984); Sean Wilentz, *Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850* (New York: Oxford University Press, 1984).

<sup>22</sup> Brooke Hindle and Steven Lubar, *Engines of Change: The American Industrial Revolution, 1790-1860* (Washington: Smithsonian Institution Press, 1986), 75-76; Merritt Roe Smith, "Technological Determinism in America Culture," in *Does Technology Drive History?: The Dilemma of Technological Determinism*, ed. Merritt Roe Smith and Leo Marx (Cambridge, MA: The MIT Press), 7.

prominently at a table with his telegraph flanked by other standing and seated figures, including Samuel Colt, Cyrus McCormick, Charles Goodyear, John Ericsson, Thomas Blanchard, and Elias Howe, among others. Peppered throughout the imaginary meeting of these leading industrial figures was physical proof of their genius: miniature mechanical models, drawings of industrial machinery, and, as with Goodyear and Colt, full-sized samples of their work. Schussele honors Benjamin Franklin as a paternal figure for American invention by including his portrait on the back wall; a piece of iconography that seems to link the contemporary technological developments of Schussele's time with the republican ideals of the founding fathers.

While Schussele's inclusion of Franklin's portrait suggests continuity between eighteenth and mid-nineteenth century inventors, Franklin's portrait, set in the background, also suggests the gulf between Franklin's views and the more proprietary understandings of invention in the nineteenth century. Unlike the "men of progress" pictured in the foreground who leveraged the legal system to validate their status as inventors in an attempt to profit from their ideas, Franklin was deeply suspicious of patents as contrary to the good of the commonwealth. As he famously described in his autobiography, Franklin reasoned: "*That, as we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously.*"<sup>23</sup> The iconography scattered throughout the scene—the drawings and mechanical models—served not only as physical proof of inventors' mental work, but within the context of nineteenth century patent law, these artifacts were essential to the processes of establishing legal priority and receiving a

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<sup>23</sup> Benjamin Franklin, *The Autobiography of Benjamin Franklin*, in *The Harvard Classics, Volume 1: The Autobiography of Benjamin Franklin/ The Journal of John Woolman/ Fruits of Solitude*, ed. Charles W. Elliot (New York: P. F. Collier & Son, 1909; reprint 1969), 111-112 (emphasis in original).

patent. Until 1880 patent applications required the submission of physical models in most circumstances, making models and technical drawings a fundamental part of the currency of invention. Read this way, these representations only reinforce the discrepancies between Franklin's archaic views and the social and cultural networks in place by the mid-nineteenth century that constructed invention as a proprietary endeavor.<sup>24</sup>

The patent system granted rights to reap financial rewards from new technological ideas, but patents also perpetuated an understanding that invention was the domain—and the necessary product—of solitary genius. This view, as common in the late nineteenth century as it often is today, not only minimized the often highly social nature of the inventive process, but also helped transform inventors into the very essence of self-made success.<sup>25</sup> Success, viewed in terms of social and financial independence, helped define masculinity in the last decades of the nineteenth century. Judging by the popularity of new genres of advice literature like the success manual and Horatio Alger's rags-to-riches

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<sup>24</sup> On models and patent law, see Eugene Ferguson, *Engineering and the Mind's Eye* (Cambridge, MA: MIT Press, 1994), 135-142; Kendall J. Dood, "Patent Models and the Patent Law: 1790-1880," *Journal of the Patent Office Society*, 65 (April and May 1983): 187-216, 234-274; Barbara Suit Janssen, ed. *Icons of Invention: American Patent Models* (Washington, DC: Smithsonian Institution Press, 1990); William Ray and Marlys Ray, *The Art of Invention: Patent Models and Their Makers* (Princeton, NJ: Pyne Press, 1974); Carolyn C. Cooper, "Social Construction of Invention through Patent Management: Thomas Blanchard's Woodworking Machinery," *Technology and Culture*, 32 (October 1991): 960-998.

<sup>25</sup> On the social nature of invention, see Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch (Cambridge, MA: MIT Press, 1987), 17-50; and Bijker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change* (Cambridge, MA: MIT Press, 1995). On critiques to social constructivist approaches, see Langdon Winner, "Upon Opening the Black Box and Finding it Empty: Social Constructivism and the Philosophy of Technology," *Science, Technology, and Human Values* 18 (Summer 1993): 362-378; Hans K. Klein and Daniel Lee Kleinman, "The Social Construction of Technology: Structural Considerations," *Science, Technology, and Human Values*, 27 (Winter 2002): 28-52; and the exchange published in *Technology and Culture* 43 (April 2002), 351-373. On constructivism in the history of science, see Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 2005).



novels, ideas about success were of great concern to middle-class Americans living in an age of increasing corporate consolidation that marked the second industrial revolution.<sup>26</sup>

While widespread cultural views of the entrepreneurially-minded inventor conformed with the celebration of self-made success in the late nineteenth century in general, perhaps no other single individual best expressed the status of the self-made inventor as Thomas A. Edison. Edison proved a deft showman whose artifice extended beyond the technological to the theatrical. Trading in his public image of the “Wizard of Menlo Park,” Edison took advantage of the openings created by recent innovations in American journalism—such as the interview and the personality piece—to position himself as the foremost expression of independent invention. The height of Edison’s fame, interestingly, coincided with the rise of the industrial research and development laboratory (another Edison innovation) and the increasing corporate control of large-scale technological systems; developments, which together, exposed the fiction of the lone inventor and threatened to render the reality of the lone independent inventor into something of an anachronism. Even with these changes—and perhaps because of them—the image of the self-made inventor remained one of the most cultural resonant products of the nineteenth century; a figure that expressed the very core of American national identity.<sup>27</sup>

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<sup>26</sup> Judy Hilkey, *Character is Capital: Success Manuals and Manhood in Gilded Age America* (Chapel Hill: University of North Carolina Press, 1997); Russel Nye, *The Unembarrassed Muse: The Popular Arts in America* (New York: Dial Press, 1970), 61-71; Karen Halttunen, *Confidence Men and Painted Women: A Study of Middle-class Culture in America, 1830-1870* (New Haven: Yale University Press, 1982), 198-210.

<sup>27</sup> On celebrity, see Charles L. Ponce de Leon, *Self-Exposure: Human-Interest Journalism and the Emergence of Celebrity in America, 1890-1940* (Chapel Hill: University of North Carolina Press, 2002); and Renee Sentilles, *Performing Menken: Adah Isaacs Menken and the Birth of American Celebrity* (New York: Oxford University Press, 2003). On the public image of Edison, see Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age* (New York: Hill and Wang, 1982), 65-68; Carroll Pursell, *The Machine in America: A Social History of Technology* (Baltimore: Johns Hopkins University Press, 1995), 221; Paul Israel, *From Machine Shop to Industrial Laboratory: Telegraphy and*

The late nineteenth century was not just the height of the celebrity of inventors, but also a key point in the redefinition of masculinity; a shift, as Gail Bederman and others have suggested, away from the restrained ideals of Victorian manhood, to a more forceful masculine ideology rooted in action and purposeful assertion.<sup>28</sup> From the popularity of rough sports like football to the interventionist foreign policy of Theodore Roosevelt, these vigorous and muscular visions of masculinity responded to the perception, common at the time, that consumer culture and middle-class family life somehow risked diluting manhood by contributing to the creation of a generation of docile, effete men and boys. The public image of the independent, self-made inventor, such as it was, conformed to this emerging ideology because even the most physically unfit inventor proved no less capable of shaping the physical and social world. Within the context of shifting gender politics, the inventor (and, in time, other male technologists like the profession engineer) embodied the kinds of character concerned adults hoped to encourage in boys.<sup>29</sup>

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*the Changing Context of American Invention, 1830-1920* (Baltimore: Johns Hopkins University, 1992) and *Edison: A Life of Invention* (New York: John Wiley, 1998). Also useful is Charles Bazerman, *The Languages of Edison's Light* (Cambridge, MA: The MIT Press, 1999).

<sup>28</sup> For a brief introduction to masculinity during this time, see Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States, 1880-1917* (Chicago: University of Chicago Press, 1995); E. Anthony Rotundo, *American Manhood: Transformations in Masculinity from the Revolution to the Modern Era* (New York: Basic Books, 1993); Michael Kimmel, *Manhood in America: A Cultural History* (New York: The Free Press, 1996); Kim Townsend, *Manhood at Harvard: William James and Others* (Cambridge, MA: Harvard University Press, 1996); Kristen L. Hoganson, *Fighting for American Manhood: How Gender Politics Provoked the Spanish-American and Philippine-American Wars* (New Haven: Yale University Press, 2000); Mark C. Carnes and Clyde Griffen, eds., *Meaning for Manhood: Constructions of Masculinity in Victorian America* (Chicago: University of Chicago Press, 1990); John F. Kasson, *Houdini, Tarzan, and the Perfect Man: The White Male Body and the Challenge of Modernity* (New York: Hill and Wang, 2001); Elliot J. Gorn, *The Manly Art: Bare-Knuckle Prize Fighting in America* (Ithaca: Cornell University Press, 1986).

<sup>29</sup> On masculinity within the history of technology, see Carroll W. Pursell, "The Construction of Masculinity and Technology," *Polhem* 11 (1993): 206-219; Ruth Oldenziel, *Making Technology Masculine: Men, Women, and Modern Machines in America, 1870-1945* (Amsterdam: Amsterdam University Press, 1999); Nina E. Lerman, Ruth Oldenziel, and Arwen P. Mohun, eds., *Gender and Technology: A Reader* (Baltimore: Johns Hopkins University Press, 2003), esp. "The Shoulders we Stand On/The View from Here: Historiography and Directions for Research," pages 425-449. See also, the

While such ideas about success, masculinity, and invention were widespread in American culture, these emerging ideals were expressed acutely in new forms of prescriptive literature for boys. The *American Boy* magazine, founded in 1899, routinely extolled inventiveness as a prized trait for readers to emulate. Articles and features paired reports of the latest technological developments with directions for experiments boys could try at home, making the magazine a key outlet for circulating an emerging inventive boy discourse. An article entitled “Young Inventors,” published in 1903, gathered elements from the biographies of several famous inventors to inspire readers’ own technological tinkering. John Ericsson, readers learned, was just twelve when he “invented a new kind of saw mill” with a saw blade powered by “an old watch spring moved by a crank constructed of a broken teaspoon,” using a knife, gimlet, and metal file as his only tools. Charles F. Brush, at fourteen, “constructed a new form of electric motor” and “an electric apparatus” for lighting gas street lamps. Thomas Edison, at the same apparently inventive age, used a “cheap clock” to mechanize the “monotonous work” of checking in twice hourly to prove he had not fallen asleep during his night telegraph clerk job. Young Edison’s clever shirking of responsibility, the *American Boy*’s editors assured impressionable young readers, allowed him not to goof off, but provided the opportunity to refocus his time and attention towards the self-directed study of more pressing technological matters.<sup>30</sup>

As the *American Boy* imagined them, Ericsson, Brush, and Edison as boys displayed early evidence of the mechanical genius that eventually made them famous, but these biographical portrayals were far less like the austere inventors pictured in

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special issue “Gender Analysis and the History of Technology” *Technology and Culture* 38 (January 1997) edited by the same.

<sup>30</sup> “Young Inventors,” *American Boy*, April 1903, 181

Schussele's *Men of Progress* and more like the subject of Reverend J. Pierpont's 1857 poem "Whittling—A Yankee Portrait." The "Yankee boy," Pierpont opens, "well knows the mystery of that magic tool,/ The pocket-knife," which brings the "young whittler.../ a growing knowledge of mechanical things."

by his genius and his jack-knife driven,  
Ere long he'll solve you any problem given;  
Make any gimcrack, musical or mute,  
A plow, a coach, an organ or a flute;  
Make you a locomotive or a clock;  
Cut a canal or build a floating dock;  
Make anything, in short, for sea or shore,  
From a child's rattle to a seventy-four;  
Make it, said I? Ay, when he undertakes it,  
He'll make the thing and the machine that makes it.<sup>31</sup>

Pierpont's ode to the Yankee whittling boy was present in Winslow Homer's painting *The Whittling Boy* (1873), whose lone subject sits, with legs dangling over the end of a fallen log carving a switch with his "magic tool." The creative spirit of the whittling boy was also present in Daniel Carter Beard's popular advice guide, *The American Boy's Handy Book* (1882), which urged parents to allow "handy boys" to construct their own playthings as a way to "stimulate the inventive facilities in boys" and "exercise" their "personal intelligence and ingenuity." Beard's "practical, ready-witted American boy," just as Pierpont's boy whittler before, celebrated boys' ingenuity to create amusements with just a few ordinary hand tools. This seemingly natural bent for technical play seemed unbound by the limits of age. Indeed, age was not an obstacle for tinkering, but its source of inspiration.<sup>32</sup> In 1908 the popular children's magazine *Youth's*

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<sup>31</sup> Rev. J. Pierpont, "Whittling—A Yankee Portrait," *United States Magazine*, February 1857, 217. See also Cooper, "Myth, Rumor, and History."

<sup>32</sup> On children in Homer's painting, see Jules David Prown, *Art as Evidence: Writings on Art and Material Culture* (New Haven: Yale University Press, 2002), 188-204, originally published as "Winslow Homer in His Art," *Smithsonian Studies in American Art* 1 (Spring 1997): 30-45. D.C. Beard, *The American Boy's*

*Companion* honored Pierpont anonymously as “a poet of the last generation” who foresaw the “modern marvels [that] grew out of the boy’s ability to do them.”<sup>33</sup>

The notion of the nineteenth century whittling boy’s inexpensive, self-directed play anticipated the inventive boy in the next century, but the primary difference between whittling boy narratives and those of his boy inventor counterpart centered upon the degree to which the inventive boy’s work was made public. The Yankee boy whittler tinkered anonymously, but the creation of a specific consumer culture for boys in the early twentieth century allowed adults to highlight the efforts of certain boys, which, in the process, transformed them into minor celebrities; even if for a single issue of a monthly magazine. The *American Boy* routinely praised boys for their exemplary behavior—such as eleven-year-old Gurnee Millard’s six years of perfect school attendance. In light of the perceived changes in the technological landscape (and the appeal of an emerging inventive boy discourse) editors also honored the ingenuity of boys like Ralph Teeter, a twelve-year-old from Hagerstown, Indiana who constructed his own electric automobile.<sup>34</sup>

Sometime in 1902, Ralph Teeter apparently “became deeply interested in” automobiles and like all aspiring inventors he soon “read everything on the subject.” By the end of the school year, Ralph readied his plans to build his own electrically-powered car, which would propel the young inventor, and up to two passengers, to a top speed of fifteen miles an hour. The *American Boy*’s editors praised Ralph’s automobile project as the perfect antidote to summer idleness and as an example of purposeful pursuits that

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*Handy Book* (New York: Charles Scribner’s Sons, 1882; reprint, Lincoln, MA: David R. Godine, 1983), xvi-xvii. On craft hobbies, see Steven M. Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999).

<sup>33</sup> “New Uses For New Inventions,” *Youth’s Companion*, 24 September 1908, 446.

<sup>34</sup> “A Boy to Be Proud Of,” *American Boy*, April 1902, 183.

would lead to success in adulthood. Much like the “great inventors” he admired, Ralph had his very own backyard workshop and an industrial backer in his father, the president of a Hagerstown manufacturing operation. Mr. Teeter, according to the magazine, built the workshop “in the hope of keeping [Ralph] out of the factory, where he was taking up the time of the men misplacing tools and working machines that little boys have no business with.” Ralph’s removal to his workshop allowed Mr. Teeter to encourage his son’s tinkering in safety, while also shielding his son from the dangers of the working-class operations of the shop floor. Protected from the rough masculine workplace of his father’s factory, Ralph’s backyard workshop placed his work at the edges of the domestic realm occupied by his mother. His proto-industrial research and development laboratory—complete with dynamos, a three-horse power engine, and a complete set of wood and metalworking tools—became an intermediary space between his parents’ spheres of influence and a place where he could become a technologically-orientated man. With an eye towards the future, the *American Boy*’s editors promised that Ralph “will be heard from.”<sup>35</sup>

In highlighting Ralph Teeter as a model boy inventor at play, the editors of the *American Boy* cast boyhood as a process of becoming and unfolding; a view perfectly congruent with contemporary views of boyhood generally. For reform-minded adults—including social workers, educators, and psychologists—the social transformations in the United States wrought by the dual processes of industrialization and urbanization led to

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<sup>35</sup> “Ralph Teeter, Electrician,” *American Boy*, March 1903, 145. On the cultural separation of boys, see Anthony Rotundo, *American Manhood*, chapter 2. On gendered technological spaces, see Ruth Oldenziel, *Making Technology Masculine*; Kristen Haring, “The ‘Freer Men’ of Ham Radio: How a Technical Hobby Provided Social and Spatial Distance,” *Technology and Culture* 44 (October 2003): 734-761, “Technical Identity in the Age of Electronics,” (Ph.D. diss., Harvard University, 2002), and *Ham Radio’s Technical Culture* (Cambridge, MA: MIT Press, 2007). Virginia Woolf, *A Room of One’s Own* (1929: reprint, San Diego: Harvest, 1989), is a classic illustration of the connections between gender and creative spaces. For a discussion of workshops and adolescence, see chapter 2, this volume.

the widely accepted perception that boyhood, like masculinity, was in crisis. Together, the Young Men's Christian Association (and later the Boy Scouts of America), the various campaigns to construct municipal playgrounds, and the influence of theorists like Friedrich Froebel, G. Stanley Hall, and lesser known philosophers like Karl Groos, provided the intellectual foundations that spurred a vibrant child-study movement in the early twentieth century. And, because of these efforts, children's play was increasingly redefined not as recreation, but as work. As one influential leader in the Playground Association of America (founded in 1906) later described, boys' play is "what work *is* to the man—the fullest attainable expression of what he is and the effective means of becoming more." While these proponents of "Boyology," as Kenneth Kidd describes in his recent study, looked to a mythic rural past in promoting their visions for healthy boyhood, inventive boy discourse embraced technological change—and boys like Ralph Teeter—as a source of inspiration for middle-class boys to take up their future roles as entrepreneurially-minded technologists. As with boy tinkerers of the past—like the venerable Thomas Edison—encouraging boys' inventively playful behavior was viewed as a way of creating a class of future manly producers whose mental and hand work carried within it the seeds of success that would lead the nation forward.<sup>36</sup>

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<sup>36</sup> David I. Macleod, *The Age of the Child: Children in America, 1890-1920* (New York: Twayne Publishers, 1998), and *Building Character in the American Boy: The Boy Scouts, YMCA, and Their Forerunners, 1870-1920* (Madison: University of Wisconsin Press, 1983); Dominick Cavallo, *Muscles and Morals: Organized Playgrounds and Urban Reform, 1880-1920* (Philadelphia: University of Pennsylvania Press, 1981); Kenneth B. Kidd, *Making American Boys: Boyology and the Feral Tale* (Minneapolis: University of Minnesota Press, 2004); G. Stanley Hall, *Adolescence: Its Psychology and its Relation to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education*, 2 vols. (New York: D. Appleton and Company, 1904); Bederman, *Manliness and Civilization*, 77-120; Karl Groos, *The Play of Man*, trans. by Elizabeth L. Baldwin (New York: D. Appleton & Company, 1901; reprint, New York: Arno Press, 1976); Friedrich Froebel, *The Education of Man*, trans. by W. N. Hailmann (1826: reprint, New York: D. Appleton and Company, 1896). Joseph Lee quoted in his *Play in Education*, (New York: Macmillan Company, 1915), vii-viii (emphasis in original). See also, Henry S. Curtis, *Education Through Play* (New York: Macmillan, 1915).

Inventive boy discourse straddled the tensions between casting the boy inventor as exceptional *and* accessible, so that those boys who admired his work could also see themselves as sharing in his potential. This emphasis, however, made the example of boys like Ralph Teeter problematic, for while he represented precisely the kind of enterprising tinkering the *American Boy* celebrated, his well-stocked backyard laboratory could only be built with a sizeable capital investment. As such, the Teeter family's wealth provided Ralph opportunities to tinker in ways impossible for many boys, which made plucky lads like Bernard Lydrick all the more important for proving that ingenuity did not require great outlays of cash.

Bernard, a fifteen-year-old from San Diego, had—according to the *American Boy* in 1907—“always been more or less interested in electricity” and had recently constructed his own working wireless telegraph for just eighty-five cents, using materials salvaged from around the home or left over from earlier experiments. Displaying a resourcefulness characteristic of all romanticized visions of backyard inventors, Bernard constructed a sending key for the device for “less than one cent” by salvaging copper wire and a knob “whittled from an old spool.” A glass case made from broken window glass obtained from careless “house-movers” joined mason jars pilfered from the pantry to fashion the sixteen batteries used to power the device. This improvised tinkering resulted in a working telegraph that routinely received messages from nearby government sending stations, including one “which he could not translate, having been sent in [secret] code.” Like all inventors, Bernard was not content to rest on his past achievements, and so he—along with “his chum” and research assistant Essex—was busy hatching plans for a new wireless scheme that promised to “be much simpler than the wireless machines



now in use in this country.” After consulting with several “wireless experts,” the *American Boy* proudly reported that they found Bernard’s plan “feasible.”<sup>37</sup>

While Bernard’s plucky resourcefulness impressed the editors of the *American Boy*, his work paled in comparison to Cromwell Dixon, a thirteen-year-old from Columbus, Ohio who, starting in 1906, gained national attention with a series of public demonstrations in his bicycle-powered dirigible. Newspapers around the country hailed young Cromwell as a “Mechanical Genius,” the “wonder of the mechanical world,” “a youthful prodigy,” a “bird-boy,” and the “youngest aeronaut in the world.”<sup>38</sup> Cromwell’s “Sky Cycle,” as his contraption was called, consisted of a large torpedo-shaped gasbag thirty-two feet long and seventeen feet in diameter, upon which he constructed a wood framework to mount an old bicycle frame that powered the dirigible’s three-bladed aluminum propeller. According to published reports, Cromwell improvised most of the components himself, including the generator used to produce hydrogen gas required for the lighter-than-air craft, but his mother apparently assisted his efforts, plying her needlework skills to sew the three hundred dollars worth of silk used in the airship. Cromwell’s first ascent at a Columbus park was limited to height of less than two hundred feet, because his mother insisted his craft remain tethered to the ground with long ropes, but in the summer of 1907, apparently without his mother’s knowledge and

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<sup>37</sup> Harry H. Dunn, “Boy of Fifteen Builds Wireless for 85 Cents,” *American Boy*, November 1907, 22.

<sup>38</sup> “Lad of Thirteen is Building Airship,” [(Columbus, OH), *Dispatch*, 21 March 1906]; “Boy Flies in Home-Made Airship,” *Chicago Record-Herald*, 27 July [1907?]; “A 13-year-old Santos-Dumont,” [(Kansas City) *Star*, 27 March 1906]; “Boy Flyer will Compete with Two Toledoans,” clipping from unknown newspaper [1909]; “Boy to Ride Sky Bicycle; Feature at Balloon Races,” [(Philadelphia) *Press*, 23 October 1907], newspaper clippings in Cromwell Dixon, Jr. (CD-466500-01), Biographies Vertical Files, Archives, National Air and Space Museum, Smithsonian Institution, Washington, DC (hereafter Dixon Files).

before a crowd of hundreds, Cromwell reached a height of 2,000 feet in his Sky Cycle.<sup>39</sup> As the *American Boy* later reported, during his flight Cromwell had “a most exciting experience.” Realizing the craft’s ballast was too light for descent—and “With decided presence of mind”—Cromwell left the relative safety of the bicycle-frame, climbed along the Sky Cycle’s light framework, and released the excess hydrogen from the airship’s gas bag. After carefully shimmying along the framework and returning to the controls, Cromwell apparently “pedaled for all he was worth and thus reached the ground in safety.”<sup>40</sup> Word of the event spread quickly through the national press, transforming the clever young tinkerer into a national celebrity.

Newspaper correspondents instantly latched onto Cromwell Dixon as the perfect expression of youthful genius and pieced together a biography worthy his remarkable achievements. Reporters routinely mentioned that his father died in 1896 when Cromwell was still a small boy, and that the youthful inventor and his younger sister lived with their mother in her childhood home in Columbus. Although a correspondent from the *Chicago-Record Herald* portrayed the Dixon family as near destitute—reporting that his mother alternated between running a boardinghouse for college students and working as a seamstress to support her family—in truth the Dixon family appears to have been of some means. According to one Columbus newspaper, the family lived in “a very attractive home” bordering Ohio State University and Mrs. Dixon was apparently “a most successful short story writer”; conditions that help explain the family’s ability to finance

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<sup>39</sup> “Cromwell Dixon, Jr.,” typescript, Harold E. Morehouse Flying Pioneers Biographies Collection, Archives, National Air and Space Museum (hereafter Morehouse Collection); “Boy of 13 Builds a Costly Airship,” clipping from unknown Philadelphia newspaper, [27 May 1906], “A Home-Made Airship,” [(Montreal) *Standard*, 21 December 1907], “Youngest Air-Ship Builder,” [(Joliet, IL) *Republican*, 6 December 1907], Dixon Files.

<sup>40</sup> “A Boy Aeronaut,” *American Boy*, January 1908, 92.



**Figure 4:** This newspaper photograph (ca. 1907) picturing Cromwell Dixon, right, and his mother in front of his flag-draped Sky Cycle reflects both popular celebrations of boy inventors and an American national identity rooted in technological creativity. Photograph from unknown newspaper clipping, Dixon File, National Air and Space Museum, Smithsonian Institution.

Cromwell's his endeavors (including the silk his Sky Cycle required) and the supposed "small fortune" she spent outfitting his workshop.<sup>41</sup>

While accounts varied as to the Dixon family's financial situation, there was wide agreement on his talents. Cromwell was portrayed in the press as a polymath; a slight lad who excelled at mechanics and was said to be an artist, a writer, and an accomplished musician who played a number of wind and string instruments—from the cornet and the piccolo, to the mandolin and the piano—but his mechanical proclivities garnered the greatest attention. In one account, a one-year-old Cromwell was said to have disassembled a clock and within a few years the precocious lad purportedly gathered

<sup>41</sup> "Boy Flies in Home-Made Airship" and "Lad of Thirteen Building Airship"; "Boy Sails on Sky Bicycle," clipping from unknown newspaper, 18 July [1907?], Dixon Files.

scattered clockwork parts to power store-bought toy boats in the bathtub. Entirely home-made mechanical toys eventually replaced modified store-bought ones. With his “well equipped” backyard workshop Cromwell had a number of contrivances to his credit: including a four-person rowboat, a mechanical fish, and, with a salvaged gasoline engine, a motorcycle out of a bicycle and a powered automobile fashioned from an old wagon, before he took up the airship work that made him famous. Though physically slight for his age “his conversations,” according to one report, “betrays the old mind” of an inventor of true accomplishment.<sup>42</sup>

Cromwell and his mother contributed greatly to his growing celebrity and made every effort to capitalize it. With a modified and slightly larger Sky Cycle, Cromwell was engaged to provide airship demonstrations at country fairs across Ohio, and in 1907 the boy aeronaut joined several accomplished adult airship fliers in St. Louis where he demonstrated his skills before crowds estimated at nearly 100,000. In St. Louis, Cromwell defied the advice of others by crossing the Mississippi River and, according to some accounts, purportedly cheered on a baseball game from the air with cries to “Bat out a home run.” Cromwell’s mother, who by this time also served as his manager, took out advertisements announcing the boy’s services at exhibitions: a potentially lucrative venture for the family as other airship fliers at the time fetched—through either flat fees or a combination of guarantees and a percentage of the gate’s take—upwards of \$750 or more per day for their services. Over the next few years, Cromwell again modified his airship by outfitting it with a small motorcycle engine and made flights throughout the

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<sup>42</sup> “Boy Aeronaut to Fly at St. Louis,” [(New York) *Herald*, 7 October 1907], Dixon Files; “A 13-year-old Santos Dumont”; “Boy Has Airship for Races,” [(Grand Rapids, MI) *Press*, 18 October 1907], Dixon Files; “Aero Club Seeks Race With the Victor in Balloon Flight,” [(Grand Rapids, MI) *Herald*, 28 October, 1907], Dixon Files; “Boy Aeronaut.”

Midwestern and Eastern United States and Canada. By the time Cromwell, then eighteen, retired his airship to become an airplane pilot early in 1911, he had some 225 ascents in his airship to his credit. Receiving his pilot's license in August, the celebrated aviator joined the Curtiss Exhibition Team and worked his way west. On September 30, 1911, Cromwell, then nineteen, became the first aviator to fly over the Continental Divide in Montana, capturing a prize of \$10,000, only to be killed two days later when his airplane crashed at a fair in Spokane, Washington. Cromwell was reported to have exclaimed, "Here I Go! Here I Go!" as he plunged to his death.<sup>43</sup>

### ***Tom Swift and the Boy Inventor in Series Fiction***

In death as in life, Cromwell Dixon's tragically short-lived career as a professional aviator expressed the collective mythology of the boy inventor by combining the fictionalized with the wholly fictional, but it was in Tom Swift—the title character of some forty juvenile novels published between 1910 and 1941—that the boy inventor gained his fullest expression. Like Cromwell Dixon and other real boys before him, Tom Swift was a clever adolescent inventor with numerous inventions to his credit, but as a fictional character, Tom Swift elaborated the mystique of the boy inventor in ways not possible in even the most exaggerated published accounts of real boys. Created by the Edward Stratemeyer Syndicate, which was responsible for some of the most popular series books for children, including the Rover Boys, the Motor Girls, the Bobbsey Twins,

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<sup>43</sup> "Hero of Airship Flight," [(Columbus, GA), *Enquirer Sun*, 7 December 1907] and "Boy Aeronaut Hero of Airship Flight," [(New York) *World*, 23 October 1907], Dixon Files; "Cromwell Dixon, Jr.," Morehouse Biographies. On exhibitions fees see Tod. C. Shriver to R. M. Colt, 24 July [1911] and Thor Aviation Co. to Colt, 19 August 1911, correspondence in Amusement Park Attractions, Aviation, Warshaw Collection of Business Americana, Archives Center, National Museum of American History, Smithsonian Institution (hereafter Warshaw Collection). "Here I Go!" Cries "Boy Flyer," Falling to Death," [(New York) *World*, 3 October 1911], Dixon Files; "Eugene Ely and Cromwell Dixon Have Fatal Falls," *Fly*, November 1911, 19.

and, later, the Hardy Boys and Nancy Drew, Tom Swift proved the most valuable property in the Stratemeyer literary empire before 1930.<sup>44</sup>

Children loved the predictable and formulaic plots as much as librarians loathed them.<sup>45</sup> Studies of school-age children's reading habits in the 1920s discovered that 98 percent of the thirty-seven thousand surveyed by the American Library Association admitted to reading series books and the vast majority of respondents identified Tom Swift as their favorite. Subsequent investigations found, incredibly, Tom Swift second in popularity only to the Bible. By 1937, total sales for the series exceeded six-and-a-half million copies but as these books routinely circulated informally between peers and siblings, actual readership was likely many times higher.<sup>46</sup>

Tom Swift, like all heroes in Stratemeyer fiction, celebrated middle-class values by being honest, hard-working, quick-witted, and virtuous. As an inventor, however, Tom Swift allowed Stratemeyer (and the contractors hired to write the books) to portray

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<sup>44</sup> The literature on Edward Stratemeyer is vast, see John T. Dizer, *Tom Swift and Company: "Boys' Books" by Stratemeyer and Others* (Jefferson, NC: McFarland, 1982); Carol Billman, *The Secret of the Stratemeyer Syndicate: Nancy Drew, The Hardy Boys, and the Million Dollar Fiction Factory* (New York: Ungar Publishing, 1986); Deidre Johnson, *Edward Stratemeyer and the Stratemeyer Syndicate* (New York: Twayne Publishers, 1993); Russel Nye, *The Unembarrassed Muse: The Popular Arts in America* (New York: Dial Press, 1970), 76-77; Fred Erisman, *Boys' Books, Boys' Dreams, and the Mystique of Flight* (Fort Worth: Texas Christian University Press, 2006). On Tom Swift and other boy inventors in the genre, see Francis J. Molson, "The Boy Inventor in American Series Fiction: 1900-1930," *Journal of Popular Culture*, 28 (Summer 1994): 31-48. While inventors in series books were typically male, the girl heroines in the Motor Girls and other series proved adept users in their own right, even if they did rely upon male characters for major repairs. See, Sherrie Inness, "On the Road and in the Air: Gender and Technology in Girls' Automobile and Airplane Serial, 1909-1932," *Journal of Popular Culture* 30 (Fall 1996): 37-46, and Kathleen Franz, *Tinkering: Consumers Reinvent the Early Automobile* (Philadelphia: University of Pennsylvania Press, 2005), 43-73.

<sup>45</sup> Franklin K. Mathiews, a Baptist preacher and chief librarian for the Boy Scouts of America, penned the most famous critique of the genre, characterizing series books as a "pernicious influence" that threatened, through "overstimulation, debauch, and vitiate," the very health of boys' imaginations with unrealistic adventure stories. See Mathiews, "Blowing Out the Boy's Brains," *Outlook*, 18 November 1914, 652-654. In response to Tom Swift's popularity, the Boy Scouts created the "Tom Slade" books. See Peter Soderbergh, "The Great Book War" Edward Stratemeyer and the Boy Scouts of America, 1910-1930," *New Jersey History* (Winter 1973): 235-248.

<sup>46</sup> Survey results in Earl Swift, "The Perfect Inventor," *American Heritage of Invention and Technology*, Fall 1990, 26; Johnson, *Edward Stratemeyer*, 162; Robert Von der Osten, "Four Generations of Tom Swift: Ideology in Juvenile Science Fiction," *The Lion and the Unicorn* 28 (8 April 2004): 268. Sales estimates in George T. Dunlap, *The Fleeting Years* (New York: privately printed, 1937), 193.

modern science and technology as an exciting world filled with contested priority claims, battles for the control of intellectual property, and the consistent theme that technological ingenuity reaped rich rewards. Each book followed Tom's perilous adventures with a wondrous device featured prominently in the title: *Tom Swift and His Airship* (1910), *Tom Swift and His Submarine Boat* (1911), *Tom Swift and His Wireless Message* (1911), *Tom Swift and His Wizard Camera* (1912). This infinitely reproducible formula soon chronicled Tom's adventures with his electric locomotive (1922), a Texas oil rig (1924), and an ocean airport (1934), but while technological development was essential to the series, the use of the possessive pronoun *his* ceded control and ownership of technology to the title character, and thus affirmed the heroic power of the inventor.

Tom Swift, as readers learn early in the series, was the motherless son of the famous inventor Barton Swift, who lived off the coast of Lake Carlopa in the fictional village of Shopton, New York, in a home surrounded by numerous machine shops where the pair "conducted experiments and constructed apparatus." Tom, who appears near sixteen, recently graduated from a local academy, but forgoes college in favor of training directly with his father, in itself a revealing acknowledgement of the importance of a shop-based education for the inventor's mythology. Reared in his father's technological world, Tom, like his father, had the "inventive fever in his veins." A shared passion for technology meant Barton and Tom "were better chums than many boys are," and Tom's talents had already paid dividends, for he "had plenty of spending money, some of which came from a small patent he had marketed himself."<sup>47</sup>

The equation of invention with financial gain meant Tom was a successful inventor when he first appears in *Tom Swift and His Motor-Cycle* (1910), well on his way

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<sup>47</sup> Appleton, *Tom Swift and His Motor-Cycle* (New York: Grosset & Dunlap, 1910), 6, 8-10, 17-18.

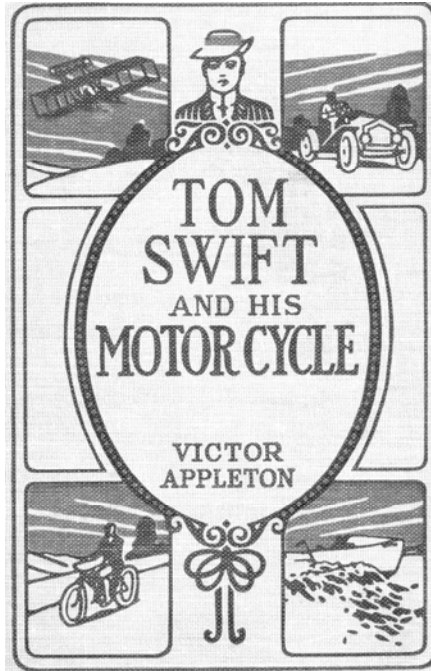
to continuing his father's legacy. Tom was wealthy to be sure, but so too was his chief nemesis in the early volumes, a boy his age named Andy Foger, whose father owns the local bank. The narrator describes Andy as "a bully and a coward" whose "good fortune in the matter of money seemed to have spoiled him," and "a red-haired, squinty-eyed lad with plenty of money and not much else." Unlike Tom, Andy's money came not from individual initiative, but inheritance, making Andy a symbol for a morally bankrupt form of wealth at odds with the ideology of self-made success permeating the series. Inventive ability remains the key to financial reward and unlike Andy, Tom—again like his father, who "did not give up working his ideas simply because he has plenty of money"—understood the value of work and of a dollar. Moreover, Tom's virtue extends the ultimate moral lesson, for although Tom frequently ran into trouble, this is, in the narrator's view, "sometimes good in a way," because "it makes a person resourceful" and more able to "think clearly and quickly." As a plucky and trustworthy lad, Tom is prepared to succeed in the modern world, but as an inventor, he is also positioned to shape and control it.<sup>48</sup>

Suspicion of Andy's inherited wealth extended to moneyed interests generally—as well as the tools of those interests, including bankers, lawyers, and industrial spies. This mistrust, ever present, serves as an often veiled—or, as was the case in *Tom Swift and His Talking Pictures* (1928), explicit—reference to Jews. As a result, Tom Swift becomes Stratemeyer's race hero: a clever boy wizard who overcomes formidable obstacles (including treacherous Jews) and uses patents to leverage financial independence. The Swifts' are clever tinkerers to be sure, but patents gauge their abilities

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<sup>48</sup> Ibid., 54, 5, 9-10, 17; Appleton, *Tom Swift and His Motor Boat* (New York: Grosset & Dunlap, 1910), 6-7, 9, 125.





**Figure 5:** This illustration from the embossed book cover of *Tom Swift and His Motorcycle* (1910) features the title character centered by several technologies, including an airplane, motorcar, speedboat and motorcycle. The wildly popular juvenile series celebrated youth and invention as sure-fire paths to adventure and financial success.

and carry legal, economic, and moral significance. The endless cast of “unscrupulous” characters scheming to swipe the Swifts’ inventions reinforce the boundaries between good and evil, but these plots also demonstrates the diligence all inventors must display to protect their intellectual property. Financial interests are subdued or vanquished, and patents allow Tom and his father to display their status as inventors by moving their creations to market. Although often elaborate schemes are handily foiled, the capers suggest the often contested legal processes of invention. The return of rightfully-owned property, a staple theme in Stratemeyer fiction, exists materially in the form of symbols of the inventors’ work—sketches, plans, models, and legal documentation; not unlike that iconography peppered throughout Schussele’s *Men of Progress*. Threats to intellectual

property provide the action the series required and the consistent message that inventors must rigorously assert their claims.

Extralegal action replaces protracted legal battles in the Tom Swift series, but just because the title character favors the chase to the lawsuit, he is nevertheless well-versed in patent law. During contract negotiations in *Tom Swift and His Great Oil Gusher* (1924), Tom corrects one character's claim for control of new processes, stating confidently, "You're mistaken there....You will see that if you look up the law on patents."<sup>49</sup> Tom's recognition of his rights extends to those of others, for when he refuses a lucrative manufacturing contract in another volume out of concern it would violate existing British patents, Tom explains, "we would be liable to prosecution," adding quickly, "even if we weren't found out, of course I wouldn't undertake such work."<sup>50</sup> The importance of patents appears in the series' first installment when Barton Swift learns to his horror that his secret turbine motor has been discovered by a "syndicate of rich men" who claimed the device infringed on patents under their control. Mr. Swift apparently "had a very careful examination made and I found the syndicate of rich men was wrong. I was not infringing." Still, the elder inventor fears,

"I think they want to get control of my invention of the turbine motor, Tom. That is what has been worrying me lately. I know these men to be unscrupulous, and, with plenty of money, they may make trouble for me."

"But can't you fight them in the courts?"

"Yes, I could do that. It is not as if I was a poor man, but I do not like lawsuits. I want to live quietly and invent things. I dislike litigation. However, if they force it on me I will fight!" exclaimed Mr. Swift determinedly.<sup>51</sup>

Legal recourse, always a potential course of action, remains one used only in last resort.

Procedural legal drama might have slowed the pace of the action, but lawsuits, as

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<sup>49</sup> Appleton, *Tom Swift and His Great Oil Gusher* (New York: Grosset & Dunlap, 1924), 32-33.

<sup>50</sup> Appleton, *Tom Swift and His House on Wheels* (New York: Grosset & Dunlap, 1929), 11-12.

<sup>51</sup> Appleton, *Tom Swift and His Motor-Cycle*, 29-41.

evidenced by the frequent threats of personal injury claims by minor characters, remain an expensive nuisance diverting inventors' attention from their true calling.<sup>52</sup>

The consistent emphasis on the singularity of creation and ownership is strikingly ironic given the collective nature in which the series was created, but just as the Stratemeyer Syndicate cloaked its operations behind fictitious pseudonyms, Tom Swift's work was also shrouded in secrecy. Privacy not only shields public scrutiny, but also ensures the drama of the reveal, as was the case when the ever-present character Wakefield Damon exclaims upon seeing Tom's latest contrivance in one volume, "I regard your House on Wheels as one of the most marvelous inventions of all time."<sup>53</sup> The reveal became another way of demonstrating the title character's brilliance, but also implied that it is the inventor who decided when inventions were made public, through patents or otherwise, and thus explains, in part, Barton Swift's frustration over the discovery of his secret turbine motor. Covert operations protect the process of creation, but also reinforce the aura that inventors were intellectual and emotional recluses. After Tom's "chest of secrets" is stolen in an easily detectable plot of industrial espionage in one installment of the series, the young inventor hurries the construction of a secret vault, which remains hidden for several volumes. When Tom's trusted friend and financial advisor Ned Newton learns of the chamber, he harbors no ill-feelings, having apparently accepted long ago that while Tom is trustworthy, no one—not even a childhood chum—is ever completely worthy of his.<sup>54</sup>

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<sup>52</sup> Appleton, *Tom Swift in the City of Gold* (New York: Grosset & Dunlap, 1912), 31; Appleton, *Tom Swift and His Electric Rifle* (New York: Grosset & Dunlap, 1911), 21-27.

<sup>53</sup> Appleton, *Tom Swift and His House on Wheels*, 41

<sup>54</sup> Appleton, *Tom Swift and His Chest of Secrets* (New York: Grosset & Dunlap, 1925); Appleton, *Tom Swift and His Television Detector* (New York: Grosset & Dunlap, 1933), 7-10.

Workshops and laboratories shield Tom's intellectual endeavors, reinforcing boundaries between public and private, but the ambiguously large and ever-expanding Swift estate remains a tempting target for criminal elements. Enforcing proprietary control requires Tom and his employs' strict vigilance, and security guards join secret vaults, electrified fences, gates, alarms, and other protective mechanisms designed to defend his property. Plots, however, require these measures' occasional failure during the course of villains' hapless attempts to pluck the fruits of inventive knowledge from Tom's garden. And what a garden it is. Workshops and airplane hangars scatter the property and by 1926, the Swift estate was an industrial behemoth containing a foundry, sawmill, electrical shop, and numerous other manufacturing facilities that "operated day and night." Vertical integration concentrated the operations of the Swift Construction Company surrounding Tom's boyhood home, and the buildings are filled with "machinery, queer tools and odd devices" and conversations "deep in discussions of ohms, amperes, volts, and currents." Even outside Shopton, workshops serve as important metaphors for the inventive mind. When Tom and his companions find themselves stranded on the ominously named "Earthquake Island" after their airship is downed in a violent tropical storm, he requires a "rude shack" to hatch his plan for their escape from the sinking island. Before revealing his scheme to construct a wireless telegraph from the airship's wreckage, Tom sequesters himself in the shack, leading one observer to comment, "Humph! Are you afraid we will steal it?" As with more permanent facilities in Shopton, improvised workshops on sinking tropical islands mask the mysteries of technical creation and stress the importance of seclusion for invention. Moreover, the books' narrative structure is complicit in this process, for as action-

orientated fiction the narrator describes only what is said and done, and never what is thought. Tom may be in his workshop, but no one—from the series' characters to its readers—is ever quite sure what he is thinking.<sup>55</sup>

While workshops provide places to tinker, they also reinforce the cultural boundaries of invention as a masculine enterprise, something made extant in the geography of the Swift estate. The widowed housekeeper, Mrs. Baggert, is confined to the Swift home, physically and socially isolated from the surrounding workshops. As the only motherly figure in his life, Tom's only connection with the housekeeper is through the occasional meal, but as Tom is technology's progeny, Mrs. Baggert can only nourish Tom, but never nurture him. As a housekeeper, Mrs. Baggert's technologies were likely numerous, but her tools bring drudgery, not adventure, and, as the narrator observes, Mrs. Baggert "was not fond of waiting with meals, and even the most serious problem of mechanics was, in her estimation, as nothing compared with having the soup get cold, or the possibility of not having the meat done to a turn." Mrs. Baggert is marginalized in the series and at times expresses hostility at her position, lashing out at modern technology and the adventures it inevitably brings. Upon learning of the Swifts' plan to test their new submarine by searching for sunken treasure off the coast of Uruguay, Mrs. Baggert protests: "Don't waste your time on such foolishness. It's bad enough to be building airships and submarines without going after treasure." Compared with Mrs. Baggert, Tom's platonic love interest Mary Nestor is far more understanding, serving a dutiful role and providing a consistent source of emotional support. After the pair marry late in the series, Tom describes Mary "as fine a little managing wife as a crazy inventor

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<sup>55</sup> Appleton, *Tom Swift and His Airline Express* (New York: Grosset & Dunlap, 1926), 2; Appleton, *Tom Swift in the City of Gold*, 4; Appleton, *Tom Swift and His Motor-Cycle*, 10; *Tom Swift and His Wireless Message* (New York: Grosset & Dunlap, 1911), 11, 164.

like myself could have.” Although supportive, Mary too serves as a foil for coding and recoding technology masculine, for when Tom and Ned happen upon Mary’s backfiring boat in one early volume, Tom comments, “Perhaps she doesn’t understand it. Girls don’t know much about machinery.”<sup>56</sup> With this statement and his actions in repairing the ailing vessel, Tom situates technological skill solely within the realm of men.

Possessing what Robert M. Pirsig would later term a “mechanic’s feel,” Tom’s superior mechanical skill establishes his widely regarded reputation as a mechanical wizard.<sup>57</sup> After he receives a severe electric shock in *Tom Swift and His Electric Runabout* (1910), one character immediately suspects foul play, for Tom “never made the wrong connections! He’s too good an electrician! There’s been some one in the shop, changing wires!”<sup>58</sup> Even in the face of seemingly more advanced technology, readers could count on Tom’s understanding to triumph in the end. During a boat race with Andy Foger’s faster craft, “Tom’s superior knowledge” nevertheless allows him to win the race.<sup>59</sup> In extolling these mechanical and moral lessons, readers too benefited from brief technological explanations. In *Tom Swift and His Motor Boat*, readers learn about the operations of carburetors and that dirty spark plugs can lead to misfiring. Elsewhere, Tom explains wireless telegraphy by describing the theory behind telegraphs and Morse code, and how the earth serves as a conductor in place of telegraph cables.<sup>60</sup> Technical

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<sup>56</sup> Appleton, *Tom Swift and His Submarine Boat* (New York: Grosset & Dunlap, 1910), 7, 12-13; Appleton, *Tom Swift and His Sky Train* (New York: Grosset & Dunlap, 1931), 7; Appleton, *Tom Swift and his Motor Boat*, 81-82.

<sup>57</sup> Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance* (New York: Bantam, 1984), passim.

<sup>58</sup> Appleton, *Tom Swift and His Electric Runabout* (New York: Grosset & Dunlap, 1910), 100.

<sup>59</sup> Appleton, *Tom Swift and His Motor Boat*, 73.

<sup>60</sup> Appleton, *Tom Swift and His Wireless Message*, 173-175; Appleton, *Tom Swift and His Motor Boat*, 43, 109; Cecelia Tichi, *Shifting Gears: Technology, Literature, Culture in Modernist America* (Chapel Hill: The University of North Carolina Press, 1987), 102; Erisman, *Boys’ Books, Boys’ Dreams, and the Mystique of Flight*.

explanations add a touch of plausibility to Tom's technologies, allowing readers to participate in their routine maintenance. While these lessons demonstrate Tom's dominance over machines, they also demonstrate Tom's power over others, as with his relations with the only African American character in the series—an elderly handyman named Eradicate "Rad" Sampson.

When Tom first meets Rad and his mule Boomerang in *Tom Swift and His Motor-Cycle*, he adroitly repairs Eradicate's broken wagon, which is a "simple matter" of "changing a single bolt." Despite the ease of the repair, the narrator notes the "colored man looked on in open-mouthed amazement," remarking that the young inventor was "suttinly a conjure-man when it comes t' fixin' wagons." Later, while Rad whitewashes a building on the Swift property, Tom threatens to mechanize the job, to which Eradicate pleads, "Doan't go 'ventin' no machine, Mistah Swift" for it's "de only professions I got." Sometime later, when Tom discovers Rad fussing with an old lawnmower he just traded for "mah ole grindstone," Tom stops to fix the machine—not out of any loyalty to his friend—but because, the narrator explains,

He could no more pass a bit of broken machinery, which he thought he could mend, than some men and boys can pass by a baseball game without stopping to watch it....It was Tom's hobby, and he delighted in nothing so much as tinkering with machines, from lawn-mowers to steam engines.

After Tom diagnoses the problem as a reversed ratchet and pawl, Rad replies he was unaware his lawnmower was named "Paul," a statement met with Tom's admonishment that a "*pawl* is a sort of catch that fits into a ratchet wheel and pushes it around." Some time later, Tom again discovers Rad struggling with a sawmill he bartered for his lawnmower. Again, Rad as a technologist who possesses only a rudimentary knowledge

of his tools, fails to notice the mill is out of gear. Predictably, Tom quickly recognizes the error and sets things right.<sup>61</sup>

Just as villains serve to demonstrate Tom's virtue, Rad affirms the title character's modernity, but as these four episodes occur in the series' first volume, Rad establishes a central theme of the inventor's racial superiority running throughout the series. As a result, just as technical explanations exist for readers' benefit, Rad routinely demonstrates the inferiority of African Americans. Rad's use of technology, and even the means with which he acquires his tools, effectively relegates him to a premodern world of toil and servitude. Rad, who is described in one volume as "a colored man of all work," frequently refers to Tom as "Massa" and exists largely for Tom's (and readers') amusement. In Texas, Rad marvels at a pool of oil, confusing it with molasses. Tom cruelly invites Rad to taste it, and when Rad inevitably does, asks, "Is it molasses, Rad?"

"No, sah, dat ain't no molasses. It's de worst stuff dat dis niggah evah tasted, an' Ah doan want no mo' of it. Guess Ah'll have to take a good swig o' watah to git de taste outen ma mouf....Nex' time Ah lets some odder fool niggah do de sampling."<sup>62</sup>

Disparaging portrayals of African American technologists like Rad were sadly commonplace in toys directed towards white, middle-class children. A 1911 catalog produced by the Kenton Hardware Manufacturing Company, an Ohio-based maker of clockwork and cast iron toys, advertised a wide array of fire engines and automobiles, but blacks were conspicuously absent from modern toy vehicles and found only when potential customers turned to the "Mule and Coal Cart" or the "Plantation Ox Cart." These representations of animal-drawn technologies carried manufacturer's descriptions

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<sup>61</sup> Appleton, *Tom Swift and His Motor-Cycle*, 64, 81-2, 137-9, 165-169, (emphasis added).

<sup>62</sup> Appleton, *Tom Swift in Captivity* (New York: Grosset & Dunlap, 1912), 5; *Tom Swift and His Great Oil Gusher*, 191.



of a “Negro Driver” as part of the products’ features; a clear coding of modern technology as the exclusive realm of whites.<sup>63</sup> The association between race and technology was decidedly more insidious in the guidebook *Electric Toy Making for Amateurs* (1897), which included directions for an “Electric Dancer”—an “amusing toy” made from a modified electric bell that featured an African American “Dancer” who hopped and jostled with each contact of an electrical current to a magnet.<sup>64</sup> In light of these examples, it is perhaps not surprising that adult commentary on boys’ technological play also reinforced the mutual construction of technology and whiteness. One report of a New York model airplane contest in 1911 observed that “fifty New York lads and a Japanese boy named W. Mangoku” competed in the event: a telling rhetorical separation that highlighted the ethnic and racial distinctions among potential boy inventors at the tournament.<sup>65</sup>

Tom Swift novels—whose advertisements promised “spirited tales” to “interest the boy of the present...in the hope that he may be a factor in aiding the marvelous development that is coming in the future”—reinforced the view of the benefits of

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<sup>63</sup> Kenton Hardware Manufacturing Company [Kenton, Ohio], product catalog (1911), p. 47 and passim, Trade Catalog Collection, Hagley Museum and Library, Wilmington, Delaware (hereafter HTCC).

<sup>64</sup> T. O’Connor Sloane, *Electric Toy Making For Amateurs: Including Batteries, Magnets, Motors, Miscellaneous Toys and Dynamo Construction* (New York: Norman W. Henley, Co., 1897), 73-74. On representations of African Americans in material culture, see Patricia A. Turner, *Ceramic Uncles and Celluloid Mammies: Black Images and Their Influence on Culture* (Charlottesville: University of Virginia Press, 2002). For issues relating to race and technology see Carroll Pursell, ed., *A Hammer in Their Hands: A Documentary History of Technology and the African-American Experience* (Cambridge, MA: The MIT Press, 2004), especially the introduction; Bruce Sinclair, ed., *Technology and the African-American Experience: Needs and Opportunities for Study* (Cambridge, MA: The MIT Press, 2004); Rayvon Fouché, *Black Inventors in the Age of Segregation: Granville T. Woods, Lewis H. Latimer, & Shelby J. Davidson* (Baltimore: Johns Hopkins University Press, 2003); Angela Lakwete, *Inventing the Cotton Gin: Machine and Myth in Antebellum America* (Baltimore, Johns Hopkins University Press, 2003); Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca: Cornell University Press, 1989). On the construction of ideas of whiteness, see David R. Roediger, *The Wages of Whiteness: Race and the Making of the American Working Class* (New York: Verso, 1991); Noel Ignatiev, *How the Irish Became White* (New York: Routledge, 1995); Mike Hill, ed. *Whiteness: A Critical Reader* (New York: New York University Press, 1997).

<sup>65</sup> “Model Aeroplanes Compete,” *New York Times*, 19 March 1911.

technologically-inspired play for white, middle-class children. At the same time, the popular novels also testified to the growing vitality of a commercial culture for children.<sup>66</sup> Edward Stratemeyer's fiction factory was but a single, albeit remarkably successful, example of the growing commercial market of goods for children, which intensified in the late-nineteenth century and only increased exponentially in subsequent decades. Hand-in-hand with the expansion of middle-class ideals of a sheltered childhood, the growth of a market for children's ready-made clothing, furniture, and other specific goods reinforced the ideal that childhood was culturally distinct from adulthood. Interestingly, and perhaps most germane to inventive boy discourse, toys emphasized just the opposite by reinforcing the similarities and recasting the play of boys as analogous to the work of adults.<sup>67</sup>

***Playing the Boy Inventor: Model Airplanes, the Wright Boys, and the Public Domain of Inventive Boy Discourse***

Between 1905 and 1920, the domestic toy industry in the United States underwent a massive expansion, undergoing an astounding 1,300 percent increase in output. Any

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<sup>66</sup> Dust jacket advertisement, Appleton, *Tom Swift in Captivity*.

<sup>67</sup> Daniel Thomas Cook, *The Commodification of Childhood: The Children's Clothing Industry and the Rise of the Child Consumer* (Durham, NC: Duke University Press, 2004); Lisa Jacobsen, *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004); Gary Cross, *Kid's Stuff: Toys and the Changing World of American Childhood* (Cambridge, MA: Harvard University Press, 1997), and *The Cute and the Cool: Wondrous Innocence and Modern American Children's Culture* (New York: Oxford University Press, 2004); Miriam Formanek-Brunell, *Made to Play House: Dolls and the Commercialization of American Girlhood, 1830-1930* (New Haven: Yale University Press, 1993); Carroll W. Pursell, Jr., "Toys, Technology, and Sex Roles in America, 1920-1940," in *Dynamos and Virgins Revisited: Women and Technological Change in History*, ed. Martha Moore Trescott (Metuchen, NJ: Scarecrow Press, 1979), 252-267. The view of children's play as emphasized by the play theorists of the Progressive-era was consistent with that offered by dealers in children's toys, and indeed, as historian Woody Register observes, the anti-commercial messages of play experts conflicted with these theorists' frequent endorsement of specific educational toys. As a result, Register argues that "play experts...were influential contributors to the discourse on play and the commodity markets for children. They were, Register concludes, every bit the "entrepreneurs of childhood" as with more explicitly commercial enterprises such as toy-makers, department stores, magazines like the *American Boy*, and others. See his, *The Kid of Coney Island: Fred Thompson and the Rise of American Amusements* (New York: Oxford University Press, 2001), 106-109.

number of factors contributed to the explosive growth in U.S. toy production during this period—including increasing prosperity, the adoption of modern production methods, boycotts of German-made toys during and after World War I, and the proliferation of toy sections in department stores. Regardless of explanation, clearly these gains marked a clear shift towards more indulgent middle-class parenting styles that embraced store-bought amusements for children. In the late nineteenth century, imported toys were expensive and rarely given, but the number of domestically manufactured toys available for middle-class children in subsequent decades was truly astonishing. The vast increase in the number of toys nonetheless adhered to—and reinforced—accepted gender norms for children. Girls who received dolls, toy stoves, and miniature sad irons were socialized in their play for their future roles as wives, mothers, and domestic managers, while boys received lessons as future manly producers with toy tool chests and construction toys.<sup>68</sup>

The 1910s and 1920s marked a renaissance in the commercial availability of construction toy sets for boys. From Meccano (first produced in Great Britain in 1901 and exported to the U.S. in 1910) to Lincoln Logs (1916) and, of course, Erector (1913), these toys fit the ethos of career-orientated educational toys and the discourse of boys' inventive play. Of these, Erector sets proved far and away the most popular, with millions of construction sets, complete with small electric motors and uniform strip metal girders, purchased by middle-class parents who could afford the price of more than five dollars for an entry-level kit. The popularity of Erector was credited to an aggressive

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<sup>68</sup> Statistics on growth of domestic toy industry from United States Department of Commerce, "International Trade in Toys," Trade Information Bulletin, no. 445 (Washington, DC, December 1926) as cited in William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Pantheon Books, 1993), 85. On the changing social position of children, see Viviana Zelizer, *Pricing the Priceless Child: The Changing Social Value of Children* (New York: Basic Books, 1985).

marketing campaign by Erector's creator A. C. Gilbert, whose personal messages opened with the salutation, "Hello Boys!" invited young male consumers to participate in the exciting world of engineering. By the 1920s, Gilbert's popular line of construction sets expanded beyond those for constructing bridges, buildings, and other modern structures to include chemistry sets, wireless radio outfits, and other small electrical contrivances. Erector sets celebrated the professionally-orientated engineer precisely when, as Cecelia Tichi asserts, the engineer served as the "vital American symbol" of the "gear-and-girder" world of early twentieth century technology. Erector sets joined a host of technologically-inspired playthings, from model railroads to working automobiles and model airplane construction kits, all of which transformed this period, as historian Carroll Pursell observes, into the "long summer of boy engineering."<sup>69</sup> The emphasis on technical creativity and the commercial success of construction kits suggested that inventiveness was not merely created, but also capable of being packaged, sold, and purchased.

The inventive boy was the advance guard of this new commercialized boy culture and the growing popularity of building and flying model airplanes was expressed strictly in terms of inventive tinkering. A report published in the *New York Times* in 1908 marking the opening night of Madison Square Garden's "Toy Show and Holiday Bazaar," attended by "about 10,000 children and many grown-ups, too," observed the "most interesting" of the educational exhibits was the one of "aeroplanes, dirigible

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<sup>69</sup> Cross, *Kid's Stuff*, 60-67; Cecelia Tichi, *Shifting Gears*, 3-4; 99-103. On Erector see, Bruce Watson, *The Man Who Changed How Boys and Toys were Made* (New York: Viking, 2002), and A. C. Gilbert, *The Man Who Lives in Paradise: The Autobiography of A. C. Gilbert*, with Marshall McClintock (New York: Rinehart, 1954; reprint, Forest Park, IL: Heimburger House Publishing, 1990). Pursell, "The Long Summer of Boy Engineering," in *Possible Dreams*, 34-43. On scientifically-inspired toys in Great Britain, see Melanie Keene, "'Every Boy & Girl a Scientist': Instruments for Children in Interwar Britain," *Isis*, 98 (June 2007): 266-289.

balloons and kites made by members of the Junior Aero Club of the United States.” “Of course,” the reporter added, “the flying machines are only models, but they are apparently accurate ones.” The writer noted that all the models on display “were built by boys under fourteen years old and all duplicate to the minutest detail the real machines of which they are the models.” Given the keen interest in flying and the remarkable skill the boys displayed in the construction of their models, the objects themselves became symbols of boys’ technical potential, readily recognized by all those who attended. The Junior Aero Club exhibit, the reporter concluded, “proved the most popular of the show” that night.<sup>70</sup>

Whereas the *New York Times* correspondent deeply admired the models exhibited by the adolescent members of the Junior Aero Club, the reporter still noted that their models were more or less derivative of “real machines.” Others, however, countered these qualifications by highlighting instead the originality of boy modelers’ work. Francis A. Collins, a popular scientific writer who researched the growing modeling scene in New York while preparing his construction guides, *The Boy’s Book of Model Aeroplanes* (1910) and the appropriately entitled follow-up, *The Second Boy’s Book of Model Aeroplanes* (1911), celebrated the potential of this “New Sport for Boys.” Collins viewed the legions of “junior aeronauts” as junior in age, not ability, and insisted that the boys he observed were not “merely imitators” of every new development in full-scale aviation. Rather, these boy inventors readily explored the “mystery of the problems of the air” every bit as much as their adult counterparts, and many “thousands of bright boys [are] working with might and main to build air-ships which will actually fly.” With continued effort, Collins contended, “this army of inventors, ranging in age from twelve

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<sup>70</sup> “Little Folks Flock to Garden Toy Show,” *New York Times*, 19 December 1908.

to eighteen years, some of whom will be aviators of the future, cannot fail to do great service, as time goes on, in the actual conquest of the air.”<sup>71</sup>

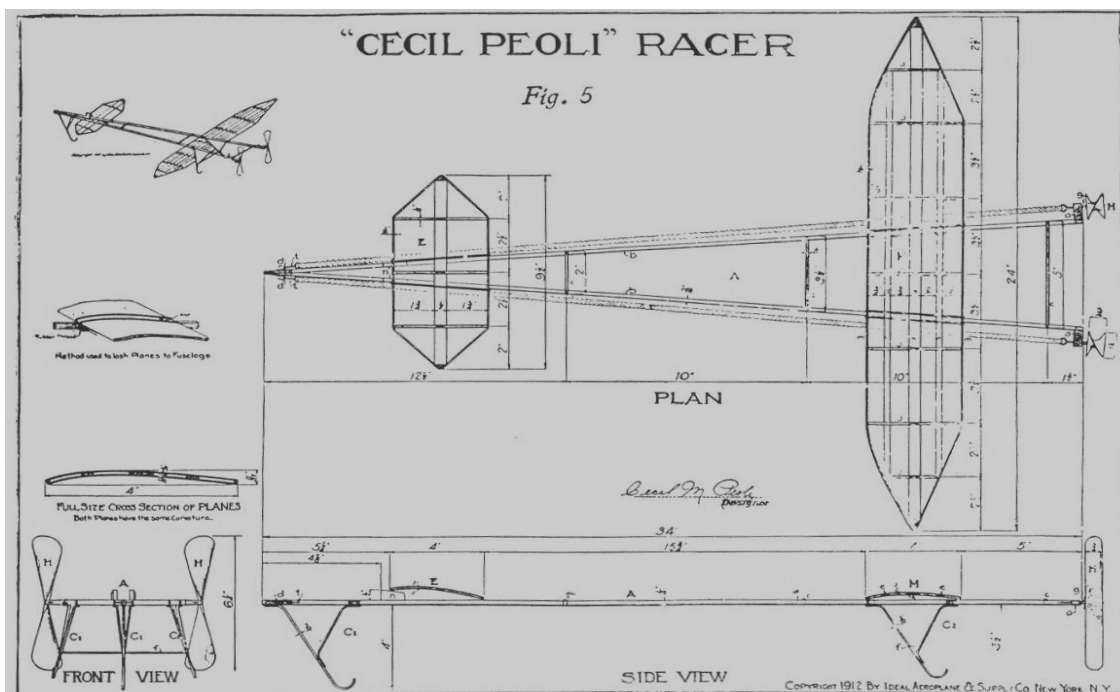
Collins’ faith in airplane models as a potential gateway to larger, person-carrying craft was not simply just another example of the rhetorical excess praising boy inventors. Sixteen-year-old Cecil Peoli, one of the young members of the New York Model Aero Club Collins met, soon emerged as a shining example of the boy inventor’s potential and proof that boyish tinkering could lead to future technological careers. Active in model building in and around New York, Cecil Peoli licensed the production rights for one clever racing model airplane to the Ideal Aeroplane and Supply Company after he established a new flight record in a model-flying contest in 1911, in itself an early confirmation of the inventors’ responsibility to move their creations to market. Ideal, which soon became the leading model airplane supplier in the 1910s and 1920s, released the “Cecil Peoli Racer” the following year to great fanfare and marketed the model as a steady performer that was capable of impressive long-distance flights and a celebration of the ingenious spirit of the young (fig. 6).<sup>72</sup>

After selling the production rights to his model, Peoli left the hobby altogether, trading his miniature airplanes for full-sized ones. In 1912, he learned to fly and joined renowned aviator Thomas Scott Baldwin’s flying circus as an exhibition pilot. In 1913 alone, Peoli made close to 400 exhibition flights in one of Baldwin’s “Red Devil” biplanes, making him, according to one newspaper report, the “youngest professional

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<sup>71</sup> Francis A. Collins, *The Boy’s Book of Model Aeroplanes* (New York: The Century Co., 1910), 3-5; idem., *The Second Boy’s Book of Model Aeroplanes* (New York: The Century Co., 1911).

<sup>72</sup> On Peoli, see Collins, *Second Boys’ Book of Model Aeroplanes*, 227; “Flying Model Aeroplanes: A Fine Scientific Sport for Boys,” [*New York Herald*, 10 September 1911], and “Aviation Meet at Oakwood,” [*New York Times*, 3 November 1912], newspaper clippings from “The Scrapbook of Percy Pierce,” Lee Renaud Memorial Library, National Model Aviation Museum, Muncie, IN; Louis H. Hertz, *Complete Book of Model Aircraft, Spacecraft, and Rockets* (New York: Bonanza Books, 1967), 243-44.



**Figure 6:** Drawings of the “Cecil Peoli” Racer” from A. Hyatt Verrill, *Harper’s Aircraft Book: Why Aeroplanes Fly, How to Make Models, and All About Aircraft*, Little and Big (New York: Harper & Brothers, 1913), 50.

aviator in the world.” Soon after Peoli decided to strike out on his own, and with the help of some investors, he designed a new biplane. Greater potential fame with his latest invention carried with it proportionately greater risks, and in 1915 Cecil Peoli shared Cromwell Dixon’s tragic fate when his plane crashed during a test flight in College Park, Maryland. Nevertheless, his “Peoli Racer” remained popular. In 1918, Ideal promoted the model as a “silent tribute to the early work of this true American hero” who gave “his life to the cause of Aeronautics.”<sup>73</sup> The youthful Peoli gained at least some limited immortality in a model airplane kit and sales of the Peoli Racer soon reached into the tens of thousands and remained a steady seller for Ideal well into the early 1930s. Frank

<sup>73</sup> “Peoli Killed in Flight,” *New York Times*, 12 April 1915; “Los Angeles Airman Killed,” *Los Angeles Times*, 13 April 1915; “Cecil M. Peoli: Early Baldwin RED DEVIL Pilot,” typescript biography, Morehouse Biographies; Ideal Aeroplane & Supply Company [New York], “‘Ideal’ Model Aeroplane Supplies,” product catalog, 1912, p. 22-23, and “Ideal Aeroplane and Supplies,” 1918, p. 12-13, HTCC.

DiTripani, who grew up in New York City at the end of the 1920s, recalled the Peoli Racer of his boyhood fondly: “That thing flew! Wow! It would fly two, three stories high and half a block.”<sup>74</sup>

As with Cromwell Dixon before him, Cecil Peoli represented an unfortunate confirmation of the potential dangers of linking boys’ early technological play to future careers in aviation. The story of the Wrights’ toy helicopter, by contrast, proved far more powerful and cast a far more hopeful vision than the specter of adolescent boys killed in experimental aircraft. As a result, Orville and Wilbur Wrights’ play as boys became the most frequently cited event in promoting aeromodeling and elevated a boyhood toy to the status of mythic object. Just as inventive boy discourse carefully weighed emphasis on exceptionality and accessibility, the Wrights’ boyhood toy allowed real boys to imaginatively recreate the wonder and mythology of the airplane’s creation by building and flying one of their own. The success of this narrative proved far greater than even its originators could have imagined—or controlled.

The story of two brothers as youths playing with a mechanical toy so similar to their own invention proved too perfect a coincidence, and popular accounts of the event created an elaborate folklore of invention and an example for aspiring boy inventors everywhere. The story was reconceived in an article published in the popular children’s magazine *St. Nicholas*’ “Modern Great Americans.” Perhaps owing to just over two decades of intense inventive boy rhetoric, the story recounted in 1926 was complete with dialogue. In this version, upon first seeing the small craft leave their father’s hands, one

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<sup>74</sup> Frank DiTripani quoted in *You Must Remember This: An Oral History of Manhattan from the 1890s to World War II*, ed. Jeff Kisseloff (San Diego: Harcourt Brace Jovanovich, 1989; reprint, Baltimore: Johns Hopkins University Press, 1999), 128-129; William Winter, “Were These Models the Greatest?,” *Model Airplane News*, August 1961, 14-15, 43.



brother cried, “What is it?...It flies!” After a short period of studying the craft’s construction, the pair built a replica that “flew just as well,” leading one of the brothers to ask,

“Why not make a bigger one?”...

“Let’s make a great big one!” said one of the experimenters.

“Let’s!” said the other, with equal enthusiasm.

Adding dialogue designed to excite young readers, the author of this fictionalized account, Frederick Houk Law, went one step further to fortify the links between the Wrights’ childhood and their lives as adult inventors. In commenting on the scene, Law asked, “Who would have thought that the bringing of that toy would change the ways of men, give a new means of communication, revolutionize war, and enable explorers to sail at will over polar ice or tropic jungles?” After staking out a claim for the importance of incident, Law introduced a greater degree of causality to the toy. “Because Bishop Milton Wright,” the author continued, “brought home that whirligig, that flying toy, and gave it to his two boys...he set in motion the remarkable train of events that led his sons, in 1903, to invent the airplane.” By collapsing the identities of the Wrights as inventors with the Wrights as children, the incident itself became a defining moment. “Through their play,” Law concluded, “those two American boys changed the ways of the world for all time to come.”<sup>75</sup> Just as it was relatively easy to scale up the toy to become their Flyer, it was just as easy to scale down the adult inventors to fit inside their imagined boy-sized frames.

For writers who encouraged young readers to take away important lessons from the story, namely that greatness was possible for enterprising young boys, Law advised

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<sup>75</sup> Frederick Houk Law, “Wilbur and Orville Wright—Inventors of the Airplane,” *St. Nicholas*, June 1926, 793.

that the real success of the Wright brothers lay in their ability to “unit[e] their play with study.”<sup>76</sup> Just as with earlier inventive boy narratives, these distinctions transformed the descriptive (though fictionalized) account of an event in the Wright brothers’ childhood, into a prescriptive text for success. Other popular accounts displayed ever-increasing imagination in describing the incident. In his *Boy’s Life of the Wright Brothers* (1928), Mitchell Charnley provided an even more elaborate account of the incident on that “crisp autumn day in 1878.” In this version, the boys immediately noticed “a twinkle in his eyes” when their father walked in the door. After Bishop Wright released the toy, Charnley imagined Orville shouting, “Look at the way it bats!” Wilbur, described as “more scientific,” wanted to know how the toy stayed up in the air. After discovering the ‘bat’ was made of cork, bamboo, and paper, Charnley explained that the toy was powered by “twisted rubber bands—exactly the kind of power boys of half a century later were to use for far more advanced model flying machines.” With this “first experience with practical aeronautics” complete, Charnley reasoned, the two brothers “packed away” this newly acquired knowledge safely “in the back of their heads,” presumably until they started the work that eventually made them famous.<sup>77</sup>

After his brother Wilbur’s death in 1912 from typhoid fever, Orville Wright proved more than willing to model his boyhood as an example to budding inventors. In the preface to Smithsonian Institution curator Paul E. Garber’s *Building and Flying Model Aircraft* (1928), Wright’s open letter to the “*Boys and Girls of the Playgrounds of America*” observed, “my first interest in aviation started with a toy flying machine when I was a boy.” “Building and flying model aircraft,” Wright continued, “is not only a

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<sup>76</sup> Ibid.

<sup>77</sup> Mitchell V. Charnley, *The Boy’s Life of the Wright Brothers* (New York: Harper & Row, 1928), 1-4.

fascinating sport, but will be the means of helping you to understand and appreciate what is to become an important feature of our lives.” In a note following the statement, the editor added that Wright’s endorsement “should not be construed as approval by Mr. Wright for all statements made by the author of this book,” a qualification that marks one of the more curious moments in the discursive construction of the Wrights’ childhood and a telling example of the centrality of priority in the history of the inventive boy.<sup>78</sup>

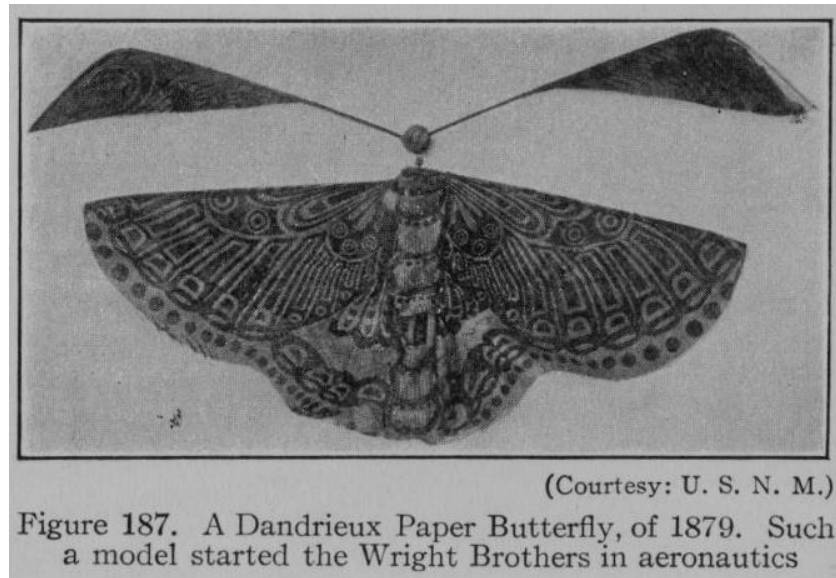
In a telegram to T. E. Rivers of the National Playground and Miniature Aircraft Tournament, Wright asked Rivers to remove his words and image from Garber’s book, because he felt the book was “another piece of Smithsonian propaganda perverting the history of model flying.”<sup>79</sup> Wright’s displeasure centered upon Garber’s discussion of the 1878 toy, which he identified as “a small model similar to a Dandrieux butterfly” (fig. 7). In describing the scene, Garber noted that when the toy was “released it flew to the ceiling, fluttered there a moment then fell.” After eager examination and experimentation, the boys, Garber continued, made “similar models embodying their own ideas,” and “[a]s the brothers grew older, it was but a step from their successful models to the making of a man-carrying glider in which every feature was the result of careful thought and trial.”<sup>80</sup> Wright’s letter to Rivers that followed his telegram spelled out explicitly his criticism. Specifically, Orville was shocked that Garber made no mention

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<sup>78</sup> Paul Edward Garber, *Building and Flying Model Aircraft: A Guide for Youthful Beginners in Aeronautics* (New York: Ronald Press, 1928), 6 (emphasis in original).

<sup>79</sup> Excerpt of telegram and letter sent by Orville Wright to T. E. Rivers, as quoted in Orville Wright to Bertram P. Pond, 30 January 1929, *Wright Papers*, vol. II, p. 1153. Garber was a curator at the Smithsonian Institution and stood at the center of a long-standing feud between the Smithsonian and the Wrights. This controversy ultimately led Orville to send the 1903 flyer to the Science Museum in London for display. The feud finally ended on December 17, 1948, when the original 1903 flyer went on display at the Smithsonian Arts and Industries Building. Orville did not live to see the controversy resolved as he died on January 27. For a discussion of the dispute and its resolution, see Crouch, *Bishop’s Boys*, esp. chp. 37.

<sup>80</sup> Garber, *Making and Flying Model Airplanes*, 284.



**Figure 7:** Image of Dandrieux Butterfly from Garber’s *Building and Flying Model Aircraft*, 284.

in his book of Alphonse Pénaud, a figure who, he reasoned, remained “one of the greatest minds that ever wrestled with the problem of flight.” Wright added that he and his brother “always appreciated the great ability of Pénaud, and hope we shall never learn to use the methods of one of our prominent scientific institutions in ignoring great pioneers.” The book’s main fault, he concluded, was that “Pénaud’s name does not even appear once, although every model described in the book used one or more of his inventions.”<sup>81</sup> The importance of recognizing an inventor’s priority—so central to popular ideas of invention—extended not only to Pénaud’s genius, but also, as it turns out, the Wrights’ as well.

Although Garber’s narrative explicitly connected Orville and Wilbur’s toy with their later experiments and faithfully honored their ability and reputation as serious inventors, his failure to mention Alphonse Pénaud was rooted, as Orville Wright viewed it, in institutional politics aimed to protect and enhance the legacy of the reputation of the

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<sup>81</sup> Wright to Rivers, as quoted in Wright to Pond, 30 January 1929.

late Samuel P. Langley as an aviation pioneer. Langley, the former Secretary of the Smithsonian Institution, was a well-respected astronomer who became increasingly interested in the problem of mechanical flight in the years before he assumed control as the head of the Smithsonian in 1887. This growing interest ultimately set in motion the precipitous chain of events that resulted in the destruction of his person-carrying “Aerodrome”—and his respected reputation as a scientist—in the icy waters of the Potomac in 1903. Langley’s very public failure was lampooned in the press as a waste of the taxpayers’ funds appropriated for his airplane’s development, sullied Langley’s reputation, and continued, even decades later, to prove greatly embarrassing to the Smithsonian.<sup>82</sup> If one ignored Pénaud, however, Langley became the first experimenter to demonstrate successfully the promise of inherent stability. For Orville Wright, Garber’s failure to credit Pénaud properly was an attempt at crass historical revisionism that impugned his own legacy. Moreover, Wright’s explicit frustrations might have also extended to his own inability to control the cultural meanings of stories about his boyhood, meanings, which had already become part of the public domain of inventive boy discourse.

Interest in the 1878 toy continued among those future inventors who wished to recreate the early efforts of the Wrights and fashion themselves in their image. In January 1929, Bertram P. Pond, a model airplane builder from the small town of Peru, Indiana, wrote Orville Wright to find out more about the toy. Pond, himself an aeronautical engineer, mentioned he had been teaching classes to “a number of boys in the making of model airplanes” and that he paid specific attention to ensure that “they are being given considerable history and theory of airplanes.” Pond noted that several of his

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<sup>82</sup> On Langley, see Crouch, *Dream of Wings*.

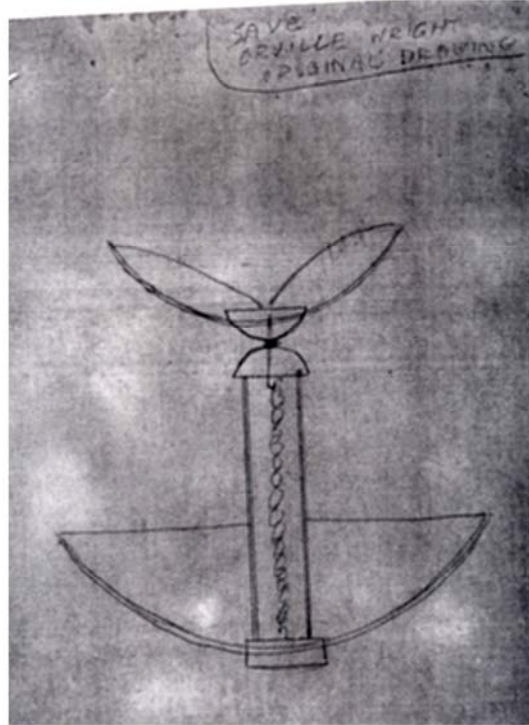
students had shown him “a picture of a Dandreaux [sic] butterfly model”—possibly the very one published in Garber’s text—and claimed to be writing for clarification on behalf of the his students (but presumably for himself as well). In his letter, Pond asked pointedly: is “this butterfly model is the same kind of model as the one with which you experimented before you began work on the large machine [?]”<sup>83</sup>

Wright’s two-page typed reply, returned with his sketch of his own, noted the “small flying model given to me by my father in 1878 was of a Pénaud type, dating from 1870” (fig. 8). As evidence, Wright explained the Dandrieux butterfly first appeared in 1879, a year after he and his brother received the toy. The enclosed sketch evidenced Wright’s search through the memories of his boyhood, and referencing Garber’s book, assured Pond that the “only reason I can see for Dandrieux’s name being used in this connection...was that the book was written by an employee of the Smithsonian Institution,” which, “except during Langley’s time, has studiously avoided using the name of Pénaud.” Within two weeks, Pond’s wrote reporting that “some of the boys [in his class] are making toy helicopters” and they “have become so efficient” that one “made 37 seconds [sic] stop-watch time indoors with one of these machines”: progress that bettered the timed flights T.J. Bennett observed in 1874.<sup>84</sup> Interestingly, the sketch that Wright provided Pond was only marginally similar to those Bennet provided in his

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<sup>83</sup> Bertram P. Pond to Orville Wright, 28 January 1929, Bertram P. Pond Collection (1999.49.01), Lee Renaud Memorial Library, National Model Aviation Museum, Muncie, Indiana (hereafter NMAM); “Autobiography of Bertram Phillips Pond,” typescript, Biography File, Academy of Model Aeronautics History Program, NMAM. Pond, probably realizing that the aging inventor was pressed for time, enclosed a sketch of the Dandrieux butterfly with this self-addressed reply: “The Dandreaux [sic] butterfly model airplane (was ) (was not) the type of flying toy with which I experimented in the early days.” All that was required of Orville would be to look the sketch over, check the appropriate response, and return the letter. We can safely assume, given the lengths he went to minimize the inconvenience, he was overwhelmed by the inventor’s reply.

<sup>84</sup> Wright to Pond, 30 January 1929 (Original in Pond Collection); Pond to Wright, 11 February 1929, Pond Collection.



**Figure 8:** Orville Wright's sketch of 1878 toy, Bertram P. Pond Collection, National Model Aviation Museum, Muncie, IN.

account, which were subsequently reproduced in Chanute's *Progress in Flying Machines* (fig. 2). While Wright's sketch proved far more like the published drawings of Pénau's *hélicoptère* than the Dandrieux toy Garber identified, his drawing was not exactly definitive proof of his claim that he and his brother received a Pénau as boys either.

But what are we to make of this exchange? In many ways, the controversy (albeit a minor one) was rooted in larger priority disputes between Wright and the Smithsonian, and these exchanges could be viewed as attempts to correct the historical record. In identifying the toy as being similar to a Pénau model, however, it is also possible that Wright was trying to advance his own version of an inventive boyhood. By identifying the toy designed by an early aeronautical experimenter, Orville tied his and his brother's legacy to an early scientific model designed by a nineteenth century experimenter who

was, in the words of one early aeronautics expert, “a very ingenious man” who produced the flying screw in 1870 “before he was 20 years old.” The Dandrieux butterfly, by contrast, was just a frivolous plaything. If we follow this line of thinking, in Orville Wright’s version, he and his brother were actually contributing to a great lineage of aeronautical science, and *not* simply playing as children. The legacy of aeronautical science, therefore, passed right through their boyhood experiments with Pénaud’s helicopter just as it was hoped that models would continue in the experiments of twentieth century boys.<sup>85</sup>

The timing of these events is also revealing, for it emerged during the discursive construction of ideas of boyhood and inventiveness. The 1878 toy—in retrospect—became a shining artifact of the inventive boy’s potential. But attributing causality to the toy also reveals much about how gender shaded discussion of the inventive mind. Interestingly, there is no word about the 1878 incident in Bishop Milton Wright’s diaries, which he kept from 1857 until his death in 1917. This does provide credence to the assertion by Wright biographers that such gifts were, more or less, commonplace in the Wright household, the diaries also reveal the extraordinary amount of time he spent away from his family as he traveled across the country to fulfill his duties as a Bishop in the Church of the United Brethren in Christ.<sup>86</sup> Although Fred Kelly, the Wrights’ official biographer, asserts that Bishop Wright “was broad minded and tolerant” and “aimed to stimulate his children’s thinking” in “every way he could,” by being away from home, at times, for the majority of the year, it is reasonable to speculate that Orville and Wilbur’s

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<sup>85</sup> Chanute, *Progress in Flying Machines*, 119. Chanute noted that Pénaud might have accomplished more “had not his career been cut short prematurely” by his suicide.

<sup>86</sup> Although it is difficult to arrive at exact number, a glance at Bishop Wright’s entries for 1878 can positively identify Bishop Wright at home for approximately ninety days in that year. A similar pattern can be seen in other years. See, Milton Wright, *Diaries*, 65-80.

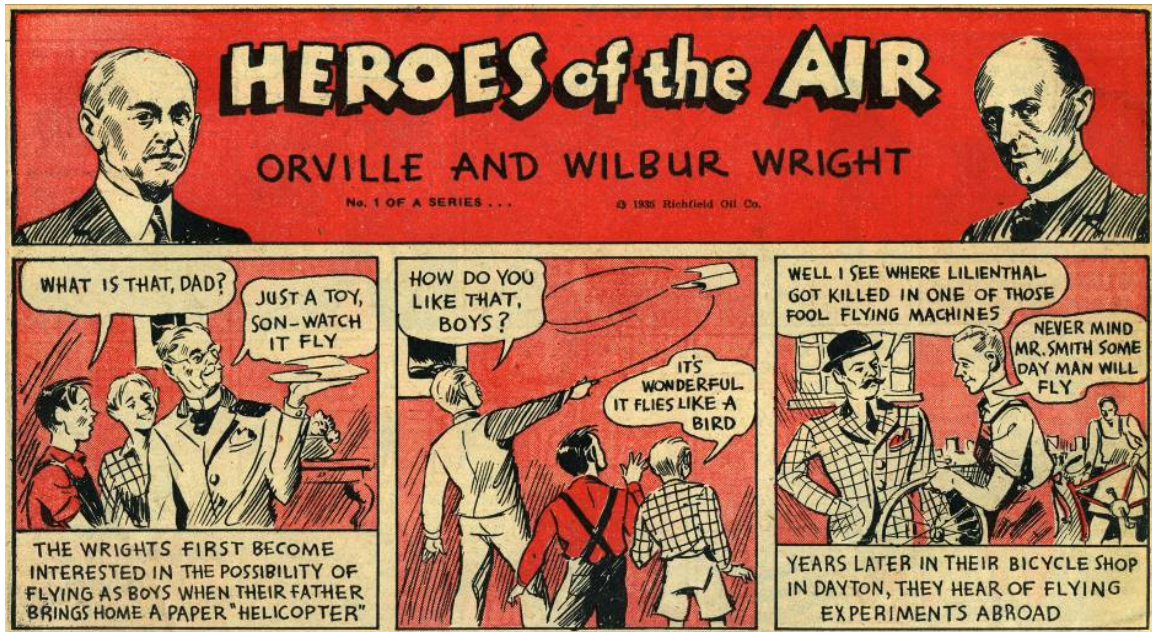


mother too might have played an essential role in encouraging any nascent mechanical ability in her boys. The daughter of a “German-born wagon maker,” Kelly contends that Susan Koerner Wright had “a knack, whenever a needed appliance was lacking, for turning some other household device to unintended use; and the children often said that ‘mother could mend anything.’”<sup>87</sup> Such mechanical ability, in all likelihood, must have had at least some part in encouraging the brothers’ supposed “inborn enthusiasm over mechanics.”<sup>87</sup> But, as with so many aspects of the Wrights’ childhood, we are left only to speculate what role Susan Koerner Wright might have played.

By rooting their narrative of the inventive process in their father’s gift, Orville Wright, and those who repeated his story, negated any possible contribution Susan Wright, by example or otherwise, made in developing the mechanical ability of her young boys. As with Tom Swift and the examples of real life inventive boys, workshop doors—real or imagined—were effectively closed to girls and women within the narratives that celebrated the potential of boy inventors. The idea of the inventive boy solidified larger cultural ideas about gender, youth, and technology formulated at the turn of the century. As stories of the Wrights’ childhood extended their identities as adult inventors back into the earliest parts of their childhood, advocates of model airplane building among boys similarly asked Americans to consider the potential of the boy inventor by expanding his play into future productive work. In going to these lengths to stimulate the imagination of boys, it seems, these commentators were also stimulating a bit of their own imaginations.

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<sup>87</sup> Kelly, *Miracle at Kitty Hawk*, 4-5; Idem., *The Wright Brothers: A Biography Authorized by Orville Wright* (New York: Harcourt, Brace & Company, 1943; reprint, Mineola, NY: Dover Publications, 1989), 5.



**Figure 9:** “Heroes of the Air: Orville and Wilbur Wright,” *Jimmie Allen Club News*, 1, no. 22 [ca. 1935], Elizabeth Hiatt Gregory Collection, Department of Special Collections, UCLA.

The explanatory power of Orville and Wilbur Wright’s childhood gift served to justify parents’ purchase of store-bought gifts for their sons precisely at the moment that commercialized play was becoming an increasingly integral part of the experience of middle-class childhood. At the same time, it presented the ambiguous status of consumption for a society steadfastly committed to a culture of work. By encouraging those boys who aspired to become successful inventors in the future—and stressing the importance of productive play—the adults who promoted consumer craft hobbies like aeromodeling redirected this ambiguity into service of this myth, regardless of its validity. A cartoon published as part of the “Heroes of the Air” comic strip published in the mid-1930s reinforced this message (fig. 9), but the “helicopter” looked nothing remotely like that produced by Penaud and far more like the Buck Rogers tie-ins to the then-popular radio serial. While adhering to the basic message of the Wright’s original tale, the cartoon also serves as a reminder that control of the Wrights’ boyhood had long

before drifted into the cultural commons of inventive boy discourse; a discourse far more likely to embrace the fictions of myth rather than the truths of reality.<sup>88</sup> Perhaps in recognition of this condition, Orville Wright's version of his and his brother's boyhood in his official biography published in 1943 mentioned the toy, but this event played a far more subdued role than before. Clever individual tinkering joined group play with neighborhood boys, painting a far more ordinary portrait of late nineteenth century boys' life than the serious independent tinkering demanded by inventive boy discourse in the next century.<sup>89</sup>

Inventive boy discourse unified middle-class ideals of boyhood and praise of technological ingenuity, reinforcing the cultural weight of masculine invention, but also spoke to the roles of parents in sparking the inventive potential in their sons. Stories of inventive boys and boy-built inventions raised the status of all boys by encouraging independence, but the next chapter demonstrates the ways in which parents and other adults were instrumental to this process. Treating the creation and maintenance of workshops and other productive technical areas for boys, this chapter sees in these spaces attempts by adults and children to navigate the rocky terrain of adolescence in the early twentieth century. Separate technical spaces supported the creation of boy inventors' separate identities by allowing them a limited amount of freedom with which to pursue their work, proving that inventive boy discourse shaped the lived experiences of real boys, and not just the ones that appeared as characters in magazine stories and series

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<sup>88</sup> Unattributed cartoon, "Heroes of the Air: Orville and Wilbur Wright," *Jimmie Allen Club News*, 1, no. 22 [ca. 1935], Models—Jimmie Allen Club, Elizabeth Hiatt Gregory Collection of Material About American Aviation (collection 313), Department of Special Collections, Charles E. Young Research Library, University of California, Los Angeles.

<sup>89</sup> Kelly, *Wright Brothers*, 5-37. On late nineteenth century boy culture, see Rotundo, *American Manhood*, 30-55.

fiction novels. While allowing their sons room to experiment and engage with technological pursuits, the adults and parents who condoned their work and provided the space to tinker proved essential to these efforts.

## CHAPTER TWO

### Putting the Boy Inventor in His Place

*The Workshop may be fitted up by the boy himself, and a suitable place can probably be found in the basement, barn, or woodshed....It is far better for a boy to spend his evening in the house than out upon the street.*

A. Neely Hall, 1905<sup>1</sup>

*Give the real boy some tools and a workshop, and half the problem of bringing up the next generation is solved.*

William B. Stout, 1917<sup>2</sup>

Nothing in recent memory, advice writer Francis A. Collins marveled in his *Boys' Book of Model Aeroplanes* (1910), "has ever taken hold of the boy's imagination" as building and flying model airplanes. And with the growing popularity of flying model contests around the country this craft hobby was already well on its way to becoming the "greatest boy's sport in the world." At typical "junior aero tournaments" Collins witnessed in New York, sympathetic adults cast open the doors of halls, gymnasiums, armories, and other large indoor spaces in service to modern boyhood to host contests that promised to "be

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<sup>1</sup> A. Neely Hall, *The Boy Craftsman: Practical and Profitable Ideas for a Boy's Leisure Hours* (Boston: Lothrop, Lee & Shepard, 1905), 4, 57.

<sup>2</sup> William B. Stout, *The Boy's Book of Mechanical Models* (Boston: Little, Brown, and Company, 1917), viii-ix.

the most thrilling experience in a boy's life." Inside these events, Collins described the atmosphere as "extremely animated," filled with sights and sounds that would "drive the average boy crazy with delight." "Boy aviators" spoke an entirely new language—the "picturesque vocabulary of the world of aviation"—over the steady hum of rubber-powered models, whose motors seemed to "flutter" as with the "sudden rise of a covey of partridges" as they took flight in contests for the greatest distance, duration, or height. Entrants busily made final preparations, hovering anxiously over their craft and hoping the countless hours devoted to solving the problems of flight would result in victory. Collins assured readers that the youthful technologists were not "merely imitators," but pioneering inventors; in fact, he added, each "may well feel himself something of a Columbus in launching his frail craft upon this uncharted sea." Conquering space and time in model airplane contests required knowledge of design and skill in construction, but as this new pastime was "not limited to any one season, as one's sled, kite, or skates," this growing "army of inventors, ranging in age from twelve to eighteen years," had ample time to perfect their craft and learn the fundamentals of mechanical flight.<sup>3</sup>

More than a construction manual, the *Boy's Book of Model Aeroplanes* limned a cultural geography of boyhood where workshops and contest spaces became wonderfully stimulating places where active, assertive, and inventive boys shined and adults faded from view. While earlier construction manuals for boys routinely linked particular activities to season, Collins reveled in the boy model builder's transcendence of seasonality as evidence of his participation in modernity's reordering of the world. Indeed, the emphasis on year-round specialized play, its movement indoors, and the abnegation of natural time suggests the phenomena Collins described was distinctly

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<sup>3</sup> Francis A. Collins, *The Boys' Book of Model Aeroplanes* (New York: Century Co., 1910), 3-17.

urban. The boys of the city Collins observed flew their contrivances in playgrounds and fields when the weather was warm and in large rooms, halls, or other sheltered structures in the winter. Shifting venues and toiling in workshops, Collins' vagabond boy inventors were transforming a popular pastime into a year-round occupation.

With an enthusiasm that surely rivaled that which he attributed to aeromodelers themselves, Collins' boy-centered portrayal cast himself as a faithful ethnographer and chronicler of an expressive form of boy culture. Here, boys exhibited their inventive potential through models and collectively transformed existing adult-built rooms into exciting boy spaces. While some merchants in the inventive boy economy viewed model airplanes as a way to unlock boys' inventive potential, Collins saw models as the very product of boyhood itself—an extension of boys' seemingly natural enthusiasm and passion for technology. Whatever roles adults played in providing locations, judging competitions, awarding prizes, or otherwise participating, Collins' sensual account erased their presence, leaving only a wonderfully intoxicating boy-driven vocation.

While Collins' description of boys' aeromodeling culture in 1910 obscures as much as it reveals, it is suggestive for its emphasis on space. The inventive boys he admired dreamed and designed, completed and competed their models within several levels of space: Workshop spaces for building and construction, meeting spaces for exchanging the latest ideas and designs, contest spaces for competition, and presentation spaces for exhibitions, framed boy aeromodelers' engagement with technology. Perhaps just as important, abstract spaces of boyhood highlighted technological activities (such as model building) as appropriate for boys, a distinction amplified by the presence of a specific literature for boys that reinforced the cultural distance from other literary forms.

The varying technologies for ordering space—be it the physical arenas for flying models that inspired Collins’ textured rhetoric or those more discursive constructions of boyhood—hint at the roles adults played in elaborating the very dimensions of early twentieth century boyhood. Moreover, while Collins and other adults celebrated boys’ freedom and independence, they nonetheless played key roles in erecting its boundaries. Space framed the inventive boy’s world, allowing avenues for adult supervision, guidance, or approval that shaped, but did not wholly determine, the technical experiences of boys.

Space mediated the interactions between inventive boy discourse and the lived experience of real boys. The robust body of fictionalized accounts of boyish tinkerers and boy-built inventions explored in the previous chapter highlighted the ongoing search for the origins of ‘inventiveness’ in the early twentieth century. But while the celebrated inventive boy reigned supreme in series novels and other forms of juvenile literature, the power of these narratives also shaped the physical spaces inhabited by real boys. Moreover, the lived experiences of flesh and blood adolescent males added depth and dimension to inventive boy discourse. Manipulation of space and place fixed inventive boy discourse within the early twentieth century landscape, fortified cultural distinctions of age, race, class, and gender, and encouraged adults and children to claim areas for boys’ technological pursuits. While developments in flight technology were essential to the creation of cultures around the model airplane, social and cultural innovations, not technological ones, were far more crucial to explaining the operation within the boy inventor’s world.



This chapter places early twentieth century discussion of boys' technical spaces within the context of emerging ideas about adolescence and masculinity and highlights middle-class tensions and anxieties about the position of boys in the United States. At a time when progressive-era reformers recast childhood as a period of life sheltered from adult responsibilities, and an emerging consumer culture offered visions of boyhood that stressed boys' autonomy, workshops and other adult-sanctioned technical realms partially resolved the gulf between free and sheltered boyhood. Boys—often in accord with adult wishes—utilized space to navigate and position themselves within a changing social, cultural, and technological landscape. Sanctioned boys' spaces allowed boys to affirm and reaffirm a whole series of relationships with other boys, adults, and, of course, with technology, while at the same time allowing them to forge their separate individual identities as technologists.

### ***Boy Culture and the Ideology of Independence***

Despite its importance for opening up a whole series of relations between adults, children, and the outside world, analysis of space has received scant attention from historians and scholars interested in the study of children and childhood. Philippe Ariès—whose *Centuries of Childhood* (1962) is credited for spurring historical inquiry into the meaning of childhood—treats the topic of space in just a few pages despite his contention that separate rooms marked concretely the arrival of modern notions of childhood as a stage of life set apart from adulthood. Whereas Ariès sees ideas fixed through space, more recent scholarship views physical areas far more dynamically, reflecting both adult concerns for children, as Lisa Jacobsen sees in discussions of

playrooms, but also, as Kim Rasmussen observes, the distinctions between areas set aside for children by adults and those spaces children claim as their own. As this scholarship suggests, space acts as an essential site for understanding how children are viewed in society, but also how for how childhood is experienced by children.<sup>4</sup>

In light of this emerging research, it is not surprising to find that space was also central to the operations in the early twentieth century universe of the inventive boy. Inventive boy discourse, the previous chapter held, spoke to the inventive potential of all boys by honoring a few, but beneath this admiration lay anxieties about the future of self-made success and technological development. Interestingly, the very height of the popularity of inventive boy discourse coincided with the spread of large scale, corporate controlled technological systems that threatened the very ideal of the lone independent inventor as an iconic symbol of American masculinity. Adults who weaved fantastic tales of real or imaginary boy inventors lauded technological mastery and ingenuity as prized character traits to be encouraged, and the fictionalized inventive boy and his idealized adult counterpart provided powerful inspirations for the importance of pleasurable technological play. For boys filled with visions of becoming the next Thomas A. Edison or the Wright Brothers—as well as those adults who encouraged them—the establishment of technical spaces inside and outside the home reflected the priorities of early technological engagement. And while boys’ technical spaces like attic,

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<sup>4</sup> Philippe Ariès, *Centuries of Childhood: A Social History of Family Life* (New York: Random House, 1962), 398-400; Lisa Jacobsen, “Revitalizing the American Home: Children’s Leisure and the Revaluation of Play, 1920-1940,” *Journal of Social History* 30 (Spring 1997): 581-596; and *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004). While Kim Rasmussen does not see “places for children” completely at odds with “children’s places,” (which can often exist within those places set aside for children’s use), her study does illuminate the divergence between how adults and children experience space and construct its meanings. See her “Places for Children—Children’s Places,” *Childhood* 11 (May 1 2004): 155-173.

basement, or backyard workshops conformed to the ideology of popular invention, these spaces were also bound within wider concerns about the status of boys generally.<sup>5</sup>

At the turn of the twentieth century, white middle-class Americans were faced with two very different visions of boyhood. One, celebrated by entrepreneurs in commercialized boy culture and represented by fictional characters like Huck and Tom, Penrod, Peter Pan, as well as the more technologically-adept stock characters of juvenile series fiction like Tom Swift, celebrated the freedoms of boyhood. The other, offered by social reformers, raised the specter of the delinquent bad boy. Together these competing views transformed the geography of childhood and institutionalized middle-class ideals of a ‘sheltered childhood’ as a period of life physically, socially, and culturally distinct from adulthood.

By the end of the nineteenth century a loose coalition of educators, social workers, reformers, politicians and others responded to a widely perceived ‘boy problem’ rooted in fears about urbanization, delinquency, and social and moral decay by enacting new social innovations in the aim of protecting children. More than ever before, developments in child psychology, compulsory education legislation, municipal playgrounds, and juvenile justice established greater corporate control—and invited increased adult involvement—in most aspects of children’s lives. Taken together, this movement reflected adult reformers attempts to enforce middle-class notions of a sheltered childhood by placing children in distinct cultural, legal, or spatial categories. While the efficacy of these reforms is debatable, these actions—taken in the name of

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<sup>5</sup> For the links between masculinity and productive workspace in the home, see Kristen Haring, “The ‘Freer Men’ of Ham Radio: How a Technical Hobby Provided Social and Spatial Distance,” *Technology and Culture* 44 (October 2003): 734-761; Steven Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999), 250-254.

protecting society from the child, or, as often was the case, the child from society—profoundly shaped the position of children in American society between 1890 and 1920.<sup>6</sup>

Perhaps nothing reflected the tensions between the freedoms of boyhood and the imperatives of adults to enclose it more than the influence of G. Stanley Hall's ideas about adolescence. Hall, a psychologist at Clark University who became the leading figure in American psychology at the turn of the century and is credited with founding child psychology in the United States, did more than any other American intellectual to popularize the importance of adolescence as a stage of life separate from adult responsibilities. Breaking from nineteenth century moralists who encouraged parents to give adolescents adult responsibilities as soon as possible, Hall popularized the biological theory that argued that each individual recapitulated the history of the species on their way to adulthood.

Adolescence, Hall elaborated in his *Adolescence* (1904), was an essential period wherein all individuals moved from a state of savage childhood to civilized adulthood. In order to negotiate this transition successfully, Hall argued that modern children required an extended period of adolescence, free from the pressures of adulthood. Central to Hall's thesis was his view that adolescent sexuality and illicit sexual acts like masturbation risked sapping boys of their virility. While nineteenth century moralists too

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<sup>6</sup> Steven Mintz, *Huck's Raft: A History of American Childhood* (Cambridge, MA: Harvard University Press, 2004); David I. Macleod, *The Age of the Child: Children in America, 1890-1920* (New York: Twayne Publishers, 1998), esp. chapter 1, and idem., *Building Character in the American Boy: The Boy Scouts, YMCA, and Their Forerunners, 1870-1920* (Madison: University of Wisconsin Press, 1983). David B. Tyack, *The One Best System: A History of American Urban Education* (Cambridge, MA: Harvard University Press, 1974); Viviana A. Zelizer, *Pricing the Priceless Child: The Changing Social Value of Children* (New York: Basic Books, 1985). On playgrounds, see, Paul Boyer, *Urban Masses and Moral Order, 1820-1920* (Cambridge, MA: Harvard University Press, 1978); Roy Rosenweig, *Eight Hours for What We Will: Workers and Leisure in an Industrial City, 1870-1920* (New York: Cambridge University Press, 1983); Dominick Cavallo, *Muscles and Morals: Organized Playgrounds and Urban Reform, 1880-1920* (Philadelphia: University of Pennsylvania Press, 1981). For rural children's experiences, see Pamela Riney-Kehrberg, *Children on the Farm: Work, Play, and Coming of Age in the Midwest* (Lawrence: University Press of Kansas, 2005).

made similar claims, Hall once again broke with his predecessors by asserting that sexual energies should not be repressed as his Victorian forebears argued, but channeled into education. This emphasis on channeling sexual desires into productive educational activities, Gail Bederman asserts, allowed Hall to keep boys safe from the threat of “sexual dissipation,” while also allowing for the redirection of these sexual urges into higher education without the perceived risks of overcivilizing boys.<sup>7</sup> Given this context, adults’ encouragement of boys’ technical hobbies followed the logic of providing a more healthful view of handwork, which also had the added benefit of reinforcing the work ethic.

The influence of Hall’s theories provided a scientific basis for increased adult involvement in children’s lives, but this involvement did not mean that adults were in absolute control of boys’ experiences. Indeed, as historian E. Anthony Rotundo describes in his history of manhood, a detectable “Boy Culture” had already emerged by the end of the nineteenth century situated between the domestic realm represented by women and mothers, and the more masculine public realm of commerce and work occupied by men and fathers. This “distinct cultural world,” Rotundo asserts, was complete with its own rules, values, and assumptions, which because of boys’ age, class, race, and gender, created sanctuary from the “rules of the home and the marketplace” for its members. Within the abstract cultural category of boyhood, Rotundo views boy

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<sup>7</sup> G. Stanley Hall, *Adolescence: Its Psychology and its Relation to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education*, 2 vols. (New York: D. Appleton and Company, 1904); Gail Bederman, *Manliness and Civilization: A Cultural History of Gender and Race in the United States: 1880-1917* (Chicago: University of Chicago Press, 1995), 77-120 (quote on p. 103); Willem Koops and Michael Zuckerman, “Introduction: A Historical Developmental Approach to Adolescence,” *History of the Family* 8, no. 3 (2003): 345-354; Joseph F. Kett, “Reflections on the History of Adolescence in America,” *History of the Family*, 8, no. 3 (2003): 355-373; Mintz, *Huck’s Raft*, 187, 189-190; Michael Kimmel, *Manhood in America: A Cultural History* (New York: Free Press, 1996), 162-163. On hobbies and the work ethic, see Gelber, *Hobbies*.

culture as largely autonomous, a sphere in which boys established and enforced rules, governed boundaries, and regulated behavior.<sup>8</sup>

Regardless of the power boys exerted in shaping boy culture, however, Rotundo tends to understate the importance of adults in sanctioning this period of freedom, for while boys' oppositional subculture was outwardly at odds with middle-class gentility and domesticity, it was nevertheless deeply indebted to middle class values for its existence. The realities of the middle-class family economy freed children from work, and parents' assumptions about gender explained the luxury of boys' extended period of independence. These freedoms were routinely expressed through the control of space. While rural children typically did not enjoy the same exemptions from work, in city and urban environs, Rotundo contends, boy culture "flourished in backyards, streets, parks, playgrounds, and vacant lots," where values of "energy, self-assertion, noise, and a frequent resort to violence" contrasted markedly with mother's "kindness, morality, nurture, and a gentle spirit." Mastery and control—over one's own emotions, over others, and, of course, over the physical and social environment—were the primary values prized by boys and the adults who encouraged them. To demonstrate this mastery, boys fished and hunted, but also, showing the influence of modern technology, constructed models and performed "crude scientific experiments" that "taught youngsters the skills (and the habit) of mastery over nature in the service of human needs and knowledge."<sup>9</sup>

Nowhere is this emphasis more apparent than in advice writer Daniel C. Beard's *American Boy's Handy Book*, first published in 1882. Beard's *Handy Book*, which he

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<sup>8</sup> E. Anthony Rotundo, *American Manhood: Transformations in Masculinity from the Revolution to the Modern Era* (New York: Basic Books, 1993), 31-55 (quote on page 31).

<sup>9</sup> Ibid., 33, 37, 44.

compiled from his article series published in the children's magazine *St. Nicholas*, advocated boys' independence through the "successful construction of their home-made playthings." Scorning parents for purchasing toys, Beard urged parents instead to use this money to buy tools so that boys could build their own amusements. In so doing, Beard contended, boys gained early lessons in the moral values of work, while also breaking their dependency on potentially indulgent parents and the marketplace of late nineteenth century consumer culture. Beard's celebration of "home-made" meant things *bought* held little value relative to things *made*, but his aversion to consumer culture mirrored attitudes about indoor spaces generally. While Beard hoped "handy boys" would be drawn outside by inviting them to fill their year with kites and fishing in the spring, camping and home-made boats in the summer, trapping and "practical taxidermy" in the fall, and a winter filled with snowball fights and tobogganing, he tempered a control of nature which nevertheless embraced its cyclical rhythms. Unlike Francis Collins who reveled in the possibilities of the aeromodeler's liberation from nature's clock, Beard advocated a less industrialized ordering of the year, something he continued to stress after helping found the Boy Scouts of America in 1910.<sup>10</sup>

The tensions between indoor versus natural, homemade versus store-bought, and consumption versus production, highlighted Beard's concerns that industrialization and consumer culture risked placing boys in a state of feminized dependency.<sup>11</sup> Moreover, Beard's mistrust of the social roles of shopping extended to the purchase of materials

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<sup>10</sup> D. C. Beard, *The American Boy's Handy Book* (New York: Charles Scribner's Sons, 1882; reprint, Lincoln, MA: David R. Godine, 1983), xvi-xvii, xxiii. Not surprisingly, Beard's emphasis expressed changes in the understanding of masculinity at the turn of the twentieth century. See, Bederman, *Manliness and Civilization*.

<sup>11</sup> On gendered views of consumption, see Victoria de Grazia and Ellen Furlough, ed., *The Sex of Things: Gender and Consumption in Historical Perspective* (Berkeley: University of California Press, 1996) and Roger Horowitz and Arwen Mohun, ed., *His and Hers: Gender, Consumption, and Technology* (Charlottesville: University of Virginia Press, 1998). For a fuller discussion, see chapter five, this volume.

required for handy boy projects, for his project lists were frequently vague and avoided suggestions on where this material could be obtained; key omissions which merely reinforced his praise of the romantically rugged handy boy's freedom from parents and stores.

Lina Beard and Adelia B. Beard's *American Girl's Handy Book* (1887), by contrast, imagined a very different vision of Victorian childhood filled with dollies to make, wildflowers to preserve, and garden parties to host, and more forthrightly identified outlets such as stationers as ideal sources for tissue paper, printer's ink, and other items required for decorative craft projects. Unlike their older brother Daniel, sisters Lina and Adelia also provided estimates on what supplies might cost, suggesting, for example, that materials for garden hammocks "should not cost more than fifty cents" and that girls should expect to spend about \$1.10 to make a "strong, fine, tennis net which will prove serviceable and last many seasons." This essential information provided handy girls with lessons in their future roles as resourceful wives, mothers, and managers of the family economy, but their advice did not necessarily presume the average Victorian girl was flush with cash. In a chapter entitled "A Heap of Rubbish, and What to Do With It," the Beards' offered a number of suggestions on recycling and reusing household junk from "a tin can to a piece of broken bric-à-brac."<sup>12</sup>

Interestingly, similar advice on *bricolage* was largely absent for handy boys, appearing explicitly only in reference to the directions for making a "slab canoe"; a rude boat made from the first cut waste of large logs discarded by sawmills. Physical proximity to the home distinguished the handy girl's recycling from that of the handy

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<sup>12</sup> Lina Beard and Adelia B. Beard, *The American Girl's Handy Book* (New York: Charles Scribner's Sons, 1887; reprint, Boston, MA: David R. Godine, 1987), 57, 161, 403-412.



boy's, for sawmills—operated by the “lumber man” and his anthropomorphized sawmill (described as a “fierce creature” with an “abnormal appetite for logs”)—were the “advance-guard of modern civilization” that chewed upon nature in order to supply “lumber for the carpenter, builder, and cabinet-maker.” The sawmill, in Beard's view, stood at the edge of industrialization, domesticating nature by desiccating forests and spewing stream-choking effluence “in the most shameful way.” For Beard, waste slabs represented the worst of industrialization, but discarded lumber also provided the means in which handy boys could imaginatively engineer their escape.<sup>13</sup>

While construction advice literature for boys in the early twentieth century retained the emphasis on the moral benefits of *making* Beard described, it also tended to display greater fascination with the modern technological world and a boy's place in it. Building and making were still viewed as ways of encouraging independence, but later advice writers also stressed the potential for acquiring vocational skills; a view that reflected the potential that boys' voluntary handwork activities would soon be enclosed by the social and economic imperatives of some future labor market. As such, Beard's handy boy gave way to handicraft advocate Joseph Adams' more “practical” one. According to Adams, carpentry could teach boys “to work systematically and accurately, and to understand the possibilities and limitations of tools.”<sup>14</sup> Readers of the *American Boy* too learned that the proper selection and use of tools could prepare boys for future

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<sup>13</sup> Beard, *American Boy's Handy Book*, 389-390.

<sup>14</sup> Adams' “Practical Boy” column provided numerous opportunities to learn these lessons through the construction of furniture for his room, iceboats, snowshoes, or any of the other designs earmarked of interest for regular readers. See, for example, Joseph H. Adams, “The Practical Boy: I. Carpentry,” *St. Nicholas*, November 1904, 42; “The Practical Boy: II. Fitting up a Boy's Room,” *St. Nicholas*, December 1904, 155; “The Practical Boy: III. Ice-boats, Snow-Shoes, Skate-sails, Sleds, etc.,” *St. Nicholas*, January 1905, 249.

success in adulthood, provided, of course, they were of “a mechanical turn of mind.”<sup>15</sup>

Columns for young technologists in the *American Boy* extended the efforts of Adams and his “Practical Boy” by encouraging boys’ fuller engagement with modernity. The pages of this popular magazine were filled with advice that ranged from the selection and use of proper tools for carpentry, to the construction and operation of telegraphs. Advice on soldering was paired with primers on mechanical drawing and instructions on building a whole host of mechanical devices, including the construction of a small drill press, a model pump, and, eventually, model airplanes.<sup>16</sup>

While nineteenth century children’s periodicals routinely featured reports on marvelous feats of engineering, fascinating new machines, or the latest developments in the sciences, early twentieth century magazines such as the *American Boy* displayed the influence of inventive boy discourse by appealing to outside expertise. In the series “Breakfast-Table Science for Young People” published in *Parley’s Magazine* in the 1840s, children’s seemingly endless questions about science and the natural world (ranging from earwigs and dog’s teeth to boiled eggs) were fielded by their father with a healthy dose of common-sense folk wisdom.<sup>17</sup> By century’s end, however, father was less well-equipped to answer questions about internal combustion engines, wireless telegraphy, or the latest developments in flying machines. The answer to these

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<sup>15</sup> C. M. Claudy, “The Right Way to Use Tools,” *American Boy*, March 1906, 156.

<sup>16</sup> “How Two Boys Built Wireless Telegraph Instruments,” *American Boy*, January 1905, 85; “Tools for the Boy Carpenter,” *American Boy*, January 1905, 85; J. C. Beard, “How To Use Common Tools,” *American Boy*, September 1904, 336; E. L. Williams, “How to Solder,” *American Boy*, March 1907, 156; Captain H. A. R. Gray, ed. “Mechanical Drawing,” *American Boy*, April 1911, 29; “How to Build a Small Drill Press,” *American Boy*, August 1906, 320; J. G. Bailey, “How To Make a Model Pump,” *American Boy*, July 1908, 283; John L. Dougheny, ed. “For the Boys to Make,” *American Boy*, November 1910, 27. The *American Boy* eventually became a leading supplier of model airplane plans in the 1920s and 1930s. See, for example, Frank Zaic’s compilation of model airplane articles, plans, and advice, *Model Airplanes and The American Boy: 1927-1934* (Northridge, CA: Model Aeronautic Publications, 1982).

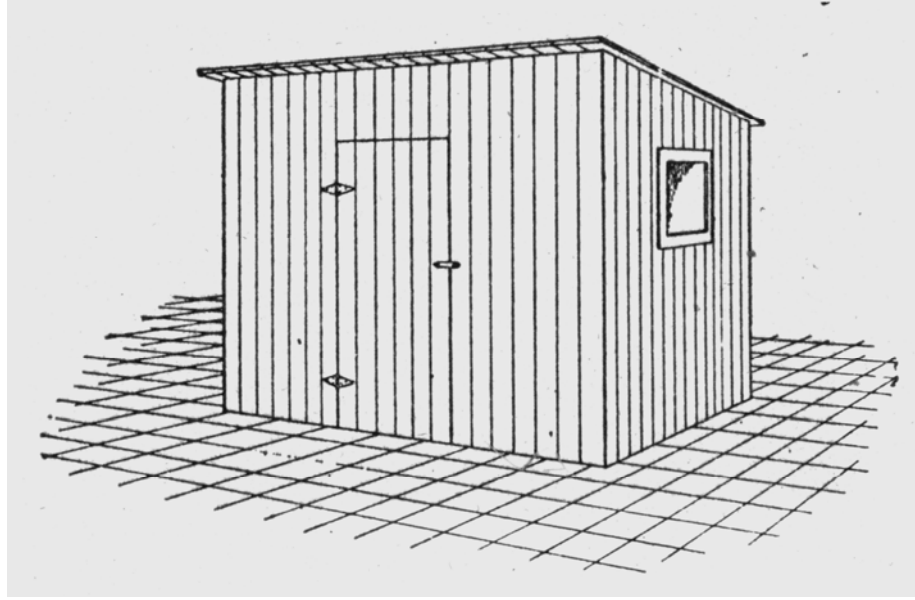
<sup>17</sup> See, for example, “Breakfast-Table Science for Young People,” *Parley’s Magazine*, April 1841, 110; “Breakfast-Table Science for Young People,” *Parley’s Magazine*, May 1841, 150; “Breakfast-Table Science for Young People,” *Parley’s Magazine*, June 1841, 173.

questions—unfortunately for father—required an appeal to expertise outside the family if American society hoped to nurture the next generation of inventors, engineers, and scientists.<sup>18</sup>

In one notable example, Captain H. A. R. Gray of the Army's Engineer Corps, a regular *American Boy* contributor, assured readers that the modern technological world of 1909, with its trolleys, trains, and telephones, was only possible as a “result of past experiments.” Citing his own example, Gray noted that he “was and still is an American boy” who had attained his “high position” through “persistency” and close “attention to details.” Signaling his solidarity with boys, Gray enlisted their participation with his cause of reshaping modern industrialized society through invention and engineering. In order to transform themselves into boy inventor-engineers, Gray insisted, boys required “a suitable place” to work. The importance of a boy's own space reflected much of Rotundo's emphasis on a boy's separate cultural world, but unlike nineteenth century boys who typically ran with a small cohort of friends, boys who aspired to follow in the footsteps of the great independent inventors were supposed to work alone in their very own workshop. For this task, Gray reasoned boys would “need a floor space at least six feet wide and eight feet long,” although more space, “if we can secure it,” would be beneficial. Ultimately, Gray contended, readers could scout out locations in basements,

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<sup>18</sup> The role of fathers was problematic for those who warned, at the turn of the twentieth century, of a ‘masculinity crisis’ that was characterized by fears of future generations of effete, overcivilized boys. While advice writers and other experts routinely blamed mothers for being too close to their boys, in failing to mention fathers, these critics also silently held men equally responsible for failing to guide their sons properly into manhood. Indeed, the existence of outside experts served as a way of co-opting the paternal role traditionally afforded to biological fathers. Kenneth Kidd, in discussing boy workers, touches on this idea briefly in *Making American Boys: Boyology and the Feral Tale* (Minneapolis: University of Minnesota Press, 2004), 12-13. In truth, as Gail Bederman argues convincingly in *Manliness and Civilization*, masculinity never was in crisis. On this late nineteenth century ‘crisis,’ see also Kimmel, *Manhood in America*.



**Figure 10:** Drawing of the “inexpensive ‘American Boy’ workshop” from H. A. R. Gray, “The Boy’s Workshop,” *American Boy*, April 1909, 190. Gray’s advocacy of such places reinforced both the influence of inventive boy discourse, but also contemporary views about the status of adolescence boys generally.

attics, or backyard sheds, but the “ideal place will be in the inexpensive ‘American Boy’ workshop built away from the house according to the following instructions, by yourself” (fig. 10). Providing plans for the construction of such a place, Gray ordered resourceful boys to “Get out your level, saw, hammer, square, chisel and...let us get busy.”<sup>19</sup>

While writers of such technical advice literature routinely emphasized building as a way to engage boys’ curiosity and assert their independence, Gray’s workshop plans underscored the importance of boys’ physical separation from feminine domestic space.

This physical separation enhanced the partial seclusion of boys’ activities from the rest of

<sup>19</sup> H. A. R. Gray, “The Boy’s Workshop,” *American Boy*, April 1909, 190. For an earlier link between adolescent boys’ spaces and independence, see “The Boys’ Room,” *Ohio Farmer*, 30 October 1875, 283. By stating that he “was and still is an American boy,” Gray suggests a certain malleability in the use of the category of ‘boy.’ Like Gray, C. Francis Jenkins employs a similar looseness in his memoir *The Boyhood of an Inventor* (Washington, DC: National Capital Press, 1931). Framed as a scientific report, Jenkins writes his own case study into the nature of inventiveness. Throughout, Jenkins refers to himself as “the boy,” “the young inventor,” or simply, “Mr. Jenkins,” but what is most interesting is that he refers to himself as “the boy” and occasionally “the young inventor” until he gained public recognition for his work developing a motion picture camera. Only then, did the nearly thirty-year-old man become “Mr. Jenkins,” suggesting links between his claims to manhood and his public status as an independent inventor.

the family and reinforced the ideology of boy culture that stressed the importance of boys' efforts to forge for themselves identities apart from mothers and younger siblings. Moreover, this view cast boyhood as an imperial force that would colonize areas within—or immediately adjacent to—middle-class homes and render previously unused and unproductive spaces for domestic production into areas for the creation and maintenance of boy culture.

The creation of dedicated spaces served Gray's attempts to encourage and legitimize boys' identities as inventors, but his call for a boy's private workspace also drew upon traditions of solitude and social withdrawal for creating knowledge. For scientists and technologists, laboratory spaces, machine shops, and other areas for industrial research emerged as key features of professionalization that regulated boundaries and access.<sup>20</sup> In addition to barring outsiders, these spaces served to protect, according to historian Thomas P. Hughes, those inside "from the constraining influences of the status quo."<sup>21</sup> In truth, these spaces could never provide total isolation, but in advocating for the adoption of likeminded spaces for boys interested in technology, Gray's little inventor shack sought to make physical cultural boundaries of boy culture by providing dedicated spaces to encourage their technological work. Placed adjacent to main living areas, Gray advocated for, in essence, the carving up of the domestic realm for a boy's own use. These domestic workshops symbolically and physically cordoned

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<sup>20</sup> On laboratory and secluded creative spaces, see, David N. Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003); Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 2005), 84-86; Steven Shapin, "'The Mind Is Its Own Place': Science and Solitude in Seventeenth-Century England," *Science in Context* 4 (1990): 191-218. For non-scientific creative spaces, see Virginia Woolf, *A Room of One's Own* (1929: reprint, San Diego: Harvest, 1989).

<sup>21</sup> In one notable example, Hughes notes inventor Nikola Tesla's comments that the "mind is sharper and keener in seclusion and uninterrupted solitude. Originality thrives in seclusion....Be alone—that is the secret of invention: be alone, that is where ideas are born." See, Thomas P. Hughes, *American Genesis: A History of the American Genius for Invention* (New York: Penguin, 1989), 25.

off boys' productive work from that of the rest of the home and reflected at least one attempt to erect gender boundaries by shielding boys from mother's influence. But, as with adult scientists and technologists, this physical and cultural partitioning was neither entirely effective, nor, as it turned out, for parents, desired. The seclusion offered by adolescent boys' workshops was acceptable to parents only if they approved of the products that eventually emerged from these areas.

Compared with Gray's call for enclosed spaces for boys' constructive work, Beard's silence on indoor workspaces is almost deafening—particularly as other later nineteenth century moralists quite explicitly praised the importance of tools and workshops for boys' healthy development. An editorial originally published in the *Detroit Free Press* and reprinted in 1885 in one Boston-based agricultural journal, for example, urged fathers to provide their sons with tools and a place to work as a way for boys to gain the practice of mending household implements, which would allow the “Handy Boy” to become a “Handy Man.” Others saw in workshops a way to encourage purposeful, rather than frivolous, leisure that would provide boys knowledge of tools and provide them with a greater a sense of responsibility around the house.<sup>22</sup> For Beard, boys' building was pretext for outside exploration, but Gray's call for inventor spaces was part of a strategy to enhance boys' positions within the home and the family. In this respect, Gray's advocacy of dedicated boy spaces shared much with contemporary changes in the meanings of childhood generally, which aimed to institutionalize boundaries of childhood as a phase of life physically, socially, and culturally distinct from adulthood.

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<sup>22</sup> “Handy Boy and Handy Man,” *Massachusetts Ploughman and New England Journal of Agriculture*, 11 April 1885, 4; “Give the Boys Tools,” *Massachusetts Ploughman and New England Journal of Agriculture*, 2 October 1880, 1; Rev. John Todd, “Boys' Workshop,” *Ohio Farmer*, 25 November 1871, 742.

### *At Home and Tinkering*

Captain Gray's call for boys' technical spaces explicitly expressed a desire to make better technologists, but the wider cultural context suggests that at least some adults were concerned about how best strike the balance between protecting children and providing them with a greater sense of autonomy. For those readers who heeded Gray's call to establish attic or basement workshops to explore technology or emulate heroic inventors, opportunities to establish independence from parents and the potential for mystery, secrecy, and privacy only enhanced the appeal provided by these areas. Possibilities for imaginative play, secret meetings, and time to dream, scheme, build, or experiment with machines proved immediately attractive for boy inventors who relished this space, no matter how porous its boundaries might actually be. Regardless of how advice writers such as Gray presented these workspaces, boys' removal to outlying workshop spaces suggests important roles for adults in facilitating this migration. Parents, it should be said at the outset, were complicit in this colonization of space, and provided both essential material support and tacit approval of boys' pursuits. Despite often having only a partial understanding of the work inside, parents nevertheless signaled tentative approval of boys' freedoms to pursue technology. This approval, however, also reveals important clues about boys' subordinate relationship generally. Freedom sanctioned could also be freedom withdrawn, and the independence offered by these boy spaces was predicated on no small degree of parental consent. The case of Elmer and Zula Sperry's children is particularly illustrative.

The Sperry household was firmly and comfortably in the middle class. Elmer Sperry was a prominent and prolific inventor, engineer, and entrepreneur, whose most

noteworthy accomplishments lay in the development of electrical dynamos, electrochemical process, and—eventually—gyroscopic compasses use by steam ships and aircraft.<sup>23</sup> Sperry's work forced him to spend long hours away from home and left—as was common at the time—the day to day responsibilities of managing the household and parenting the four Sperry children to his wife, Zula. As Helen Sperry Lea—the couple's eldest and only daughter—later recalled, the excitement and pride for her father's work created an “atmosphere of vicarious achievement” which infiltrated all parts of the Sperry household. Whereas each Sperry family member supported Elmer Sperry's work, the couple's two youngest boys were particularly drawn to emulate their father through technical pursuits of their own. Helen Lea remembered distinctly her two youngest brothers' “violent desires” for technology, which often meant the pair “were always breaking loose” in some way or another. Admittedly, this could be “very trying for Mother,” but she added her mother typically greeted the boys' latest inventive schemes with laughter and approval.<sup>24</sup>

As daughter Helen wrote soon after her mother's death in 1930, Zula Sperry rigorously adhered to a parenting philosophy stressing the importance of allowing her children to “work out their desires.” This—she imagined—must have been “fairly difficult...for such a gentle and peace-loving person as Mother” because she oversaw such “a trying family of non-conformists.” However, Lea stressed, rarely did her mother attempt “to limit the field of her rather daredevil children.” “Nowadays,” Lea concluded,

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<sup>23</sup> Thomas P. Hughes, *Elmer A. Sperry: Inventor and Engineer* (Baltimore: Johns Hopkins Press, 1971).

<sup>24</sup> Helen Sperry Lea, interview by Thomas P. Hughes, Lake Success, NY, 28 January 1966, Tape I, pp. 1, 4-5, 13-14, Oral History Transcripts, Elmer A. Sperry Papers, 1889-1930, Hagley Museum and Library, Wilmington, Delaware; Helen S. Lea, “Zula Goodman Sperry,” typescript [ca.1930], Zula and Family in Cleveland, Thomas P. Hughes, Research Notes and Correspondence, Sperry Papers. Although Elmer Sperry too was a devoted father who routinely indulged his children's desires and actively encouraged his boys' fascination with technology, his approach to parenting largely conformed to the cues set by his wife.



“such an understanding of the need of children to work out their schemes and experiments and the giving of the materials and environment is called progressive education.”<sup>25</sup> While she may have not have had Susan Koerner Wright’s knack for mechanical work, Zula Sperry’s relatively permissive, child-centered home nonetheless created a fertile environment for her boys to exercise their inventive inclinations in ways probably not possible in stricter households.

After moving from Chicago, the Sperry children’s desires—and Zula Sperry’s child-centered philosophy—were scorched into the backyard of the family’s large Victorian home on Cleveland’s east side, where Elmer Jr. was born in 1894, joining Helen, Edward, and Lawrence (born in 1888, 1891, and 1892, respectively). In recalling her mother, Helen Lea painted a vivid picture of an active childhood, describing the backyard of their Cleveland home as “full of messy building operations and pits, the grounds riddled with tunnels and deep, boy-made gullies with precarious bridges over which a small cart rumbled with a hollow sound which delighted us. Above ground rose fearfully flimsy structures housing goats, guinea pigs, rabbits, pigeons. There were fires and gardens, grubby children and happy times in the old back yard in Cleveland.” Lea’s youngest brother too, recalled fondly the two-story barn at the end of the home’s long backyard as just the place for raising pets and, when pets gave way to “pushmobiles,” which were eventually powered by small gasoline engines, places to act out more mechanically-inclined schemes.<sup>26</sup>

The freedoms provided boys like Lawrence and Elmer Jr., who, according to their older sister, were “all for engineering, invention, and aeronautics and the new things,”

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<sup>25</sup> Lea, “Zula Goodman Sperry.”

<sup>26</sup> Lea interview, I, p. 1, 4, and “Zula Goodman Sperry”; Elmer A. Sperry Jr., *Notes....* ([n.p.], 1969), 1, 4.

created a sympathetic environment for an early engagement with technology. The beginning of the “greasy boy era,” as Elmer Jr. later termed it, continued with the family’s move to Brooklyn in 1905, where they eventually settled in a house with a large basement, the ideal location for the boys to act out their passions to tinker with technology (fig. 11).<sup>27</sup> Soon after Lawrence convinced a local repairman to teach him to respoke a bicycle wheel, the basement became home to a bicycle repair shop, with Lawrence and Elmer Jr. handling repairs, and Edward, the more business-like of the three, becoming treasurer of the newly formed “Lawrence B. Sperry” bicycle repair company. The business venture specialized in, according to one handbill advertisement, the repair of “Bicycles, Roller Skates, and Door Bells...at Reasonable Prices” and in time, provided a remarkably lucrative and steady income for the Sperry brothers, signaling their financial independence, but also chances to refine their technological skills.<sup>28</sup>

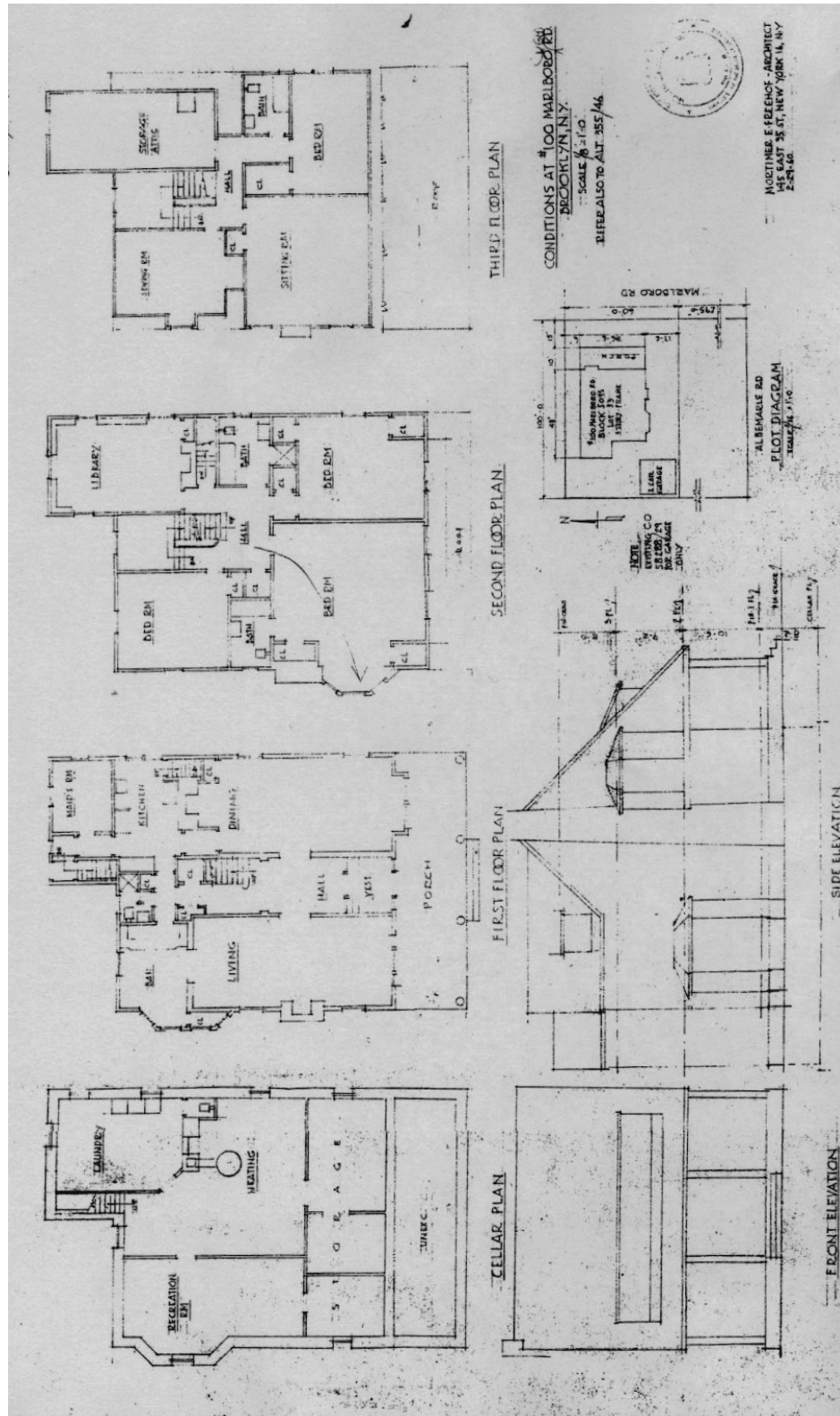
To bicycles, Lawrence et al. soon added motorcycles to their repertoire of technologies, but for all the excitement inside, outsiders—for which sister Helen most certainly was—saw little significance in the “home-made engines on bicycles,” which “spit, stank, coughed, gasped, hesitated, trembled with a mighty ague, and never went far.” More memorable perhaps were the grimy by-products resulting from these experiments for she remembered that the “oil under two boy’s fingers was [as] ineradicable” as the oil which “trickled on the cellar stairs.”<sup>29</sup> Upstairs in the attic, the

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<sup>27</sup> Sperry Jr., *Notes*, 4; Floor Plan for 100 Marlboro Road, Brooklyn, NY, dated 29 February 1960, Lawrence Burst Sperry Biographical Files (CS-825500-02), Archives, National Air and Space Museum, Smithsonian Institution, Washington, DC (hereafter NASM Vertical Files).

<sup>28</sup> Handbill as pictured in Hughes, *Elmer A. Sperry*, 180.

<sup>29</sup> Lea, “Zula Goodman Sperry,” and interview transcripts, I, p. 2, 5, 7, Sperry Papers.



**Figure 11:** Floor Plan for Sperry Home at 100 Marlboro Road, Brooklyn, NY (dated 29 February 1960) showing cellar and three floors. Workshops in the cellar and attic separated the Sperry boys' work from the rest of the house. Drawing from Lawrence B. Sperry Biographical Files, NASM Archives.

boys, with their father's help, constructed an electric generator with a hand-crank armature to operate any number of the small electro-mechanical contrivances at their disposal. This too was subject to their tinkering, as the generator was soon connected to a homemade water turbine in the basement. Each family purchase—be it automobiles or radios—led to still more lessons in technology, which were readily explored within the confines of each workshop area within the house.<sup>30</sup>

The Sperry children benefited from the specific circumstances of their upbringing, namely their father's comfortable middle-class income and their mother's enlightened philosophy of childrearing, but by providing the space for the establishment and operation of workspaces in the attic and basement, Zula and Elmer Sperry provided tacit approval for the behavior inside. As evidenced by sister Helen's later observation that the "family never knew about things" until Lawrence's latest plans "were really well launched," the creation of private spaces dedicated for his work proved essential to encouraging his inventive behavior and developing his ability as a technologist.<sup>31</sup>

Unlike the Sperry family, where Lawrence and Elmer Jr. capitalized on some degree of their parents' cultivated ignorance to shield their workshop activities from those of the rest of the home, advice writer A. Neely Hall called for active measures to maintain this separation. In writing of the importance of a properly outfitted workshop, the author of *Handicraft for Handy Boys* (1911) outlined several considerations for boys before establishing productive areas for their work. In addition to having ample room for

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<sup>30</sup> Sperry Jr., *Notes*, 5-6, and chapter 2. During one family visit in 1905, one distant cousin distinctly recalls being led to the basement workshop by Lawrence, then thirteen, and Elmer Jr., eleven, where they proudly showed off their new working gasoline engine. One can only imagine the brothers arranged similar tours for their parents. See, Kate Goodman Inazawa, "Recollection of the Sperry Family," in *Dr. Sperry as We Knew Him*, ed. Zenichi Kawaguchi and Russel L. Durgin (Yokoma, Japan: Nichi-Bei Press, 1931), 377.

<sup>31</sup> Lea, interview transcripts, I, p. 7.

workbenches and tools, Hall suggested that basement workspaces should have “good light,” be free of moisture, and “located conveniently,” yet “far enough away from the living-room and bedrooms so that your hammering will not disturb any one.” To enhance this seclusion, Hall advised readers to “partition off a space as large as you will need and provide a door with a padlock which can be locked.” Although he reasoned these measures were required to prevent “things from being tampered with by younger hands,” Hall’s suggestions also served to shield activities from the eyes of prying adults.<sup>32</sup>

In Hall’s view, privacy and seclusion served as important elements to sate boys’ apparently “unquenchable thirst” for each “new development in the scientific world.” By allowing boys to colonize previously unused areas of middle class homes, and thus allow for the more efficient use of domestic spaces, Hall assured parents that they could nurture technological development—something, he added, which should “be encouraged in boys” anyway because it appealed “to their mechanical natures.” But while workshops offered boys the freedom to experiment, these spaces also conformed with adults’ desires to protect boys as well, for it was far safer for boys to tinker with tools and construct home-made contrivances “in the house than [to roam] out upon the street.”<sup>33</sup>

Hall’s advocacy of the separation of boys’ productive work rested on far more than a practical division of boys’ mechanical work from the rest of the home, for his entire manual is concerned with only the operations inside. Once boundaries of the

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<sup>32</sup> A. Neely Hall, *Handicraft for Handy Boys: Practical Plans for Work and Play with Many Ideas for Earning Money* (Boston: Lothrop, Lee, & Shepard, 1911), 2-3. Similar advice could be found in Clarence Kelland’s edited collection of *American Boy* articles, *The American Boys’ Workshop* (Philadelphia: David McKay, 1914).

<sup>33</sup> Hall, vii, and *The Boy Craftsman: Practical and Profitable Ideas for a Boy’s Leisure Hours* (Boston: Lothrop, Lee & Shepard, 1905), 57.

workshop were established, Hall remained silent on the relations between boys' workshop and the home. Defensive technologies (doorways and locks) secured workshops and effectively sealed these spaces off from the rest of the operations of the family and enhanced the divisions between boys' masculine productive work and the more domestic operations outside. Moreover, the obscurity of basement workshops was merely reinforced by the status of cellars generally.

As philosopher Gaston Bachelard suggests, cellars spaces—created by excavating earth—reveal not only a house's foundation, but mask and retain meanings not afforded the rest of the home. Within the structure of the house, cellars and basements are human-built worlds, but the nature of the darkness and isolation so often characterizing these spaces also retains elements of the supernatural, where “creatures,” ranging from the very real to the wholly imagined, “moving about...are slower, less scampering, more mysterious.” Unlike the main living areas above, these spaces, even with the installation of electrical lighting technology, often continue to retain their cavernous meanings and rarely do they operate as permanently inhabitable spaces. Read this way, by calling into service these previous unused spaces, Hall's imagined “Handy Boy” and the Sperrys' very real boys sought to tame the space and put it to productive use. But in going underground for the purpose of creating knowledge, for outsiders—be it sisters, parents, or we present day observers—the work accomplished within remained a mystery to all except those who possessed and controlled these spaces, namely, those boys who transformed dark cellar spaces into personal places for invention.<sup>34</sup>

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<sup>34</sup> Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas (Boston: Beacon Press, 1994), 19; Rosalind Williams, *Notes on the Underground: An Essay on Technology, Society, and the Imagination* (Cambridge, MA: MIT Press, 1990).

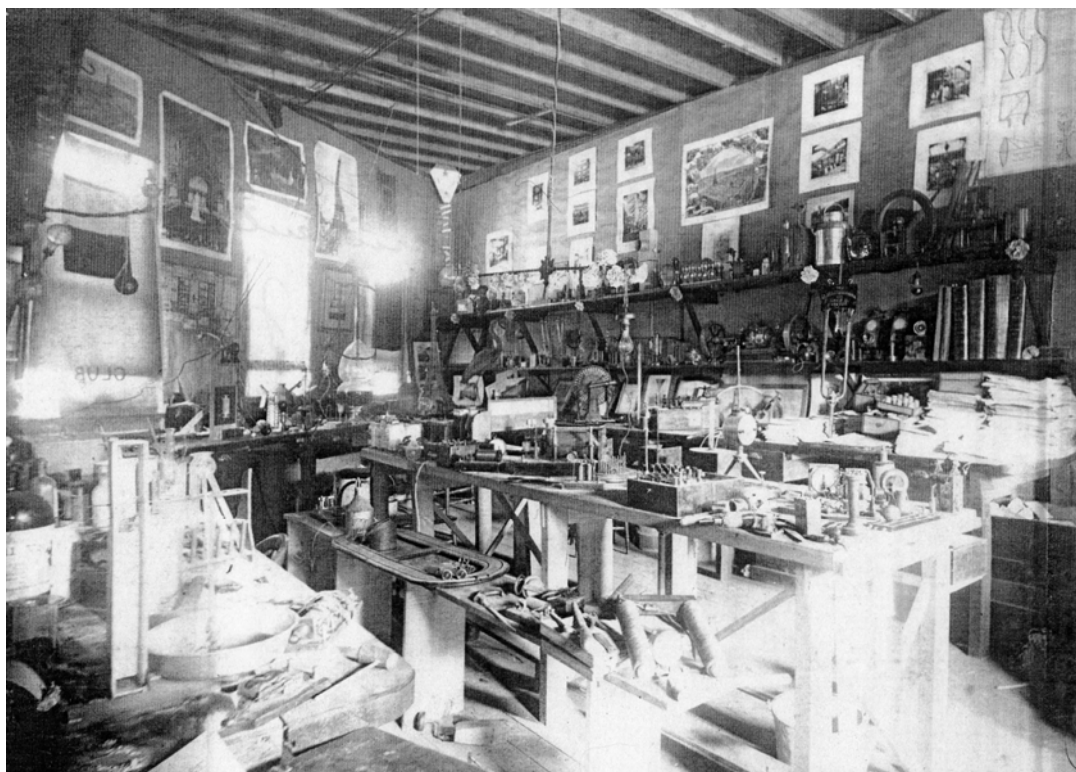
### *Workshops Outside the Home: E. Lillian Todd and the Junior Aero Club of America*

Home-based workshop spaces served adults' desires to encourage boys tinkering in ways that preserved the gendered expectations of separating domestic living spaces from masculine productive workspaces. Unlike the Sperry boys who benefited from their mother's approval and their father's expertise, the majority of boy inventors (both actual and aspiring) would have rarely been able to count on having an inventor in the home. For these 'less fortunate' boys, the efforts of adults outside the home in establishing and maintaining workshop spaces proved particularly important for accessing expertise. Even outside the home, the imperatives of maintaining existing gendered divisions of work nevertheless remained intact.

In one notable example, the Franklin Experimental Club was established in 1890 with the express purpose of providing young aspiring electricians in Newark, New Jersey with practical instruction in science and technology. The brainchild of William H. Hammer, an electrical engineer employed at Thomas Edison's research laboratory, the Franklin Experimental Club featured a complete laboratory outfitted for electrical and chemical experiments exclusively for members' work. Adopting Benjamin Franklin as the club's muse, the venture was financed entirely by Hammer, save for modest contributions from other notables, including inventor Nikola Tesla. By joining the group, Franklin Experimental Club members gained access to private lectures and hands-on instruction provided by visiting inventors, engineers, and other established experts.<sup>35</sup> Moreover, surviving photographs reveal the club's well-stocked laboratory was filled

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<sup>35</sup> William J. Hammer, Franklin Experimental Club Announcement, 10 January 1890; Nikola Tesla to Hammer, 10 June 1891, Correspondence, 1879-1895, William J. Hammer Collection, Archives Center,



**Figure 12:** Photograph of the Franklin Experimental Club, ca. 1890-1892, from the William J. Hammer Collection, Archives Center, National Museum of American History, Washington, D.C.

with rows of workbenches and numerous instruments, which provided its members chances to apply the lessons they gained more directly by conducting experiments of their own (fig. 12).<sup>36</sup>

According to reports in the technical press, a banquet held in honor of the club's first anniversary revealed an elaborate spectacle utilizing various electrical devices built by the few dozen or so club members. A number of engineers, including F. J. Sprague (who installed the first electrical streetcar in Richmond, Virginia in 1887), as well as prominent local politicians and school board officials attended the banquet, which was presided over by a life size bust of Benjamin Franklin who 'talked' with the use of a

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National Museum of American History, Washington, D.C. Paul Israel, *Edison: A Life of Invention* (New York: John Wiley & Sons, 1998), 216.

<sup>36</sup> Franklin Experimental Club, Photographs, Hammer Collection.



hidden phonograph broadcasting wisdom from *Poor Richard's Almanac*. An electric model train circled the banquet table centered in a room lit with, one can only guess, Edison's electric light bulbs. According to reports from the *Electrical World*, "with every course...some strange thing was done by the intervention of electricity," including, at the end of the evening, the release of dozens of flowers from the ceiling thanks to a well-timed electrical switch.<sup>37</sup> In keeping with Hammer's grasp of the promotional power of electrical technology, commentary cast the banquet as an amusing and fitting tribute to the legacy of Franklin and to the efforts of the club members. Unfortunately, the celebration proved a one-time event, for the building housing the club perished in a fire the following year, and with it so too did the Franklin Experimental Club.

Although short-lived, Hammer's Franklin Experimental Club served as one expert's way of encouraging young technologists by establishing a fraternity of boy electricians. In the first decades of the next century, those with similar aims in channeling interest in aeronautics also turned to the creation of boys' workspaces. As with the Franklin Experimental Club, the Junior Aero Club—founded in New York City in 1908—supported boys with budding interests in mechanical flight, by providing locations to learn and discuss the latest advances in aeronautics, to construct and experiment with models, and, eventually, forums to exhibit and test their expertise. Again, as with Hammer's efforts, the Junior Aero Club served its membership with technical guidance from a founder who was also a recognized expert, in this case an airplane inventor.

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<sup>37</sup> "Franklin Experimental Club Dinner," *Electrical World*, 7 February 1891, 100; "The First Annual Dinner of the Franklin Experimental Club," *Electrical World*, 14 February 1891, 111.

As that expert-inventor was a woman, however, the Junior Aero Club challenged the existing gender order in ways the Franklin Experimental Club never did. While girls were explicitly excluded as candidates for club membership (and boys generously defined as those through age twenty-one), Junior Aero Club founder E. Lillian Todd's presence and claims to an inventor's identity proved problematic for many outside observers, suggesting the contested nature of technology, gender, and boys' technical spaces. Whereas women such as Zula Sperry could support boys' efforts by sanctioning private spaces within the home, Todd's efforts to do so publicly while directing the work inside posed serious challenges for those interested in keeping airplanes, and the instruction of boys interested in that technology, thoroughly masculine. Although Todd sought and received the endorsement from the Aero Club of America (a group modeled after the American Automobile Association that governed aeronautical activities and issued the first pilot's licenses in the United States) to establish its junior counterpart, the Junior Aero Club under her direction only invited consternation from outsiders and eventually led to her removal.<sup>38</sup>

E. Lillian Todd first gained national attention after exhibiting an airship and scale models of an airplane she designed at the 1906 Aero Club exhibition. Todd's inclusion

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<sup>38</sup> The Aero Club's endorsement of its junior counterpart naturally extended the parent group's educational efforts to stimulate, in the words of the club's first president, "a proper interest in the possibilities of aeronautics." To this end, the club sponsored lectures for members and, beginning in 1906, aeronautical exhibits in conjunction with the New York Automobile Show. The formation of the Junior Aero Club, then, was in keeping with the parent organization's stated mission and in the words of the Aero Club's institutional biographer E. Lillian Todd was the "guiding power" in the Junior Aero Club's first few years. "Balloon Flying for Young People," *New York Times*, 10 February 1908; "Boy Aeronauts Sail Many Balloons," *New York Times*, 5 April 1908; Bill Robie, *For the Greatest Achievement: A History of the Aero Club of America and the National Aeronautic Association* (Washington: Smithsonian Institution Press, 1993), 47-48; Claudia M. Oakes, *United State Women in Aviation Through World War I*, (Washington: Smithsonian Institution Press, 1978), 10-12; E. H. Phipps, "The Junior Aero Club of America," *Fly*, March 1909, 15. Although it is entirely unclear what prompted Todd's motivation to limit membership to boys, it is possible she deferred to the wishes of the parent organization. In time, the Aero Club would emerge as a key lobbying group for the aviation industry and, until 1926, exclusively license pilots in the United States, but in the first years after its creation in 1905, the Aero Club's emphasis was largely educational.

proved, in the words of one Boston reporter, to be the most “interesting” of the exhibits, while another from the *New York Times* noted, “Miss E. L. Todd of this city” appeared to have invented “a perfect aeroplane.” At a time when Americans viewed flight as a new curiosity, the prospect of a women airplane inventor was perhaps doubly so, making Todd a novelty within an exhibit of novelties.<sup>39</sup>

Commenting on the “wide attention” given to her display, one *New York Times* reporter dismissed her work because it apparently had the “same difficulty” of other airplanes, namely, the “machine won’t fly.” This reporter’s skepticism, however, was balanced by interest from industrialist Andrew Carnegie, who allegedly spent “two or three hours every day in going over the details with the woman inventor” and considered, according to one report, underwriting her efforts to construct a full-sized version.<sup>40</sup> The *Washington Post*, relating a story first appearing in the *New York World*, noted that Todd’s exhibit stood apart from others, most notably a “paper spiral airship” presented by an inventor from Indiana “that brought wrinkled brows instead of understanding.” This ultimately made, in the reporter’s estimation, “Miss Todd’s aeroplane...an unusually attractive exhibit.” Within weeks the *Washington Post* reported that the “invention of Miss Todd has attracted more attention than any other exhibit at the Palace show.” For the editors of the *Boston Daily Globe*, however, Todd’s very presence caused more derision than excitement, for she provided irrefutable evidence that the women “of this age” were attempting to achieve status within “those fields of human knowledge” that

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<sup>39</sup> “Big Throng at the Motor Show,” *Boston Daily Globe*, 2 December 1906; “Many Balloon Exhibits,” *New York Times*, 30 November 1906; “Novel Balloon Exhibits,” *New York Times*, 2 December 1906; Augustus Post, “Something About Aero [sic] Clubs,” *Fly*, November 1908, 10-11.

<sup>40</sup> “Woman Tries Hand at Aerial Navigation,” *New York Times*, 5 December 1906. According to notes from early aviation reporter Elizabeth Hiatt Gregory, Todd eventually received financing from Margaret Olivia Sage (wife of philanthropist Russell Sage) to underwrite the construction of the full scale version of her model. See information relating to Todd in Women in Aviation subject files, Elizabeth Hiatt Gregory Collection, Special Collections, University of California, Los Angeles (hereafter Gregory Collection).

were “formerly enjoyed only by men.” Rather than evidence of her technical ability, Todd’s foray into invention led the paper to wonder: was there “any department of masculine activity which she has not invaded?”<sup>41</sup>

Subsequent reporting on Todd, her invention, and her work with the Junior Aero Club, extended this initial fascination, but also highlighted the difficulties she faced in tempering her identity as a woman and as an inventor that expressly transgressed accepted gender boundaries. Reporters who visited her New York studio commented on the relative lack of “feminine touch[es]” of the space, noting that “‘living room’ and ‘work shop’ are synonymous in her eyes.” The studio’s walls were covered with mechanical models, tools, parts, and other items related to her work, and at least one reporter noted that Todd “throws nothing away” as seemingly useless “tiny wires and bent pins” were safely set aside for some unknown future use. Reporters credited Todd’s unusual ability as a technologist to an “inventive germ” she apparently received from her handy grandfather, which allowed her latitude in fashioning an inventive girlhood, filled with modified mechanical toys and home-built contrivances normally reserved for boys in the popular imagination.<sup>42</sup>

Appropriating the mythology of invention, however, proved considerably more difficult than weaving tales of an inventive girlhood. While reporters found it difficult to

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<sup>41</sup> “Woman’s Work,” *The Washington Post*, 7 December 1906; “Thinks She can Fly,” *Washington Post*, 16 December 1906; “A Woman’s Aeroplane,” *Los Angeles Times*, 20 January 1907; “Alone in Her Class,” *Boston Daily Globe*, 6 December 1906.

<sup>42</sup> “Only Woman Aeroplane Inventor Tells of Plans,” *Washington Post*, 1 November 1908; “A Woman Inventor Who Plans—and Expects—to Fly,” *New York Times*, 28 November 1909. The *New York Times* story was picked up by a number of other prominent newspapers. See, “Inventor Will Pilot First Woman-Made Aeroplane,” *The Washington Post*, 12 December 1909, and “The Only Woman Who Ever Built an Aeroplane Is Awaiting Fair Weather—Then She’ll Fly,” *Chicago Daily Tribune*, 28 November 1909. See also, “Woman has a New Aeroplane,” *New York Times*, 31 July 1908; “Airplane Built by a Young Woman,” *The Atlanta Constitution*, 3 September 1909; “Flying Machines in the Big Garden,” *New York Times*, 26 September 1909; “Aeroplane For a Woman,” *New York Times*, 29 September 1909.

dispute—on the surface—the validity of her claims, Todd was treated as an aberration. In order to preserve accepted understandings of the natural order of girls and women, reporters provided Todd with a dual identity, which allowed for the separation of—in their words—“Miss Todd the woman” from “Miss Todd the inventor.” This bifurcated identity protected the public discourse about masculine invention by rationalizing that her airplane work was guided by her more mannish inventive half, which like all inventors, actual or aspiring, worked in seclusion in a workshop. Described by one reporter as a “little woman” who invented “one of the handsomest aeroplanes in existence,” reports of an imminent public demonstration of her airplane only further piqued reporters’—and, presumably, readers’—interest, but as her invention remained hidden within a tent at the fairgrounds in Mineola, New York, this only enhanced her mystery.<sup>43</sup>

Then, as now, little was known about the specifics of Todd or her inventive work, but the ambiguities of her status affected representations of her Junior Aero Club efforts. The press stressed the uncertainties of her bifurcated gender identity, at once portraying her as a knowledgeable technical expert and a nurturing schoolmarm. One *Washington Post* correspondent noted that the aim of the Junior Aero Club was “to promote interest and to encourage the study of aerial science among young people”; a purpose reinforced by the accompanying illustrations and captions published with the story. In the series of illustrated pictures, Todd, dressed in an ankle-length dress and, when outside, a large hat, guides her young charges through demonstrations of small parachutes, kites, and model airplanes in her studio workshop (fig. 13). Reinforcing the significance of place for encouraging technological experimentation, the accompanying illustrations also reflected

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<sup>43</sup> “A Woman Inventor Who Plans—And Expects—To Fly.”



**Figure 13:** "His first airship," left, and "Teaching the young idea how to fly," from "Only Woman Aeroplane Inventor Tells of Plans," *Washington Post*, 1 November 1908.

acutely the uncertainty of her status as a woman inventor teaching boys about technology.<sup>44</sup>

In the published illustrations, Todd's presence—dressed in an outfit of respectable middle-class domesticity—directly contrasted with the imagined masculinity of an inventor's workshop. Her novelty, however, was on view largely for the reader, as the boys in the picture clearly focused their curiosity on the object under study and never on Todd herself. Quite simply, the illustrator dealt with her status as an outsider, by having the boys ignore her. The image above the caption, "teaching the young idea how to fly," portrays an aged and matronly Todd working on a model surrounded by Junior Aero Club members whose focus is intently, even faithfully, fixed on the model. The caption reinforces this image for it is the "young idea" represented in the model receiving the lesson directly and *not* the boys pictured in the workshop. Another illustration of a

<sup>44</sup> "Only Woman Aeroplane Inventor Tells of Plans."

young boy flying a kite, labeled “His first airship,” features a suddenly more feminized and dramatically younger looking Todd (perhaps “Todd the woman” reporters detected) gazing lovingly at the young aeronaut, but, again, his line of site never leaves the technology. To avert his eyes—and thus his attention—away from the kite and onto an approving Todd might acknowledge her role as a teacher and inventor of airplane technology. It is here the meanings of her gender become most pronounced, as she (with no small assistance from the *Post*’s illustrator) is to serve a dutiful, supportive role. Her youth restored, Todd reemerges as a woman and not a mannish inventor.

Regardless of how Todd was presented in these images, or in photographs seated in ankle-length dress at the controls of a grounded airplane, the Junior Aero Club was a welcome resource for its young members. Through their models, boys participated in the recent developments in aviation and gained access to resources to heighten their engagement with technology. Although little is known of the operations within the club itself, Todd played a much more active role than the *Post*’s profile suggested. By opening her workshop and providing a location for club meetings, Todd assumed the responsibility of guiding and encouraging the construction of models, provided regular lectures, and created a forum where members could discuss, complete, and present their work. At the first public Junior Aero Club event in February 1908, which according to one *New York Herald* reporter was designed “to arouse enthusiasm among boys interested in aeronautics,” Todd promised active participation in instructing and overseeing members’ work at weekly meetings held every Saturday at her West 23<sup>rd</sup> Street “office” that served as her workshop. In addition to Todd’s guidance, members

also benefited from access to adult members of the Aero Club who frequently attended the group's public events.<sup>45</sup>

For Percy Pierce, who was about twelve when he joined the Junior Aero Club, membership provided channels to focus his interest in model building, which in turn allowed him to establish and maintain friendships with other boys to exchange ideas. Purportedly the first boy member of Todd's group, Percy later recalled building his first model airplane sometime in 1906. The crude model, fashioned from egg crates and tracing paper, may have been his first foray into aeronautics, but through the Junior Aero Club, Percy established himself within a small but growing technical community. In addition to nurturing interactions with other boy inventors, Percy gained contact with New York's adult aeronautical community. Within a year of joining the club, he had exhibited examples of his work at aeronautical shows in New York, including the 1909 Aero Club exhibition at Madison Square Garden where he displayed a full-sized glider. According to reports published in his school newspaper, which praised Percy's display of "genius," his classmates and teacher characterized him as "a worthy representative of class 7B" and expected "great things for him in aerial navigation" in the future. Described by one New York reporter as "a small lad" with "remarkable inventive ability," membership in the Junior Aero Club may not have determined his ability, but Todd's guidance and his Junior Aero Club ties nevertheless provided Percy a way to enter the exciting world of aeronautics Francis Collins described.<sup>46</sup>

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<sup>45</sup> Untitled clipping from *New York Herald*, 22 February 1909, The Scrapbook of Percy Pierce, Vol. 1, Lee Renaud Memorial Library, National Model Aviation Museum, Muncie, Indiana (hereafter Pierce Scrapbook, NMAM).

<sup>46</sup> "Percy Pierce," in *Model Aircraft Yearbook*, ed. Philip Zecchitella (Newark, NJ: Twentieth Century Publications, 1937), 58; "A Worthy Representative of Class 7B," *Fordham Height Bulletin*, School Paper, P.S. No. 33, the Bronx, New York, February 1909, Pierce Scrapbook, NMAM; "After School; Boy



Despite the potential benefits that boys like Percy gained from his membership in the club, Todd's uneasy hold on her public status as an inventor only invited closer scrutiny. A report in the *Washington Post* noted that Patent Office employees, though "much interested" in reports of Todd's aeronautical work, flatly refuted claims that she once worked in the office (insisting "no one...remembers a stenographer of that name"). Moreover, Patent Office personnel disputed reports that Todd held patents for several inventions. The ambiguities of Todd's status as an inventor, along with being unmarried and, according one account, a supporter of woman's suffrage, made her an easy mark.<sup>47</sup> The *Boston Daily Globe*, ever direct on subjects relating to Todd, conceded that although American society might be accustomed to having women "morally outfly us," Todd's attempt to do so "physically grows most alarming." "After centuries of effort," the writer opined, "to confine her to her traditional sphere or her domestic reservation...to have her go circling peremptorily above our head is most discouraging." The only solution, this editor reasoned passionately, was to enact "stringent laws" to abolish "flying women" as the last defense of "man's prerogatives."<sup>48</sup>

In calling for legislation, the *Globe's* opinion writer sought a legal solution for the "New Peril." Todd's public status inverted a perceived natural order, and restoring that order required removing her from the workshop and returning her to the confines of the domestic sphere. As Todd's airplane never received its promised public trial, the *Globe's* editorialist was saved from further calls proscribing her behavior, leaving to counterfactual speculation just what sort of reaction a successful demonstration might

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Aviators," *Chicago Daily Tribune*, 25 June 1911; Untitled clipping from *New York Herald*, 17 May 1908, Pierce Scrapbook, NMAM.

<sup>47</sup> "Told in Departments," *Washington Post*, 2 August 1908.; "Short Humorous Stories," *Boston Daily Globe*, 11 October 1908.

<sup>48</sup> "The New Peril," *Boston Daily Globe*, 28 August 1909;

have produced. As for the Junior Aero Club she created, the gender of its membership was never in question, but its leadership was, and by 1909 the Aero Club took over direct control of its junior counterpart, establishing Edward Durant as director and moving its meeting space from Todd's workshop to the Aero Club's headquarters on East 42<sup>nd</sup> Street.<sup>49</sup> The following year, one reporter writing on recent interest in aviation noted confidently—no matter how inaccurately—that the “fair sex” had never “taken an active part in aeronautics in America.” With this statement, Todd's erasure was complete, and she and her airplane quietly drifted into the past.<sup>50</sup>

The change in leadership at the Junior Aero Club coincided with greater public interest in aviation and, by extension, model building. While this raised the potential stakes for commentary on boys' model building, the criticism surrounding Todd was rooted in concerns about gender. In wresting control of the Junior Aero Club, Durant and the Aero Club disentangled the Junior Aero Club from the complications of Todd's involvement. The movement of meeting space to the Aero Club's headquarters merely enhanced its institutional backing and fortified the gendered boundaries for boys' secret meeting spaces outside the home.<sup>51</sup> No matter how novel or dire the popular press

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<sup>49</sup> Edward Durant, “Junior Aero Club of America; Bulletin No. 1,” *Fly*, June 1909, 15.

<sup>50</sup> “A Sport That Reminds Us That We Are Living in an Age of Air,” *New York Times*, 2 January 1910. Todd apparently was not the only woman to teach boys in New York about technology. Mary Lee, described by one reporter for the syndicated “After School” column as “an attractive Virginia girl,” was apparently a recent graduate of Columbia College with degrees in physics and chemistry who taught wireless telegraphy classes to boys—all “youthful Marconis” readers learned—at the Brooklyn Children's Museum. Interestingly, while aimed at “girls and boys...looking for ‘something to do’,” the “After School” column routinely highlighted the adventures of boys. Girls, it seems, were to be content with simply admiring boys' exploits. See, Harriet Gillespie, “After School; Youthful Marconis,” *Chicago Daily Tribune*, 27 August 1911.

<sup>51</sup> Elizabeth Hiatt Gregory, the first woman reporter to work the aviation beat, too, appears to have had difficulty with Durant while attempting to start a lecture series for boys on aeronautics. Gregory apparently turned to Lee Burrige for assistance in recommending possible venues and contacts who might be interested in such a program. Although the details of the plan are unclear, Burrige's written reply noted that for a program dealing with boys and aviation “I would know of no one to recommend except Mr. Durant whom you know so well and so disadvantageously.” Burrige recommended instead that Gregory

portrayed Todd's position as an inventor and mentor, however, she never really posed a serious threat to male control of technology. It was precisely that she was not a man that made her a novelty, and, as with her actions—or at the very least complicity—in barring girls from membership, Todd's involvement merely reinforced the hegemonic masculinity, to borrow R. W. Connell's term, surrounding technology in the early twentieth century. Regardless, shifting the leadership and location to the all-male Aero Club symbolically returned technology—and the instruction of young technologists—to masculine control. By 1910 the number of groups working to encourage boys' model building expanded exponentially, marked by separate efforts by the Young Men's Christian Association, public school teachers, and others. From membership to instruction, these all-male enterprises discouraged girls by withholding the benefits of inclusion. If, as Francis Collins noted, completed model airplanes served as "credentials" for access to model airplane culture—and, if one believes its most optimistic boosters, the world of aviation—girls were left to secure their own visas.<sup>52</sup>

In barring girls and women from directly participating, the various institutions built up around model airplanes reinforced the insular world of masculine interest in technology. But for boys of the cities, adult-led efforts were essential for colonizing places in environs where space—and the control of space—was already a precious commodity. As one adolescent aeromodeler explained in *Fly* magazine, city boys faced acute challenges gaining access to spaces for building, flying, or otherwise sharing their

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seek out the superintendent of New York's public schools for aid with such a program. While in no way conclusive, against the backdrop of Todd and the Junior Aero Club, Durant and the Aero Club held tightly onto their monopoly of instructing boys interested in aeronautics. See, Lee Burrige to Elizabeth H. Gregory, 16 December 1912, Correspondence on Lectures, Gregory Collection.

<sup>52</sup> R. W. Connell, *Masculinities* (Berkeley: University of California Press, 1995); Collins, *The Second Boy's Book of Model Aeroplanes* (New York: Century Company, 1911), 25.

work. Drawing on his own experiences, Morris W. Ehrlich lamented the fact that boys in New York, like himself, had to make do with the “use of the public parks” or “whatever space is available,” be it a backyard or a large room. The problem of space encountered by all city boys was especially pronounced for those who lived in crowded tenements, but the use of public parks was not without its risks. Without special permission, Morris warned, boys chanced citation or arrest “for disorderly conduct or something to that effect,” thus enhancing the benefits of belonging to a model airplane club or similar organization. Membership provided boys the room to build and socialize over models, while also allowing occasional entry to nearby armories or other large indoor spaces set aside for their occasional use.<sup>53</sup> For Morris and others, the challenges of negotiating New York’s urban environment were as vexing as any technical problems, making the maintenance of adult sanctioned spaces an important resource for those boys interested in making and flying model airplanes.

In addition to the Junior Aero Club, the West Side Young Men’s Christian Association also led efforts to encourage boys in New York to start aeromodeling. The West Side YMCA offered classes on model airplane construction and hosted contests (weather permitting) on its athletic field, inside a generous supporter’s private stables, or in the nearby armory at 68<sup>th</sup> and Broadway.<sup>54</sup> Newspaper reports presented the West Side

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<sup>53</sup> Morris William Ehrlich, “Launching a Model in New York; Some Difficulties a City Junior Met,” *Fly*, May 1911, 9-10, 16. According to Lewis Mumford, who grew up in New York at this time, “it was accepted practice on the part of the Central Park Police that they would chase any gang of boys out of the park on the theory, possibly sound, that a gang would probably be up to mischief.” As a result, for Mumford and his friends on Manhattan’s West Side, the “street was our playground.” See his *Sketches From Life: The Autobiography of Lewis Mumford; the Early Years* (New York: Dial Press, 1982), 94-95.

<sup>54</sup> “Model Aeroplane Contest,” *New York Times*, 7 November 1909; “Model Aeroplane Contest,” *New York Times*, 14 November 1909; “Model Aeroplane Contest,” *New York Times*, 28 November 1909; “Dederer’s Aeroplane Wins,” *New York Times*, 16 January 1910; “Trophy for Watkins,” *New York Times*, 30 January 1910. By 1912, several Jewish organizations responded with model airplane programs of their own. It is unclear, however, whether Jewish boys were barred outright or excluded because meetings often took place

YMCA's contests as wildly popular sporting events. Although coverage cast contests as sport, reporters did so within the conventions of inventive boy discourse. At one of the first contests held at the 57<sup>th</sup> Street YMCA, a *New York Herald* reporter marveled at the "[r]emarkable skill" displayed by those many boys who "talk glibly of 'centres of air pressure,' 'lateral stability,' and other technicalities of aviation." Another concluded that such programming highlighted the potential for young "inventive minds...to solve aeronautic problems," which could only result in generating the sort of expertise useful later in life. Although one YMCA official claimed a desire to provide a "thorough working knowledge" of aviation as primary motivation for their programming, in creating programming such as model airplane classes and contests, the West Side YMCA's embrace of model airplanes became the transaction costs to achieving their larger goal of sheltering boys from urban ills. Regardless of motivation, YMCA officials were apparently so impressed with boys' efforts to "invent model airplanes" that they planned a new class teaching the construction and operation of a full-scale piloted airplane by year's end.<sup>55</sup>

The reporting of aeromodeling programs in the city, like all inventive boy commentary, stressed that the hobby was a form of industrial training, which allowed participants to acquire vocational skills that could lead to future professional careers. This logic, as we have already seen, required the conflation of adult engineer-inventors with their boy counterparts and was deftly facilitated by adult observers who rescaled one

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on Saturdays. It is just as possible that leaders of New York's Jewish communities feared risks of Jewish boys' involvement in YMCA programs. See, "Boys to Study Aviation," *New York Times*, 24 March 1912; "Jewish Model Club," *Fly*, August 1912, 25.

<sup>55</sup> "Boys Fly Miniature Aeroplanes of All Types in Competition on Y. M. C. A. Field," *New York Herald*, 7 November 1909, Pierce Scrapbook, NMAM; George W. Wharton, "Y. M. C. A. School of Aeronautics," *Fly*, March 1909, 9; "Youngsters Invent Model Aeroplanes," *New York Times*, 30 January 1910.

to fit the other. The multiplication of outlets for boys to build, study, and fly their models merely stoked the fires of adult enthusiasm, but the dream of future accomplishment as aviator-engineer-inventors also spoke to boys' desires.

For these children, dreams of becoming such technologists served their aims to achieve independence and recognition in the present, which, not surprisingly, were also the same motivations for securing sanctioned workspaces. The excitement of the newest technology represented by their models provided boys with a means to participate in modernity and permitted an imaginative inversion of scale between 'real' boys and 'real' airplanes. Building a working model airplane placed young hobbyists in control over modern technology, but these visions of the future were really attempts to imagine a time when boys could exercise a more complete control over their own lives and destinies. In this respect, participation in flying model contests, possession of home workshops, and membership in model airplane clubs all served as immediate realizations of these desires by allowing boys to fortify visions of themselves as technologists and assert their independence. Each new class, club, or tournament series validated these visions, but for the more resourceful who carefully navigated the openings created by adults, these efforts permitted them the opportunities to transform visions of themselves as aspiring inventors into public identities.

Thus far, this discussion has focused on single spaces, be it workshops in attics or basements or those within clubs and classrooms. In reality, however, boys occupied several places, each with varying levels of adult involvement and influence. For the most adept, such as Percy Pierce, skillful use of space could enhance their experiences with technology. Percy, the fifteen-year old member of the Junior Aero Club mentioned

above, is particularly useful in illustrating how one boy successfully negotiated a crowded cultural landscape and furthered his own interests, socialized with his peers, and gained important encouragement. Far from being determined by the wishes of adults, Percy, and presumably others as well, utilized adult sanctioned spaces to suit his own ends.

### ***Space and Place: Percy Pierce and the Identity of the Boy Inventor***

Although little is known of Percy's home life, press coverage allows for partial reconstruction of his use of adult-sanctioned spaces for his model building efforts.<sup>56</sup> Soon after joining the Junior Aero Club in 1908, Percy became a regular figure at aeromodeling events around the city. Living in the Bronx, Percy attended, but did not compete in, the Junior Aero Club's first contest in February 1908, and, according to reports, his mother encouraged his interest by bringing him to the event. In addition to the workspaces of the Junior Aero Club, Percy maintained similar workshops at home, first in the den of the family's home and, eventually, in the attic. Percy's progressive control over larger spaces within the home signaled evidence of parental support, which also would have joined the financial support required to provision materials needed for his work. While the historical record is wholly silent on the role of Percy's father (or even if his father lived with his son and his mother), fragments of his relationship with his mother suggest that she was generally supportive of her son's pursuits. Still, this

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<sup>56</sup> Percy Pierce appears to have escaped enumeration in both the 1900 and 1910 U. S. population census, making it difficult to reassemble many important details of family life. According to the handwritten captions and newspaper clippings within his surviving scrapbook it appears the Pierce family moved frequently. Between 1906 and 1909, the Pierces lived in the Bronx at no fewer than three addresses, and by 1910, newspaper reports have the family living at 100 Morningside Avenue in Harlem. By 1912, Percy Pierce was living in Philadelphia. See, Pierce Scrapbook, NMAM.

support was not without limits: when he told one reporter of his hope to someday fly in a real airplane, he admitted, “mother won’t let me yet.” To this, the reporter commented, Percy’s “ambition is hindered by his youth.”<sup>57</sup>

While workshop spaces provided important material support for his work, Percy’s spaces also aided in the establishment of an independent technical identity. As all inventors by very definition must have places to work, Percy told one reporter in Boston that he had “a fine workshop in my den,” which allowed him to fortify his claims to an inventor’s identity, but also to a small portion of his boyhood home. Whether requiring additional space, privacy, or both, Percy eventually moved his operations from the den to the attic, and reporting on model building in New York routinely published photographs of Percy busy at work in his attic workshop, which he purportedly “manufactured by himself.” This publicity manipulated the mystique of the boy inventor and bolstered Percy’s claim of being an inventor. As these images appeared outside New York in national and, on at least one occasion, international coverage of American boys’ interest in aeronautics, these reports allowed Percy to enhance his limited fame.<sup>58</sup>

In introducing readers to the inventive boy in his popular model airplane manual, Francis Collins too turned to workspaces and, as it turned out, to young Percy.<sup>59</sup> Indeed, a photograph of Percy in his attic workshop became the prototypical “Young Inventor in his Workshop” (fig. 14). Just as with the models he constructed, the workshop became a

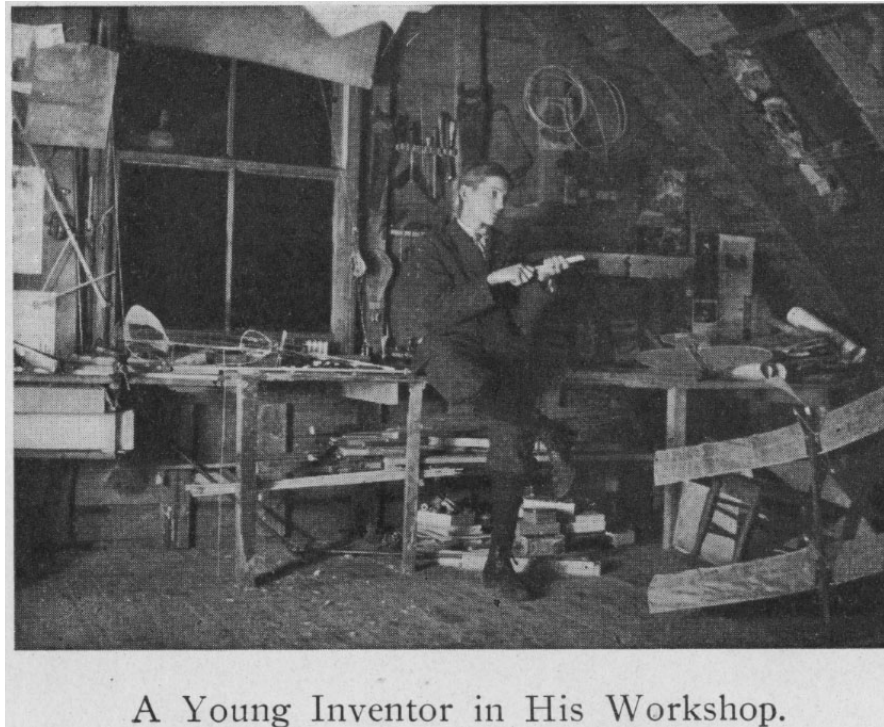
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<sup>57</sup> Untitled clipping from *New York Herald*, 17 May 1908; “How the Junior Aero Club is Competing for the \$100 Prize Offered to the Most Successful Boy Aeronaut,” *New York Herald*, 17 May 1908; “Boy of Fifteen is One of the Wonders at Airship Exhibit,” *Boston American*, 18 February 1910, Pierce Scrapbook, NMAM.

<sup>58</sup> “Boy of Fifteen is One of the Wonders at Airship Exhibit”; “Junior Aero Club,” *Aeronautics*, February 1908, 41; “A Worthy Representative of Class 7B,” Pierce Scrapbook, NMAM. For other published images of Percy in his workshop, see “Young America is Alive to the Important of Aeronautical Matters,” *Automobilia and Flight*, April 1909, and “Boys Building Airships,” *New York Sun*, February 1910, Pierce Scrapbook, NMAM.

<sup>59</sup> “A Young Inventor in His Workshop,” in Collins, *Boy’s Book of Model Aeroplanes*, 14.





**Figure 14:** Percy Pierce pictured as “A Young Inventor in His Workshop,” idealized the independent inventor while emphasizing the importance of reorganizing domestic spaces for the work of inventive boys. Photograph from Francis Collins, *Boy’s Book of Model Aeroplanes*, 14.

physical artifact of one boy’s inventive imagination. In the image, Percy is posed leaning against his workbench, casting his field of vision outside the camera’s frame.

Surrounded by examples of his past work, the photograph’s composition suggests Percy’s possible plotting of his next project, as he leans, holding a block of wood in one hand and a carving knife in the other. Short pants connote his young age, but the photograph captures Percy in a moment of mature contemplation. Alone in his workshop surrounded only by his work and thoughts, the image invokes the cultural ideal of the independent inventor. Together, Percy becomes the very model of the boy inventor and his workshop a haven for creativity. Books line the small shelf beneath the cluttered workbench and on the walls hang tools, building materials, partially constructed frames for models, along with drawings, posters, and newspapers clippings—including one full page story about

Orville and Wilbur Wright, the quintessential inventive boys. Collectively these items serve as both sources of inspiration, but also—for outside observers—evidence of Percy's status as a creator of airplane technology.

Within his attic workshop, placed in a space of the house Gaston Bachelard views as ideal for creative expression, Percy's role as producer is reinforced by the presence of the exposed rafters; this place of productive contemplation seemed born out of a desire to ponder the nature of construction and design. In writing an article on "Boys who Fly," *American Boy* writer F. W. Splint took readers on an imaginative tour of Percy's by now well-publicized workshop. Atop the highest level of the house, Splint described, Percy's workspace as "an absorbingly interesting place," a "big high room" running the entire length of the house that was filled with models "of all sorts."<sup>60</sup> Drawing on the potential of inventive boys, Percy's presence transformed an ordinary and useless attic into a productive workspace, while Splint's recognition of him signaled Percy as a boy worthy of others' emulation and admiration.

Splint's description admiringly cast Percy's workshop as a mysterious and wondrous space, but as an outsider he failed to grasp Percy's personal attachment to his workshop. As the human geographer Yi-Fu Tuan suggests, place and space are relational concepts, wherein place is space ordered according to personal experience. Barring such personal experiences, however, we are left with nothing but mysterious, free space.<sup>61</sup> As a result, Collins' photograph speaks only to the perspective of the outside observer. Percy, pictured in repose, held a deep personal connection with his workshop space. It is here, where his roles as consumer, builder, designer, and producer of model airplanes

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<sup>60</sup> Bachelard, *Poetics of Space*, 18; F. W. Splint, "Boys Who Fly," *American Boy*, July 1910, 295.

<sup>61</sup> Yi-Fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977).

were elaborated. Unfortunately, once we shift the perspective from Percy's experience to the camera's lens, space replaces place, and reveals the photograph's (and the historical record generally) silence on the meaning of his workshop as *his* place. Instead, Collins' photograph (and Splint's description) position Percy as a feature of the workshop, as still and silent and mysterious as the rafters, the wood floor, the workbench and the model airplanes positioned in the photograph in various stages of completion. While suggestive of Percy's subjective experience, Percy's static pose constructs *him* as an object.

Regardless of the difficulties in capturing what it was like for Percy in the attic, the physical independence it provided from the rest of the home, also spurred at least some limited degree of financial independence. By 1910, when Splint wrote his article for the *American Boy*, Percy had purportedly built over fifty models in the previous year, which, through their sale, provided a limited but steady stream of income. Admiring Percy for possessing a "mechanical genius [that] is phenomenally well developed," Splint also noted that Percy routinely sold many models of the airplanes of famous aviators, but also of his own design. Working after school and on Saturdays, Splint reported that Percy "has made such a reputation for his machines that he has more orders for models than he can fill."<sup>62</sup> While merchants throughout New York responded to the "growing demand" for models by creating "attractive window display[s]" of the various types of model airplanes for sale, Percy, in another report, also did "considerable business" from his operations in the family home. As if to signal the final transformation of the attic into productive masculine space, one commentator reenvisioned the space into a "factory" where Percy turned out models between one and five feet in length that were "guaranteed to fly." While one reporter noted that Percy's "business has already reached considerable

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<sup>62</sup> F. W. Splint, "Boys Who Fly," *American Boy*, July 1910, 295.

dimensions,” another concluded favorably that he “has perhaps done more in a commercial way...than any other boy.”<sup>63</sup> By summer’s end in 1911, Percy had already licensed designs for his “Percy Pierce Flyer” to one New York firm. That same year, Percy gained additional financial success when some of the models he designed were offered as prizes to boys who sold annual magazine subscriptions. And just as with all inventors (both real or imagined) he continued to refine his designs and market new ones from his home in New York, and by 1912, in Philadelphia (fig. 15).<sup>64</sup>

Percy’s fame, however minor, seemed fitting to contemporary commentators given his achievements. After winning his first model contest in 1910, Percy won over two dozen local, regional, and national meets over the next three years and, in so doing, established a number of record-setting flights. Percy’s talents were not simply as a competitor, nor solely as a technologist, for he was able to increase his position by adopting a social strategy in which he gained access to a number of groups in the New York metropolitan area. Regardless of whether this strategy was entirely conscious or calculated, it nonetheless successfully opened doors by adults who either responded favorably to Percy personally or respected his abilities and potential, which proved essential to extending his reputation as a recognized (and even recognizable) expert.

Percy’s ties with the Junior Aero Club, first through E. Lillian Todd and then through Edward Durant, led Percy to accompany the club’s exhibit at the Aerial Craft Exhibition in Boston as Durant’s guest. Durant, in effect, placed Percy on display right

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<sup>63</sup> “Y. M. C. A. Youths in New York Show Aeroplane Models,” *Christian Science Monitor*, 9 November 1909; “After School; Boy Aviators,” *Chicago Daily Tribune*, 25 June 1911; [untitled article], *Boston American*, 19 February 1910, Pierce Scrapbook, NMAM.

<sup>64</sup> See the following in Pierce scrapbook: “Percy Pierce Flyer” advertising circular [ca. September 1910]; “Racing Models Aeroplanes for Boys,” Premium Circular, *Farm Journal* [1911]; “Boys! Build A Toy Airship that Will Fly,” *Youth’s Companion*, 13 June 1912. For a fuller discussion of magazine premiums, see chapter five, this volume.



**Figure 15:** Cover of assembly instruction for one of Percy Pierce’s record-setting models, the “Percy Pierce Racer No. 68” [ca.1912]. Image from Pierce Scrapbook, National Model Aviation Museum, Muncie, Indiana.

alongside the examples of his work, and one *Boston American* reporter labeled Percy a “boy wonder.” Similarly, Percy’s adult relationships gained invitations to demonstrate his models between the flights of airplanes piloted by famous aviators at exhibitions in New York and New Jersey. That same year, 1911, Percy advanced the public recognition of his expertise by providing lectures and penning a number of articles for newspapers and periodicals on model aviation and model airplane construction. By the end of 1911,

Percy became the model editor for technical magazine *Aeronautics* and gave lectures before the Aeronautical Society. During one lecture and demonstration for the YMCA in New Britain, Connecticut, Percy recalled in the margins of his scrapbook that “fully 2,000 people” attended the event. With automobiles flanking each end of the driveway, “Boys swarmed...making it difficult to fly.” Of the experience, Percy later remarked, “I never experienced such large attendance as was at these flights.” The boy inventor moved from being an established expert to a regional celebrity.<sup>65</sup>

In addition to the spaces offered by his mother, the West Side YMCA, the Junior Aero Club, and the New York Model Aero Club (another club created by Durant with more rigid membership requirements in 1910), Percy also received welcome encouragement and training at Stuyvesant High School. Stuyvesant High, which was established on New York’s Lower East Side in 1904, was a testament to John Dewey’s educational philosophy and aimed to combine training in the industrial arts with teaching in more traditional academic subjects. The curriculum, which was designed to prepare boys with interests in technology for the rigors of future college training in engineering

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<sup>65</sup> “Percy Pierce,” *Model Aircraft Yearbook*, 58; “Model Aeroplane Record,” *New York Times*, 4 December 1910; “Model Aeroplanes Compete,” *New York Times*, 19 March 1911; “A New Model Record,” *Fly*, February 1912, 24; Edward Durant, “Junior Aero Club of America; Bulletin No. 3,” *Fly*, August 1909, 13. “Boy Aviator and Type of Biplane Seen at Show,” *Boston American*, 18 February 1910, Pierce Scrapbook; “Airship Show Surprises All,” *Boston Daily Globe*, 17 February 1910; “The World’s Aeroplane Models,” Program for the *New York World’s* Model Exhibit, Grand Central Palace, December 1910; Program, First Annual Banquet of the Aeronautical Society, April 27, 1911; International Aviation Tournament Program, 1911, Pierce Scrapbook, NMAM. On Percy’s public demonstrations, see Collins, *Second Boy’s Book of Model Aeroplanes*, 16; “Junior Aero Club Flights,” *New York Times*, 5 August 1910 and “Y. M. C. A. Boys Break Camp in Jersey,” *New York Times*, 24, August 1913. On lectures and publications, see the following clippings in Pierce Scrapbook, NMAM: [untitled] *New York Herald*, 16 January 1910; [untitled] *New York Tribune*, 16 January 1910; “Aeroplane For Boys,” *New York Sun*, 12 December 1909; [Percy Pierce], “Model Hydroplaning the Newest Sport for Boys,” *New York Herald*, 17 September 1911; Percy Pierce, “The History of Model Flying in America,” The Aeronautical Society General Meeting, 9 November 1911, Program Announcement; Pierce, “Model Notes,” *Aeronautics*, December 1911, 208; Clippings and notations for YMCA talk in New Britain, Connecticut [n.d.].

and the sciences, was based, according to one school official, on the idea that “manual training should supplement and not supplant thorough academic training.”<sup>66</sup>

Stuyvesant High, as fellow student Lewis Mumford later recalled of his own experiences at the school, was staffed with recent graduates of some of the country’s most serious research universities such as Cornell, Chicago, Wisconsin, and others. As a result, Stuyvesant’s instructors “were stirred up over their subjects and...would break into their routine demonstrations in physics with a hint of exciting scientific news that would not for a decade or more penetrate the textbooks.” This passion for science and technology, Mumford added, was felt at all levels, creating an atmosphere where faculty and students alike were universally “excited about science.” Admiring the scientific and mechanical offerings—including instruction on turning wood and metal, and lessons in casting, forging, and pattern making, classes in carpentry and mechanical drafting—Mumford also praised the rigorous academic offerings. As Mumford recalled, Stuyvesant’s instructors showed genuine interest in him, which proved more important than classroom instruction for they provided lessons in “what mattered”; namely crucial encouragement and a constant source of “stimuli.” While it is impossible to know for certain if Percy Pierce’s experience was anything like Lewis Mumford’s, he, too, likely found his years at Stuyvesant “a stimulating and rewarding experience.”<sup>67</sup>

In addition to the rigorous academic environment, which included study in mechanical drawing that would have immediately benefited his model design work,

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<sup>66</sup> Hertz, *Complete Book of Model Aircraft*, 241; “New York Model Club,” *Fly*, January 1911, 18; J. Gerald Cole, “A History of the Stuyvesant High School, 1904-1911,” 16, published in Stuyvesant High School’s yearbook, “The Indicator,” 1911, New York Public Library, New York, New York.

<sup>67</sup> Lewis Mumford, “A New York Adolescence: Tennis, Quadratic Equations, and Love,” *New Yorker*, 4 December 1937, 86-94, reprinted in *Sidewalk Critic: Lewis Mumford’s Writings on New York*, ed. Robert Wojtowicz (New York: Princeton Architectural Press, 1998), 40-51 (quote on pages 44-45); Donald L. Miller, *Lewis Mumford: A Life* (Pittsburgh: University of Pittsburgh Press, 1989), 34; Mumford, *Sketches from Life*, 98, 101

Percy also gained additional avenues of encouragement and support. According to the *Caliper*, Stuyvesant's student newspaper, in March 1910 the Stuyvesant Aeronautical Society was established for students interested in aeronautics. With a member of the school's woodworking faculty serving as the club's sponsor and faculty advisor, the society maintained a stringent membership policy, restricting membership to just fifteen students deemed eligible by a "committee elected by the society." Unlike model airplane advocate Francis Collins' claim that aeromodeling was "democratic," this committee withheld membership from all but those "who can give a satisfactory proof of their interest in the subject and their ability." For those select boys, the administration granted access to the school's gymnasium for practice flights and a room for the club's weekly after school meetings. With Percy becoming the club's first secretary, the group's restrictive membership policies merely echoed the professionalization of engineering by reinforcing the existence of a technological elite.<sup>68</sup>

In highlighting the work of the Stuyvesant Aeronautical Society, one *New York Times* reporter commented that the rules for qualification for membership were "surprisingly strict," because rules required proof that an aspiring "young aviator...be able to design and build an aeroplane, but he must be able to explain the principles involved in its construction to the satisfaction of the committee." Strict requirements for membership meant that by the end of the club's first year, the Stuyvesant Aeronautical Society only had nine members.<sup>69</sup> For boys like young Lewis Mumford, who expressed interest in aviation by building a miniatures of the famed Wright Flyer—which were, he admitted, "clumsy models...that would never fly in the air and would hardly even stay

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<sup>68</sup> "The Aeronautical Society," *Caliper*, March 1910, 15, NYPL.

<sup>69</sup> "Schoolboys Learn to Make Air Ships," *New York Times*, 24, April 1910.



glued together in repose on my bedroom table”—there was simply no place in the Stuyvesant Aeronautical Society, the New York Model Aero Club, or other groups that stressed a demonstration of prior knowledge before joining.<sup>70</sup> Until such requirements were met, they were simply on their own.

### ***Containing the Boy Inventor***

If, as one *New York Times* reporter observed, the popularity of aeromodeling proved “we are living in an Age of Air,” then boys like Percy represented the future (while others like young Lewis Mumford served as the citizenry of a more grounded age). As the boy inventor’s work improved solely as the “result of the experiments necessitated by...competition,” this evidenced the “alertness shown by the lads in catching the true idea of mechanical flight.” Competition and displays of merit, not egalitarianism, would be the key to future development. Far exceeding the confines of New York, aeromodeling’s popularity in other large urban centers around the country, the reporter predicted, suggested that the movement would soon spread across the United States.<sup>71</sup>

F. W. Splint’s article on “Boys Who Fly,” published in the *American Boy* in 1910, also expressly admired those “lads” heroically “studying the science of aviation,” and wondered if any other country had “taken up the science of aviation as generally or systematically.” Boys’ carefully planned and executed experiments (using the “most systematic and scientific care”), Splint held, extended the work of the past into the future. Encouraged by the example of twenty-year-old Alfred Morgan—who started building kites and models at age fourteen and was currently overseeing the construction of a real

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<sup>70</sup> Lewis Mumford, “A New York Adolescence,” 40-41.

<sup>71</sup> “A Sport that Reminds Us We are Living in an Age of Air,” *New York Times*, 2 January 1910.

powered airplane between classes at the Massachusetts Institute of Technology—Splint outlined a similar trajectory for all boys, whereby kites gave way to models, gliders, and, eventually,—as with Morgan—a powered airplane. Morgan, who hailed from New Jersey, was just one of several boys in and around New York already studying aeronautics who was ready to move “well beyond the preliminary stage and are trying to solve the problems that confront the older aviators.”<sup>72</sup>

Splint and others hoped boys would graduate from flying models to greater accomplishments as they became older and more experienced, but many boys, it is worth stressing, similarly accepted this vision as their own. For one Washington, D.C. sixteen-year-old the attraction to airplanes in miniature was primarily economic, because boys “could not afford a real one.” Models, like adolescence, were a temporary stop towards greater ambitions. Almost as if the eventual movement to a full-scale version was a foregone conclusion, sixteen-year-old Robert Gannett was quick to note, “most boys were not contented with making use of the ideas of the real machines, so quite a few have made successful models of their own.” Acknowledging the work of the Junior Aero Club, Robert felt that the real reason for sponsoring contests and exhibits was “for the advancement of ideas concerning aeroplanes” by providing an opportunity “to determine which boy has put his ideas to use in the best manner.”<sup>73</sup>

The pages of boys’ periodicals routinely filled with instructions on models, but also advice on building full-sized gliders that carried promises that “any boy of average intelligence can...build a glider.” In one column, readers learned that directions for

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<sup>72</sup> F. W. Splint, “Boys Who Fly,” *American Boy*, July 1910, 280-81; 295. According to reports, students at universities with strong programs in engineering were also already at work on constructing airplanes. See, “Aero Club at Michigan to Build Hydroplane,” *New York Times*, 29 December 1912; and, “Tech Boys Want to Fly,” *Boston Daily Globe*, 23 October 1910.

<sup>73</sup> Robert Gannett, “Aeroplane Building For Boys,” *The Washington Post*, 4 June 1911.

constructing a person-carrying glider printed in a magazine inspired two brothers to commit to building their own glider over summer vacation. Fifteen dollars worth of materials and three weeks worth of work allowed the pair to complete a craft that was, in their words, “a beauty.” Clearly proud of the result of their efforts, the boys assured readers that if they could do it, “anybody can.”<sup>74</sup> Aspiring inventor and engineer Charles Hampson Grant constructed his own full-scale glider in 1910, making him, at fifteen, the first in the state of Vermont to fly in a person-carrying craft.<sup>75</sup> But while the design and construction of models was one thing, the prospect of building a real glider was something altogether different. Boys who attempted to do so not only tested the limits of their technical abilities, they also strained the limits of parents’ willingness to endorse these activities. And as boys, such as Lawrence Sperry soon discovered, the independence of workshop spaces was not total and in fact had defined limits, no matter how unclear its boundaries may have seemed.

From his family’s home in Brooklyn, Lawrence was centrally located to observe the developments in aeronautics—model or otherwise—and he too thought he saw his future in the air. Although it is uncertain if he ever built models, if he shared anything with his fathers’ technological style, which—according to Elmer Sperry’s biographer—favored striking analogies and physical models to mathematical ones, the combination of Lawrence’s roving technological interests and his close proximity to the junior

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<sup>74</sup> Harold S. Lynn, “How To Build a Glider; What Boys Can Do in Aeronautics,” *American Boy*, March 1910, 159; “After School; Two Young Aeronauts,” *Chicago Daily Tribune*, 22 October 1911; “Monoplane Glider Built by Boys,” *Fly*, February 1911, 8. As a boy, Jimmy Doolittle too recalled constructing a model based on instructions published in *Popular Mechanics* sometime in 1910 or 1911. After several mishaps in his glider, and a lack of money, he aborted efforts to construct a powered monoplane. See, “The Reminiscences of James Harold Doolittle” (April 1960), p. 2, Oral History Collection of Columbia University, New York, New York.

<sup>75</sup> Charles Hampson Grant to Willis C. Brown, 27 May 1965, Charles H. Grant Biographical Materials, Academy of Model Aeronautics History Program (hereafter AMAHP), National Model Aviation Museum.

aeronautical activities around New York make it probable that he did.<sup>76</sup> What is clear, however, is that sometime during the summer of 1910, Lawrence Sperry and his younger brother Elmer Jr. set to work on what would be Lawrence's most ambitious project to date: the construction of a full-scale gliding airplane. As various members of his family later recalled, Lawrence had become increasingly interested in the developments of airplanes in the past year. And with most of the family vacationing at the seashore for the week and his father was away in Europe on business, the two brothers took the opportunity to realize their plans by transforming the family's Flatbush, Brooklyn home into an airplane factory.

Zula Sperry's absence meant that the Sperry boys' technological pursuits were no longer confined to the basement or attic workspaces. In effect, their mother's absence removed the last remaining levees and the two boys' passions for tinkering quickly became a deluge that flooded all levels of the family home, resulting in the complete destruction of the home as a site of genteel, domestic consumption. Lawrence disconnected the steam line from the basement furnace in order to fashion a steam box, which after several hours' treatment, made wooden wing spars pliable enough to bend. The adjacent laundry room served as a staging area for the formed ribs to dry, before the boys carted the ribs upstairs to the attic assembly area where the wings for the new craft took shape. Downstairs, bedrooms became workrooms, where the job of making the wings' fabric covering began. Having assembled the large wings in the attic, Lawrence and Elmer Jr. discovered they had not anticipated problems moving the frames from the attic assembly room, which led the pair not to disassemble their work, but rather to remove the banister from the front stairs and demolish part of the wall to create the

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<sup>76</sup> Hughes, *Elmer A. Sperry*, 159, 161.

necessary clearance. Efforts to accelerate drying time of the dope on the fabric wing covering by firing the now dry furnace also proved costly, resulting in a cracked furnace by week's end. Final assembly of the biplane then moved to the backyard. When the family arrived home from their vacation, they found the house in shambles and Lawrence, according to one biographer, triumphantly displaying the efforts of his week's work behind the now battered house as a partial justification for the collateral damage caused "in the name of technological advance."<sup>77</sup> Unfortunately, we can only imagine whether Zula Sperry shared her son's pride in the accomplishment.

While certainly used to his schemes, Lawrence's plans to modify his glider by installing a gasoline engine power plant the following year caused great concern for his parents. As the family soon discovered, Lawrence enhanced the secrecy of work by establishing a separate workshop in an unused stable at a nearby racetrack where he tested his glider by towing it behind the family car. After convincing the racetrack's owner to grant him the use of the space to use as an improvised workspace, Lawrence purchased a second-hand Anzani radial engine from a French concern for \$800, which he pulled—incredibly—from the proceeds of his repair business. The plan, at least until his parents got wind of it, was to recoup the money through flying demonstrations at the racetrack, which Lawrence, naturally, would perform himself. Before his plans were put into effect, Lawrence's school report card for the term revealed his deception and his truancy as he had been ditching school to work up to ten hours a day on the airplane. His father expressed dismay in his son's "extreme interest in aeronautics," but the engineer in him quietly acknowledged that his son was "a boy of marked ability" who "has done a remarkable work in that aeroplane." Still, Lawrence's enthusiasm for aviation had

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<sup>77</sup> Sperry Jr., *Notes*, 15-16; Lea, "Zula Goodman Sperry"; Hughes, *Elmer A Sperry*, 179-180.

violated his parents' trust and, by moving his work outside the boundaries of the workspaces sanctioned by his parents, his transgression exhibited too much independence. Accordingly, his parents exercised their ultimate authority by restricting Lawrence from any further access to his technical spaces and shipping him off to a boarding school in Arizona.<sup>78</sup>

As the case with Lawrence Sperry illustrates, the boundaries of boys' sanctioned technical spaces were, in the end, defined not wholly by boys, but by adults. Disagreements over space became metaphors for discussing boys' independence generally. Through these various technical realms, boys, such as Lawrence and Percy, negotiated their relationships with adults both inside and outside the home and forged separate identities as technologists. External recognition, however, also meant internal control, and regardless of the sometimes-remarkable degree of independence exhibited by boys, it was adults—not boys—who ultimately policed its limits. While boys played key roles in elaborating the meanings of workshop spaces, their agency was finite.

Whereas advice writers portrayed boy inventor's productive spaces as entirely masculine (and as evidenced from the Tom Swift novels, almost monolithically so), women, be it Lawrence's or Percy's mothers, or E. L. Todd, served perhaps a more important role in creating workshop spaces than any such writers allowed. While cultural norms tended to minimize women's contributions, in reality women played important

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<sup>78</sup> Sperry Jr., *Notes*, 16-17. Preston R. Bassett, *Long Island Cradle of Aviation* (Amityville, NY: Long Island Forum, 1950), 10-11, and *Elmer A. Sperry and his Sons, Edward Goodman Sperry and Lawrence Burst Sperry: A Brief Biography* ([Ithaca, NY: Cornell University], 1966). For Elmer Sperry's reactions to his son's airplane, see Elmer A. Sperry to H. H. Wilcox, 3 August 1911, Sperry Children, Personal Papers, Sperry Papers. Lawrence, apparently undeterred, wrote his parents the following year explaining that after graduation he was determined to "enter the aeroplane business" after he graduated high school. His parents capitulated and he joined his father's company upon his return and eventually developed gyroscopes for use in airplanes. See, Lawrence Sperry to Elmer and Zula Sperry, April 1912, as reprinted in Institute of Aerospace Sciences, *Young Men in Aeronautics: A Twenty-year Progress Report of the Lawrence B. Sperry Award* (New York: Institute of Aerospace Sciences, 1957), 14-15.

roles in establishing, maintaining, and policing (by either sanctioning their construction or withdrawing their support) the dimensions of boys' masculine places. Nevertheless, the freedom (no matter how limited) such places provided allowed boys to situate themselves within a changing cultural landscape and, as the example of Percy Pierce reveals, construct simultaneous identities as consumers, producers, inventors, and even entrepreneurs and minor celebrities.

Inventive boy discourse and the creation of boy inventor's spaces collectively called for a reevaluation of the potential of children's play. Not coincidentally, an emerging model aviation industry recognized the opportunities represented by the changing meaning of leisure and the potential profits in catering to boys' enthusiasm for aviation. In catering to this new market, manufacturers—from small makers such as Percy Pierce to larger firms operated by adults—sought to package the productive experience into a single consumer good: the construction kit. The construction kit straddled the worlds of consumption and production and, in time, set the conditions for the transformation of hobby work in leisure into a mass consumer cultural experience. Just as the imperatives of enclosure, order, and rationalization drove the places where aspiring inventors labored, the construction kit would eventually transform how.

## CHAPTER THREE

### Packaging Modernity: Towards an Ecology of the Aeromodeling Hobby

*There never was a mechanical field which held so much fascination for boys... that model building and flying has not surpassed. There can be no doubt that all its effects are beneficial, not only to the brains and hands of the model builder but to those leaders in the aviation world who welcome suggestions by model experimenters.*

Joseph Lucas, 1922<sup>1</sup>

*There is no thing more interesting to the average boy of mechanical inclinations than the model aeroplane.*

[William B. Stout], 1912<sup>2</sup>

Reading Lewis H. Hine's photograph "Two Boys with Model Airplanes" is an exploration of contrasts; and not solely because its subject is so starkly different from those emotionally-stirring images captured for the National Child Labor Committee (NCLC)—of children at work and play on street corners and inside mills, mines, and factories—that made Hines famous (fig. 16). In the picture, a boy with shortly cropped hair stands, in the background, at a cluttered workbench; his work largely obscured by

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<sup>1</sup> Joseph Lucas, "The Illinois Model Aero Club," *Aerial Age Weekly*, 22 November 1922, 257.

<sup>2</sup> Jack Kneiff [William B. Stout], "High School Aeronautics," *Aerial Age*, November 1912, 15-16.





**Figure 16:** Louis W. Hines, “Two Boys with Model Airplanes,” (n.d.), George Eastman House, Syracuse, New York.

his companion who leans upon the table. Both figures wear shirts and ties, but the clothing of the boy in the foreground appears snug, slightly ragged from age and use; those worn by the other boy seem instead to billow, fold, and twist around his small frame.<sup>3</sup>

The paper covering the biplane on the workbench—a scale version of a de Havilland DH-4—seems as wrinkled as the constructor’s clothing.<sup>4</sup> The overall makeshift quality of the work—rumpled paper skin, slack thread riggings, slightly uneven ailerons, and a conspicuously lopsided wood piece mounted at the front of the

<sup>3</sup> Lewis H. Hines, “Two Boys with Model Airplanes,” ca. 1920-1940, [85:0094:0005], Still Photograph Archive, George Eastman House, Syracuse, NY.

<sup>4</sup> Ideal Aeroplane & Supply Co. [New York], “How to Build an improved ‘Ideal’ De Havilland (DE H-4) Battle and Mail Plane,” instruction booklet, 1926, private collection of Chester Hubbard, Horsehead, NY (hereafter Hubbard Collection). Ideal, founded in 1911, was the leading producer of model airplane kits in the United States before the 1930s. For a more complete listing of American (and some European) model airplane and flying toy-making firms, see Louis H. Hertz, *Complete Book of Model Aircraft, Spacecraft, and Rockets* (New York: Bonanza Books, 1967), 197-230.

fuselage—stand out markedly from the manufactured-neatness of the components—rubber-tired wheels, straight axle, and other metal fittings—that accompanied the construction kit. Parts, tools, and materials litter the table in the photograph’s lower right hand corner. Drawings and plans paper the wall behind the workbench, which also serves as storage for models in various stages of completion.

Hanging on the wall between the two figures, a completed version of a “Cecil Peoli Racer” first produced as a construction kit in 1912, but still extremely popular in the mid-1920s when the photograph was likely taken. The rudimentary, flat twin-fuselage design of the Peoli Racer was strikingly different from the miniature biplane emerging on the table, sharing more with Alphonse Pénaud’s 1871 *planophore* (see fig. 2) than with the de Havilland biplane that saw military service during the Great War and transported mail once hostilities ceased. Still, upon completion the tiny DH-4 would have never flown as well as the Peoli Racer hanging in repose on the wall. Old technologies and new exist simultaneously in the image, offering competing visions of modernity: one stressing function and performance; the other, aesthetics and scale replication.

If Hines’ decade-long work for the NCLC portrayed the youngest victims of industrialization, then “Two Boys with Model Airplanes” suggested instead its beneficiaries. But his photograph did more than simply capture a moment in a popular middle-class leisure hobby. Rather it hints to the existence of an ecology of practice surrounding aeromodeling in the early twentieth century. This ecology, formed materially by construction kits and printed instructions, tools, wood, and building components, framed the experiences of individual users interested in building model

airplanes. As in the natural world, this ecology meant more than just things and comprised individual actions as well. The tacit knowledge gained by individual users who interacted with materials and instructions during the assembly process formed just one link in the chain of social practices involved in making models.<sup>5</sup> Construction kits became popular in the early 1910s, but these products remained a single path towards production. Others, such as building advice published in periodicals and book-length manuals, or those lessons received more directly from peers and adults, profoundly influenced not just what hobbyists produced, but how. The two boys in Hines' photograph made series of decisions—realistic scale models over speedier, long-distance performance types; construction kits over improvised scratch building—but when countless others faced these choices they often arrived at altogether different conclusions.

In moving from the models hanging on the wall in Hines' photograph to those forming on the workbench this chapter ventures into the workshops described previously in order to draw attention to the operations within. This task remains more easily said than done. Fragmentary evidence makes capturing boys' decision-making while constructing models a challenge, but by focusing on the range of practices that framed their operations, it is possible to sketch the world boys constructed and highlight how competing visions of consumption and production coexisted in the hobby.

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<sup>5</sup> This 'ecology of practice' departs from Arthur F. McEvoy's description of "working environments" and moves into the realm of tacit knowledge. See, McEvoy's "Working Environments: An Ecological Approach to Industrial Health and Safety," *Technology and Culture*, 36, no. 2 Supplement: Snapshots of a Discipline: Selected Proceedings from the Conference on Critical Problems and Research Frontiers in the History of Technology, Madison, Wisconsin, October 30 – November 3, 1991, (April 1995): S145-S173. On tacit knowledge, see, Michel de Certeau, *The Practice of Everyday Life*, trans. Steven Rendall (Berkeley: University of California Press, 1984); Clifford Geertz, *Local Knowledge: Further Essays in Interpretive Anthropology*, 3d ed. (New York: Basic Books, 2000); Anthony F. C. Wallace, *Rockdale: The Growth of an Industrial Village in the Early Industrial Revolution* (New York: Knopf, 1978); Douglas Harper, *Working Knowledge: Skill and Community in a Small Shop* (Chicago: University of Chicago Press, 1987); Julian E. Orr, *Talking About Machines: An Ethnography of a Modern Job* (Ithaca: Cornell University Press, 1996).

In mining the instructions, advice, and products created by—and for—young hobbyists, this chapter shines light on the technical and social challenges confronting the amateur model maker's world. Central to these operations was how conflicting ideas of value in technical craft hobbies—in terms of education and in strictly monetary terms—hovered in the visions offered by hobby advocates, practitioners, and commercial suppliers. And in raising the prospect of shopping as a technical skill, this chapter shifts from what users built to how they built them, bringing attention to the influence of flying contests, model airplane clubs, printed construction advice and kits, and ideas about modernity. In the process, this chapter unpacks the ecology of practice wherein boys realized their consumer desires by becoming shoppers for, and ultimately producers of, model airplanes.

***“Purely Sporting Models”: Aeromodeling as Craft and Sport***

Demand for flying toys and model airplanes seemed insatiable in 1910, and with newspapers filled with word of the latest technical developments in aviation or the daring feats of aviators and exhibition pilots, this trend seemed certain to continue. New York's F. A. O. Schwartz, arguably the nation's premier toy emporium, stocked rudimentary flying tops and rubber band-powered helicopters for as little as a quarter in time for the traditional Christmas toy-buying season. In addition to these toys for young children, the retailer also offered pre-constructed airplane models of varying qualities priced from fifty-cents to a budget-breaking thirty dollars for one model measuring six feet long.<sup>6</sup>

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<sup>6</sup> F.A.O. Schwartz [New York], “Grand Christmas Exhibition,” p. 16, advertising circular, 1910, oversize materials, Toys, Games, and Hobbies, Warshaw Collection of Business Americana (hereafter Warshaw Collection), Archives Center, National Museum of American History, (hereafter NMAH Archives) Smithsonian Institution, Washington, DC. The creation of a retail toy season around celebrations of the

The range of store-bought offerings spoke to the strength of demand, but the “live, ingenious modern boy,” as *Youth’s Companion* magazine imagined him in 1910, proved little satisfied with “ready-made” models and preferred instead “to **work out his ideas**” by constructing these machines from scratch at home. His hobby his passion, the enterprising and “ambitious boy” who undertook this work used materials “few and inexpensive” and gained valuable lessons in working with tools, while becoming intimately familiar with the airplane terminology—including “centers of pressure,” “lateral stability,” “dihedral angle,” among others—that pattered his conversations.<sup>7</sup> “There is hardly a boy,” one fashionable women’s magazine proclaimed in April 1911, “who, as he reads of the daring feats of the Wrights, of Bleriot, of Curtiss, and of a host of other kings of the air, does not say to himself, ‘I wish I had a flying-machine.’ Now there is no reason,” its editors concluded, “why a handy lad can not have his wish fulfilled.”<sup>8</sup>

It was perhaps only natural that boys who became fascinated by the recent progress in mechanical flight during this time clamored for models that replicated—in appearance and operation—the machines flown by their heroes.<sup>9</sup> Unfortunately, the countless miniature Wright Flyers, tiny Bleriot, and diminutive Antoinettes purchased in stores or constructed at home all shared the same flaw: scale models flew poorly if they

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Christmas holiday emerged in the nineteenth century, but retailers and toy manufacturers worked tirelessly at the turn of the century to encourage the purchase of toys beyond the Christmas season. See chapter 5, this volume, for a fuller discussion. On Christmas celebrations in the United States, see Stephen Nissenbaum’s *The Battle for Christmas* (New York: Alfred A. Knopf, 1996), and Karal Ann Marling, *Merry Christmas!: Celebrating America’s Greatest Holiday* (Cambridge, MA: Harvard University Press, 2001).

<sup>7</sup> “Boys’ Page for June; Model Aeroplanes,” *Youth’s Companion*, 2 June 1910, 290 (original emphasis).

<sup>8</sup> “Boy Knights’ Club; A Boy’s Aeroplane,” *Delineator*, April 1911, 356.

<sup>9</sup> On instructions for making scale models, see “Construction Drawings of a Bleriot Model,” *Aircraft*, March 1911, 17; Philip McCutcheon, “Construction of a Wright Model,” *Fly*, January 1911, 10, 20; Ideal Aeroplane & Supply Co. [New York], “‘Ideal’ Model Aeroplane Supplies” (1911-1912), 22-23, product catalog housed in general collections, Library of Congress.

flew at all. These models, constructed in the *spirit* of the air, more often than not seemed fated to remain stuck on the ground. Problems of weight (either too much or improperly distributed), insufficient power, or general aerodynamic instability conspired to make the “flights” of such models, as one hobbyist observed dismissively in 1913, little more “than short hops.”<sup>10</sup> The initial “craze for model flying,” another wrote in 1915, created a market “flooded with dozens of so-called scale flying models” that proved nearly universal in their failure “to duplicate the feats of the full-sized machines in miniature.”<sup>11</sup> For countless thousands of boys like Willis C. Brown—whose clever resourcefulness in constructing a scale Bleriot monoplane in 1911 included salvaging silk wing covering from a broken umbrella—the hours spent making scale, or near scale, miniatures meant little when these models failed to fly under their own power. Indeed, as Brown admitted in 1936 rather wryly, the “particularly outstanding” feature of his model Bleriot seemed to be “its complete lack of flying qualities.” Others who purchased construction outfits fared little better. Frank Zaic, recalling his first efforts, described kit-built models that were “just able to roll across the street.”<sup>12</sup>

While in hindsight unsuccessful attempts to get models to fly provided humorous fodder for adults’ reminiscences, for boys the collective failure of scale models to perform well aloft dashed their hopes and expectations, proving false retailers’ claims that these miniatures would perform like the real thing. Diminished expectations likely discouraged many altogether, but those who persisted—and longed for models that could fly through

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<sup>10</sup> Nicholas S. Schloeder, “Scientific Models,” *Aircraft*, August 1913, 134.

<sup>11</sup> W. H. Phipps, “Why Scale Models are Not Successful Flyers,” *Aerial Age Weekly*, 14 June 1915, 305

<sup>12</sup> “Capt. Willis C. Brown,” in *Model Aircraft Yearbook*, ed. Philip Zecchitella (Newark, NJ: Twentieth Century Publications, 1936), 48; Frank Zaic quoted in “The Biography of Frank Zaic,” unpaginated, typescript, 7 April 2001, Biographical Materials, Academy of Model Aeronautics History Program (hereafter AMAHP), National Model Aviation Museum (hereafter NMAM), Muncie, IN.

the air under their own power—soon all but abandoned scale models entirely. For these hobbyists, the speedy, long-distance flights of an entirely different class of racing model airplane proved far more appealing. Boys who chose models that flew well prioritized realism in function rather than in appearance: an embrace of modernity in operation that characterized the lion's share of popular interest in aeromodeling for much of the next two decades. While boys' own desires to approximate the flights, if not the appearance, of the real-life airplanes that had captured their collective imaginations was key, the growing popularity of model airplane contests also figured largely in these decisions.

By 1910 flying model tournaments were commonplace in cities around the country and helped transform aeromodeling from a solitary technical hobby into a new sporting pastime. In contests hosted by schools, youth-orientated civic groups like the YMCA, aeronautics clubs, and other adult-led institutions, models became proxies for judging constructor-entrants' skill. Events for best measured distance, longest timed duration, or greatest height, differentiated young inventor-engineer-pilots from one another; creating divisions between spectator and entrant, expert and novice, in what *Youth's Companion* insisted remained a "friendly rivalry."<sup>13</sup> In 1911, *Manual Training* magazine urged its readers, made up of vocational training instructors, to organize "aviation meets" and assist boys' model work at home by gearing classroom lessons to include discussions of the "principles underlying the construction of a successful flyer."<sup>14</sup> For boys, noted one observer, the "thrill" of tournaments was "a sensation peculiarly its own."<sup>15</sup> But as much as the allure of flying captivated the estimated ten thousand or so American boys interested in aeromodeling for sport by 1910, the prospect of winning

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<sup>13</sup> "Boys' Page for June," 290.

<sup>14</sup> George Seaton, "Shop Problems; Model Monoplane," *Manual Training*, February 1911, 294-297.

<sup>15</sup> Francis A. Collins, *Boys' Book of Model Aeroplanes* (New York: Century Co., 1910), 3-6, 12.

trophies and small cash prizes, cavorting with peers, or establishing a new flight record also held great appeal. If the present interest in contests kept apace, one hobby advocate predicted confidently, “fully two thirds of the boys of America...will soon become enthusiastic builders of model aeroplanes.”<sup>16</sup>

If tournaments channeled boys’ interest in aviation, these events also directed their efforts towards models constructed primarily for performance. Interest in model building was widespread in the early 1910s, but competitive sport aeromodeling remained, by-and-large, an urban phenomenon. New York, Boston, Philadelphia, Buffalo, Cleveland, Chicago, and St. Louis among others, hosted the largest and most organized events, garnering enough attention to receive newspaper coverage alongside other popular sports.<sup>17</sup> For young and old, there was something inherently fascinating—and fittingly modern—about the trend, which the *New York Times* labeled simply “A Sport That Reminds Us We Are Living in an Age of Air.” These tournaments were more than a reflection of popular modernity, however, for they fostered a masculine environment of competitive individualism that quickened the adoption of a new category of “purely sporting models”—like the Percy Pierce Flyer—that little resembled smaller versions of existing full-scale airplanes, but in terms of their performance flew far better.<sup>18</sup>

When the “Percy Pierce Flyer” first appeared, in competition in 1909 and commercially the year next, it was the state-of-the-art in model aviation: a novel,

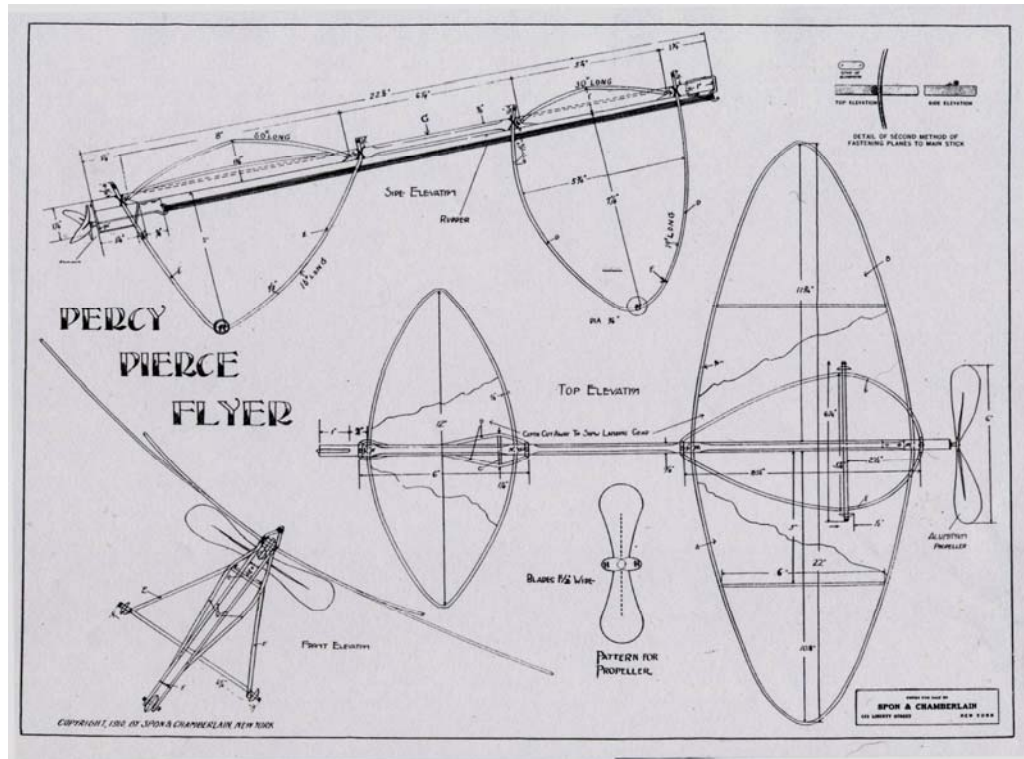
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<sup>16</sup> A. Neely Hall, *Handicraft for Handy Boys* (Boston: Lothrop, Lee & Shepard Co., 1911), 300.

<sup>17</sup> “Boys Defeat Men,” *New York Times*, 6 March 1910; “A Sport That Reminds Us We Are Living in an Age of Air,” *New York Times*, 2 January 1910; “Youngsters Invent Model Aeroplanes,” *New York Times* 30 January 1910; “Schoolboys Have an Aeronautic Class,” *New York Times*, 13 February 1910; “After School; Boy Aviators,” *Chicago Daily Tribune*, 25 June 1911; Jack Kneiff, “Model Aeroplane That Will Fly 1,000 Feet; Easily Built by Any Boy,” *Chicago Daily Tribune*, 28 April 1912.

<sup>18</sup> “A Sport That Reminds Us We Are Living in an Age of Air.”





**Figure 17:** Spon & Chamberlain, plans for “Percy Pierce Flyer,” (1910), Stick Models, NASM Vertical Files.

lightweight flying model that reflected recent trends—and anticipated future ones—in popular aeromodeling (fig. 17).<sup>19</sup> Even a cursory glance at the plans for the model—printed by the New York scientific and technical book publisher Spon & Chamberlain—reveals it was no miniature version of a larger aircraft. A rear-driven, or pusher, canard monoplane measuring just shy of two feet in length, the Pierce Flyer was dominated by two elliptically-shaped flat surfaces—a single, rear-mounted frame 22” wide forming the two wings, and a smaller 12” wide plane serving as the craft’s forward stabilizer—which were mounted on a solid, 3/8” square spruce stick. The framework for the landing gear

<sup>19</sup> Spon & Chamberlain [New York], “Percy Pierce Flyer,” (1910), drawings and instruction booklet, V0001200—Stick Models, Models Vertical Files (hereafter NASM Vertical Files), Archives, National Air and Space Museum (hereafter NASM), Smithsonian Institution, Washington, DC; “Percy Pierce Flyer” advertising circular, (ca. September 1910), In “The Scrapbook of Percy Pierce,” (hereafter Pierce Scrapbook, NMAM), Lee Renaud Memorial Library, NMAM.

echoed the planes in shape and construction; both were formed from single pieces of 1/8” thick bamboo that were carefully heated over a candle flame and bent into shape. Flat, thin aluminum was variously twisted, hammered, snipped, and drilled to form the single rear propeller and the hardware securing the horizontal flat planes, landing gear, and motor to the thin spruce fuselage.

The Pierce Flyer, save for the slight cambering and dihedral angle of the wings, had a strikingly flat appearance. The fuselage that gave the airplane structure served dual functions as the mounting surface for planes and the engine mount for the rubber torsion motor. The engine consisted of a single 1/16” square, 50 foot long elastic strand looped between two hooks—one fixed, the other formed at the end of a small wire axle—running underneath the craft’s stick fuselage. The model’s creator made no attempt to cloak his Flyer’s mechanical operations, the components forming its power plant—which included the rubber strands, hooks, axle, and propeller—were exposed, present for all to see. To operate this, and indeed all rubber torsion motors, the user simply rotated the model’s six-inch aluminum propeller, which turned the axle and caused the rubber strand to twist over itself. After a hundred or so turns, the formerly slack elastic skeins, drawn taut, would have resembled a tightly beaded rope that stored the necessary energy so that upon release the model would scoot across the ground and into the air.<sup>20</sup>

In terms of its design, the Pierce Flyer was elegantly functional, deceptive in its simplicity. Mounting the plane surfaces directly to the fuselage eliminated the need for outside bracing or guy wires, and thus avoided the added weight, drag, and fragility resulting from external supports. There was little beyond the outer frame of bent strip

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<sup>20</sup> Hertz, *Complete Book of Model Aircraft*, 197-198; Louis I. Phillis, “Percy Pierce Type,” *Fly*, June 1911, 6.

bamboo in terms of extra support for the planes: each of the fabric-covered wings formed from the large plane received a single internal brace of thin bamboo; the smaller stabilizer, deemed by its designer sufficiently rigid, received none. Weight was shaved, planed, and sanded off the inches-long section between the wings and stabilizer to form a slightly rounded surface for fingers, while also eliminating precious fractions of an ounce from the small craft. The single frame forming the wings was, according to the drawings, mounted slightly ajar, making wing “B” just 11/16” longer than its counterpart; an ingenious and indeed barely noticeable adjustment necessary to correct for the propeller’s torque and ensure stability in flight.

The Pierce Flyer was a testament to clever, functional design and observers, even decades later, described it as “eminently satisfactory” and even “fool proof”; a reputation that secured both notoriety and fame for its adolescent designer within aeromodeling circles.<sup>21</sup> As a tournament-proven flying model that carried with it manufacturers’ promises that “anyone with a little patience and at small cost” could build “an exact reproduction of Mr. Percy Pierce’s famous prize winner,” the Pierce Flyer was unlike most other models or flying toys available in stores. Still the Pierce Flyer was an example of the craft devised by amateurs: the majority of which never benefited from the wider distribution made possible by licensing agreements and construction kits.<sup>22</sup>

Young hobbyists’ desires to compete in contests required their models conform to rules set by those adults overseeing tournaments. Rules that stipulated that entrants enter only those airplanes they themselves had constructed were common, as were others requiring models to start from the ground under their own power (a rule relaxed as

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<sup>21</sup> Hertz, *Complete Book of Model Aircraft*, 238-239; Zecchitella, *Model Aircraft Yearbook*, 58.

<sup>22</sup> “Percy Pierce Flyer,” instruction booklet, NASM Vertical Files.

contests moved onto large outdoor fields in warmer weather). In time, some tournaments established requirements that governed the size and weight of entrants' models.<sup>23</sup> Contests rules codified boys' desires for long distance flights, but also constrained their interests, placing new priorities in the models they made. Together, these standards only hastened the turn away from attempts to replicate, with any degree of precision, real airplanes in miniature. As one young expert put it sharply in 1913, competitive flyers had little need for the "useless pieces of bracing, guy wires, and other things adding to the weight and [air] resistance of the model."<sup>24</sup> As a result, these new performance, endurance, or racer models as they were called by some, scientific or experimental models by others, introduced a striking degree of uniformity—solid stick fuselages, rubber torsion motors, and fabric (or tissue paper) covered framework for plane surfaces—even if the materials or construction methods varied.

Experienced adolescent amateur model makers, like Percy Pierce, led the technological progression of performance racers, but these designs quickly filtered to novices through an emerging consumer culture devoted to aeromodeling. Specialized model airplane manufacturers licensed promising designs from some elite hobbyists to produce as construction kits; other champion flyers found their work published as plans and instructions in periodicals—like *Aviation*, *Aerial Age Weekly*, and *Fly*—with regular model aeronautics features. Book-length construction guides devoted to aeromodeling

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<sup>23</sup> On contest rules, see A. Hyatt Verrill, *Harper's Aircraft Book: Why Aeroplanes Fly, How to Make Models, and All About Aircraft, Little and Big* (New York: Harper & Brothers, 1913), 70-73; Collins, *The Second Boys' Book of Model Aeroplanes* (New York: Century Co., 1911), 245-247; Hall, *Handicraft for Handy Boys*, 300-302. These rules serve as an example of the "stealth technologies" of standards identified by Amy Slaton and Janet Abbate in their "The Hidden Lives of Standards: Technical Prescriptions and the Transformation of Work in America," in *Technologies of Power: Essays in Honor of Thomas Parke Hughes and Agatha Chipley Hughes*, ed. Michael Thad Allen and Gabrielle Hecht (Cambridge, MA: The MIT Press, 2001), 95-143.

<sup>24</sup> Schloeder, "Scientific Models," 134.

provided yet another outlet for publicizing new ideas. The combination of construction kits and published plans allowed experienced hobbyists to become recognized experts and together these products filtered the latest designs to beginners who either consumed this information directly or, often, indirectly via manual training courses and model airplane clubs.

Clubs, as we have seen, offered technical guidance and material support for young members, and served as places where adults and children learned the intricacies of the design and construction of flying models. Local clubs rarely had more than a dozen or so members, but these groups could serve as chapters of larger parent organizations, as was the case with the Illinois Model Aero Club, which boasted 1,000 members soon after it was founded in 1912. Club members who distinguished themselves in local and regional contests could find their designs published in periodicals, which, in turn, became the basis for lessons for a new batch of hobbyists. Taken together, this cycle propagated the knowledge gained from inside clubs and extended this knowledge well beyond the exclusive confines of club meeting spaces and workrooms. The emerging national hobby culture of aeromodeling honored ingenuity and outwardly celebrated individual achievements, but, interestingly, this very same culture also operated to homogenize the hobby as well.<sup>25</sup>

The primary challenge facing hobbyists—and indeed all makers of airplanes large or small—centered upon minimizing the weight and air resistance of their craft. “At first,” one builder reflected with an air of experience in 1913, “models were very heavy and clumsy. Model flyers were slow to see the....great weight of the models,

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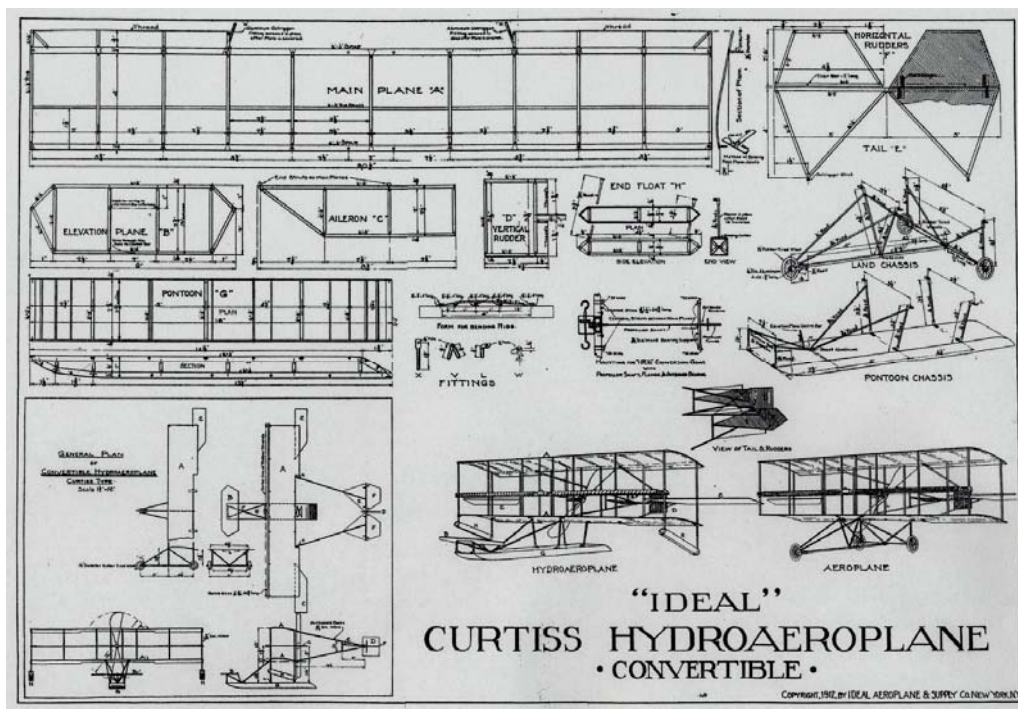
<sup>25</sup> Kneiff, “Model Aeroplane That Will Fly 1,000 Feet,”; “A Sport That Reminds Us”; W. H. DeLancey, “What a Model Club Can Do,” *Aerial Age Weekly*, 3 October 1921, 87.

comparatively speaking, did not make them stronger, but, on the contrary, resulted in having them land harder, and more likely to breakage.” Simple substitutions, such as tying wood frame joints with silk-thread and soldering connections with cement soon replaced earlier practices that relied upon brad nails. Other changes, including the abandonment of heavier, wheeled landing gear contraptions in favor of lightweight bamboo skids, the movement towards solid stick-fuselage construction, and the near universal adoption of fine-gauge piano wire for axles and other engine components, reduced models’ weight dramatically. By 1913 the average weight of competitive models was fully half the twelve ounce average of 1909, and some of the lightest examples weighed two ounces or less. Lighter models required less elastic for motors—providing still more opportunities to trim fat—and some experienced constructors experimented with the size, shape, and pitch of screw propellers to allow motors to turn propellers more slowly and efficiently. Together, these modifications, driven by trial-and-error experimentation, greatly improved performance; by 1912, distance records for racing models flown in competitions topped half a mile: a twelve-fold improvement in two years.<sup>26</sup>

Performance models, which one leading model airplane supplier labeled “speed machines,” proved capable of longer flights than their more representative scale model cousins, but their lower cost and relative ease in construction only enhanced their appeal. Building scale models quickly came to be viewed as a separate technical hobby resulting in vastly different machines and driven by an entirely different set of priorities: namely fidelity to the details of a larger original. Indeed, compared to the Pierce Flyer, the

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<sup>26</sup> Schloeder, “Chronology of Model Aviation,” *Aircraft*, October 1913, 182-84; Percy Pierce, “Model Notes,” *Fly*, December 1911, 208.



**Figure 18:** Plans for “Ideal” Curtiss Hydroplane,” (1912), Miscellaneous Materials, William J. Hammer Collection, Archives, NASM, Smithsonian Institution.

drawings for a scale model of a Curtiss Hydroplane offered for sale in 1912 appeared rigidly rectangular, far heavier, and—with a retail price six times the \$1.15 price tag accompanying a comparable Pierce Flyer construction kit—significantly more expensive than those popular with sport hobbyists (fig. 18).<sup>27</sup> Of course, aeromodelers could—and did—build speedy racing fliers *and* scale versions of larger aircraft, but for those interested in flying competitively, performance models were king.

In the end, the overwhelming popularity of these craft among adolescent boys forced a redefinition of what was meant by a model airplane. A. Hyatt Verrill, author of

<sup>27</sup> Ideal Aeroplane & Supply Co. [New York], “‘Ideal’ Model Aeroplane Supplies,” (1912), 2, Trade Catalog Collection, Hagley Museum and Library (hereafter HTCC), Wilmington, Delaware. Ideal, plans for the “‘Ideal’ Curtiss Hydroplane,” (1912), Miscellaneous Materials, William J. Hammer Collection, Archives, National Air and Space Museum, Smithsonian Institution; M. Palmer, “How to Build an ‘Ideal’ Curtiss Hydroplane,” instruction booklet, 1912, V0000350—Instructions, NASM Vertical Files. “Percy Pierce Flyer,” instruction booklet, NASM Vertical Files.

the *Harper's Aircraft Book* (1913), defined “a true model aeroplane” as “an exact copy of a real [i.e. full-scale] plane” that “may or may not be capable of actual flight.” Still, he admitted candidly, most boys “have little interest” in such models “save as curiosities and examples of good handwork.” “Nowadays,” Verrill continued, “the term ‘model aeroplane’ is more widely applied to small machines which are very distinct from any man-carrying aeroplane, and are designed and built solely for amusement or for racing or distance contests.”<sup>28</sup>

Not all, of course, welcomed these changes. As hobbyist Nicholas S. Schloeder observed in a 1913 issue of *Aircraft*, the “aviator accustomed as he is to view the Wright, Curtiss, and other large aeroplanes, looks askance at the light model racer” as something different “from the machines which he knows.” This “aviator....derisively terms” performance models “flying sticks, toys, good enough for the play of boys, but not worthy of the attention of anyone *seriously* interested in aeronautics.” This view Schloeder thought was mistaken. If, he ventured, sport-minded aeromodelers merely changed their habits to make their “work scientific,” then the speedy long distance flights of racing types would reveal much about the “great field of aerodynamics”—far more, in fact, than a poorly flying scale model ever could.<sup>29</sup>

Distance and endurance records achieved by performance models increased exponentially between 1910 and 1912, but this improvement was due to the near universal adoption of the “A-frame twin pusher.” The A-frame pusher—a generic term taken from the distinctive “A” shape made by the two stick members forming the fuselage—was, like the Pierce Flyer, a canard pusher monoplane. Unlike the Pierce

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<sup>28</sup> Verrill, *Harper's Aircraft Book*, 31.

<sup>29</sup> Schloeder, “Scientific Models,” 134 (emphasis added).





**Figure 19:** “Storing Energy for a Long Distance Flight.” Boys and adult contest officials observe the use of a propeller winder. Photograph from Collins, *The Second Boys’ Book of Model Aeroplanes*, 56.

Flyer, which used an offset wing scheme to correct for torque, the A-frame pusher corrected for the same by employing a pair of rear-driven, counter-rotating propellers. Two separate rubber motors ran alongside each fuselage member, and stability in flight required propellers mirror each other in terms of shape and size, but also in the number of turns each received prior to flight, a potentially onerous task soon mechanized with the use of a propeller winder either purchased from a model airplane supplier or improvised more cheaply from a common Dover eggbeater (fig. 19). Rubber bands, used for power, also attached fabric or paper-covered planes to fuselages, providing flexibility in wing placement to suite outdoor flying conditions or for ease in disassembly for transport, storage, or repair. Overall, the design was reliable and forgiving, but its reputation as a consistent performer and tournament-winner made it instantly popular.<sup>30</sup>

<sup>30</sup> Ideal sold two mechanized winders, an “‘Ideal’ Winder for Rubber Strands” for 85 cents postage paid, and the “‘Ideal’ Patent Friction Winder,” for 38 cents including postage. See, “‘Ideal’ Model Aeroplane and Supplies,” 1912, p. 13, 31, HTCC. Percy Pierce, in the mail order supply house he ran from his home,

The A-frame pusher first appeared in the United States in 1910, but its origins are somewhat mysterious. The model likely first developed in Great Britain, but youthful model makers in America almost immediately claimed the A-frame pusher as their own, recreating—and improving—it on countless workbenches inside improvised workshops across the country. Word of the model first appeared in the United States as early as 1910 through reports on model aeronautics published in aviation periodicals, and this is likely where young members of model building clubs, like the New York Model Aero Club, first learned of the design. Working from sketches that accompanied this reporting, these hobbyists began experimenting with A-frame pushers of their own. By 1910, the model appeared in greater frequency at events in the eastern United States; mere months after its appearance in English contests.<sup>31</sup> Within a few years the familiar flat triangular fuselage was ubiquitous, appearing in published sources as the “Nealy Racing Monoplane,” the “Selley Monoplane,” the “Surini Model,” and the “California Racer” among others (fig. 20 and 21).<sup>32</sup> These models, ever subject to their namesakes’ tinkering, faithfully reproduced the basic A-frame shape and spoke not just to the strength of a national aeromodeling culture, but also the conformity it engendered.

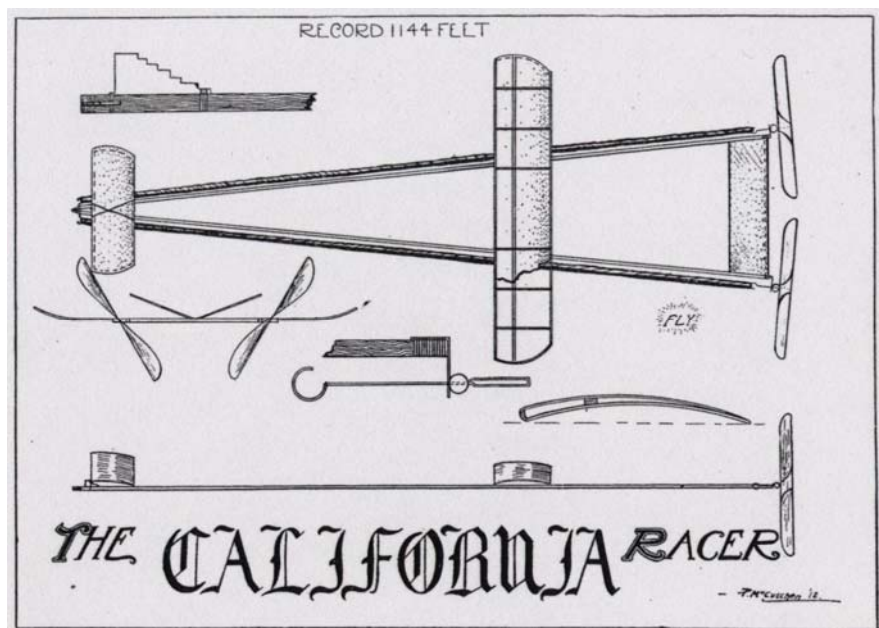
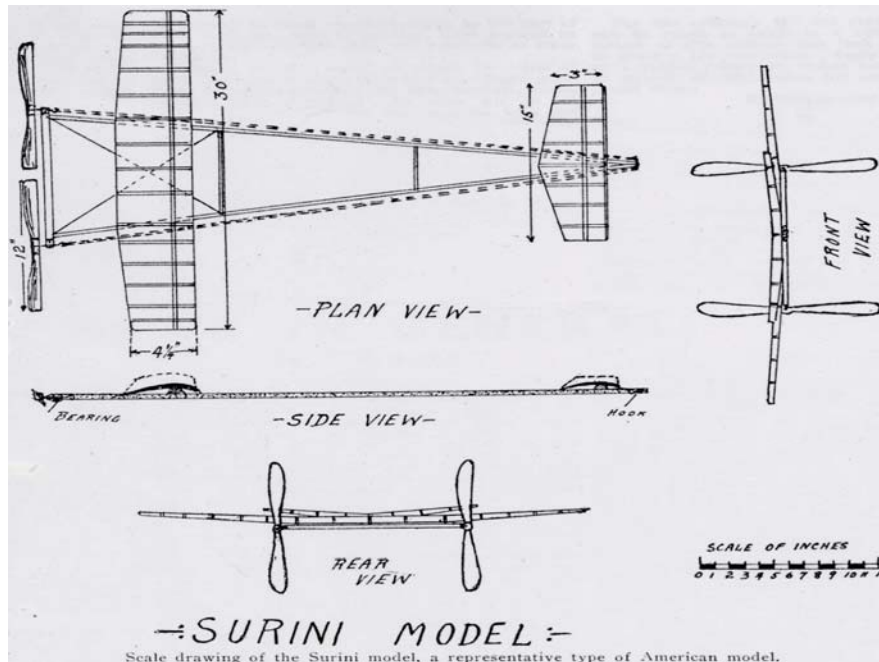
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sold a “Pierce’ winder for 50 cents. See, “Aero-Models,” product catalog [1912], Pierce Scrapbook, NMAM. On homemade winders, see Oliver M. Prentice, “Stability in Model Aeroplanes,” *Fly*, September 1912, 24-25; “High School Aeronautics,” *Aerial Age*, November 1912, 15-16; “Model Aviation,” *Aerial Age*, September 1912, 13. Dover egg beaters were available for as little as 9 cents at the end of the nineteenth century. See Susan Strasser, *Never Done: A History of American Housework* (New York: Pantheon, 1982; reprint, New York: Owl Books, 2000), 45-46.

<sup>31</sup> W. H. Phipps, “Flying Machine Models,” *Aircraft*, July 1910, 188; V. E. Johnson, *Theory and Practice of Model Aeroplaning* (London: E & F.N. Spon; New York: Spon & Chamberlain, 1910), 75-76, 146; A. Melcombe & Co. [Seattle, WA], “Holds All World Records,” advertisement, *Fly*, May 1912, 29; Hertz, *Complete Book of Model Aircraft*, 235-240; Verrill, *Harper’s Aircraft Book*, 41-62.

<sup>32</sup> Kneiff, “High School Aeronautics,” *Aerial Age*, December 1912, 15; Percy Pierce, “The Selley Monoplane,” *Fly*, October 1912, 24; A. M. Surini, “The Surini Model,” *Aircraft*, October 1913, 183; “New Pacific Coast Record,” *Fly*, May 1912, 21. See also, “The Lauder Duration Model,” *Aerial Age Weekly*, 31 May 1915, 256. By the mid-1910s, the popularity of the A-frame pusher design was near universal. Five of the six “world record models” described in George A. Cavanaugh’s *Model Aeroplanes and Their Engines: A Practical Book for Beginners* (New York: Moffat, Yard, & Company, 1917), 52-82, were A-frame pushers.





“common form,” adding: “It is interesting to find that experimenters from New York to San Francisco have reached much the same conclusions.”<sup>33</sup> Even hobby insiders admitted the similarities, acknowledging that recent developments were confined primarily to “construction and minor details of design.”<sup>34</sup> Interestingly, even these

<sup>33</sup> “Boys Find Sport in Flying the Miniature Airships,” *Christian Science Monitor*, 5 September 1914.

variations seemed to follow regional patterns, with model builders in New York favoring built-up wood frame construction for planes and large 12” propellers, while those from Chicago preferring instead Illinois Model Aero Club methods of rigid piano-wire framework for wings and solid, wafer-thin wood stabilizers. Given the overall uniformity of these examples, these differences proved relatively minor. By 1913, the A-frame pusher had also become quite popular with boys in Japan, and while Verrill observed these Japanese aeromodelers followed primarily “American” methods, he added “many are original, and...worthy of imitation by American designers.”<sup>35</sup> In the end, the popularity of the model spoke not just to the widespread demand for flying models, but also a pattern of borrowing and appropriation that honored—and challenged—the emphasis on priority in inventive boy discourse.

By 1912, the easily reproducible A-frame pusher was fast on its way to becoming the most popular type of flying model in the United States, a status it retained for nearly two decades. In 1934 the model crowned the four-part model-building course published by the Hearst-newspaper chain’s Junior Birdmen of America, and it remained a staple of flying tournaments into the 1930s.<sup>36</sup> Despite its popularity, and with so many variations, it is difficult to gauge precisely how many were produced. One conservative estimate, published in *Model Airplane News* in 1961, was that several tens of thousands were built between 1910 and 1930, but the true figure—particularly if one takes into account those that were purchased ready-made, assembled from kits, improvised at home, or

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<sup>34</sup> Schloeder, “Chronology of Model Aviation,” 182-183.

<sup>35</sup> Verrill, *Harper’s Aircraft Book*, 55-60.

<sup>36</sup> Junior Birdmen of America, “The Beginners Twin Pusher,” Handbook Number 4, Junior Birdman Library Series (1934), V0000350-Instructions, Models, NASM Vertical Files; Paul Edward Garber, *Building and Flying Model Aircraft* (New York: Ronald Press, 1928), 91-134; Merrill Hamburg, *Beginning to Fly: The Book of Model Airplanes* (Boston: Houghton Mifflin Company, 1928), 117-130; Carl H. Claudy, *Beginner’s Book of Model Airplanes (They Fly!)* (Indianapolis: Bobbs-Merrill Company, 1930), 137-145.



**Figure 22:** Advertisements for A-frame pushers routinely emphasized performance, reminding potential purchasers of their distance and duration flights in contests and unofficial trials. “‘Cecil Peoli’ Champion Racer,” (1912), and, right, “Percy Pierce Racer No. 68,” (1912).

constructed as part of some recreational model building program—was likely several times higher.<sup>37</sup>

While the exact number of A-frame pushers produced is unknown, it is clear that the “Cecil Peoli Racer” proved the most commercially successful (see fig. 22 and 6). The Peoli Racer, like the Pierce Flyer, was designed by an adolescent member of the New York Model Aero Club and its commercial release confirmed the practice of adult-run firms licensing the rights to innovative designs created by expert hobbyists. Cecil Peoli, then sixteen, probably learned of the basic design in 1910 with his Aero Club pals and eventually perfected his own 34” long version sometime the next year. In the summer of 1911, he set a new distance record of 1,691 feet with the model in a contest held in the Bronx, becoming the first competitive aeromodeler to break the barrier of 1,000 feet in a single flight. The feat caught the attention of the managers of the Ideal Aeroplane and Supply Company, a newly formed model airplane manufacturer on New York’s Lower

<sup>37</sup> William Winter, “Were These Models the Greatest?,” *Model Airplane News*, August 1961, 14-15.



East Side, who obtained the exclusive rights to reproduce the craft.<sup>38</sup> Released in 1912 to company praise that “*The Long Distance Racer*” carried the “official” endorsement of “**America’s champion model-maker,**” the Peoli Racer proved instantly popular and remained a perennial offering in Ideal’s product line for the next two decades.<sup>39</sup>

### ***“Too Expensive for Schoolboys”?***

The commercial success of the Peoli Racer spoke to the potential profits in catering to the sport-aeromodeling market, but model airplane manufacturers looked upon the trend as a way to steer young consumers into products for more expensive scale model projects. Even with Ideal’s release of the Peoli Racer, the company disparaged models in its class as poor substitutes for more realistic-looking miniatures. Product catalogs echoed the tenets of boys’ inventive play—arguing in 1912, “It is YOU, the young men of to-day, that we rely upon to become the great men of tomorrow....NOW IS THE TIME for you to study Aviation, to read, to think and especially to experiment with FLYING MODELS.” But, the company added, educational “progress is more likely to be made by Model builders who grasp their first principles of Aeronautics by building a Wright or Bleriot Style Model than those who confine their efforts to the racing type.” This conclusion was not often shared by hobbyists themselves—including the one, above, who

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<sup>38</sup> Schloeder, “Chronology of Model Aviation,” 183. Drawings for the Cecil Peoli Racer reprinted in Verrill, *Harper’s Aircraft Book*, 50; Ideal Aeroplane and Supply Company, “Cecil Peoli Champion Racer,” instruction booklet, 1917, Instructions, Models, NASM Vertical Files; “‘Ideal’ Model Aeroplane Supplies,” 1912, p. 22-23, HTCC, and “Ideal Aeroplane and Supplies,” 1918, p. 12-13, HTCC.

<sup>39</sup> On promotions see, “Cecil Peoli Champion Racer,” instruction booklet, NASM Vertical Files; “Boys Build *the Long Distance Racer*,” advertisement, *Fly*, March 1912. For similar efforts, see W. H. Phipps [New York], “Model Aeroplanes and Supplies,” *Aircraft*, March 1911, 25, and Percy Pierce [Philadelphia], “Percy Pierce Racer No. 68,” *Fly*, March 1912, 32. The Peoli Racer even outlived its inventor, whose short career as an exhibition pilot and airplane designer ended with his death in an airplane crash in 1915. See, “Cecil M. Peoli: Early Baldwin RED DEVIL Pilot,” typescript biography, Harold E. Morehouse Flying Pioneers Collection, NASM Archives.

highlighted the possibilities for exploring aerodynamics—but Ideal’s position was not about the relative educational merits of performance versus scale models or even the firm’s outspoken commitments to expanding popular knowledge about aviation. Rather, company profits were far more important. The company’s scale Wright Flyer, for example, was touted as “a fine model for exhibition purposes,” perfectly suited for the “lecture room of all educational institutions.” Unfortunately at twenty-dollars in 1912 for a factory-assembled version and a still-significant six dollars for a “knocked down” construction kit, the price of the model itself would have challenged not just the limited purchasing power of adolescent children, but also their abilities to persuade parents into purchasing it on their behalf.<sup>40</sup>

Performance models, to be sure, cost less than scale models—and in most cases significantly so—but they nonetheless represented a sizeable investment for a hobby geared towards primarily white, middle-class children. Moreover, the cottage industries catering to the youth aeromodeling market treated boys not solely as the users of their plans and construction kits, but often the purchasers as well. At a time when toy retailers largely targeted promotions to those parents and adults who purchased toys *for* children, the companies forming the model airplane industry instead catered their messages to the ultimate end users of their products: boys.<sup>41</sup> This novel, albeit risky, marketing strategy

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<sup>40</sup> Verrill, *Harper’s Aircraft Book*, 32; “‘Ideal’ Model Aeroplane Supplies,” product catalog, 1912, 1, 34, inside back cover, HTCC; “Ideal Model Aeroplane and Supplies,” 1918, p. 10, HTCC; Schloeder, “Scientific Models,” 134.

<sup>41</sup> On marketing practices to parent purchasers of toys, see Gary Cross, *Kids’ Stuff: Toys and the Changing World’s American Childhood* (Cambridge, MA: Harvard University Press, 1997); Miriam Formanek-Brunell, *Made to Play House: Dolls and the Commercialization of American Girlhood* (New Haven: Yale University Press, 1993); Lisa Jacobsen, *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004) and “Manly Boys and Enterprising Dreamers: Business Ideology and the Construction of the Boy Consumer, 1910-1930,” *Enterprise and Society* 2 (June 2001): 225-238. On the child consumer as a cultural construct, see Daniel Thomas Cook, *The Commodification of Childhood: The Children’s Clothing Industry and the Rise of the*



hinged upon companies' promotion of the value of their products, precisely when construction guides, manual training instructors, and model airplane clubs advocated an entirely different vision of the place of shopping in craft hobbies like aeromodeling.

To enhance the relative value of model airplane kits and supplies, manufacturers adopted a tiered pricing strategy of selling plans and instructions apart from construction kits. Such a practice preserved the task of procuring materials that kits intended to solve, but also left open the possibility for future sales. As a result, model airplane manufacturers' flexible pricing schedules allowed consumers to frame not only the kind of technical experience they desired, but also afford. For the Peoli Racer, Ideal made the model available as printed plans and instructions for twenty-five cents and as a "knocked-down" construction kit for \$3.50. The kit, which included plans and instructions, contained roughly precut lengths of wood, as well as the materials required to make the model, including rubber strand, carved propellers, various metal hooks, axles, and fittings, tissue paper for covering the planes, and a small jar of "'Ideal' Bamboo Varnish" used to draw the paper skin covering the frame taut. Ambroid cement, required for assembly, was *not* included in the construction outfit, but sold separately for an additional ten to fifty cents depending on the quantity purchased. For those desiring a Cecil Peoli Racer without the work, the company offered a completely assembled and ready-to-fly version for \$7.50.<sup>42</sup>

Unlike other popular construction toys in the 1910s like Erector and Meccano whose most elaborate projects required the purchase of equally elaborate building sets, Ideal's pricing allowed purchasers with prior craft hobby experience to substitute their

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*Child Consumer* (Durham, NC: Duke University Press, 2004). For a fuller discussion of the boy consumer, see chapter 5, this volume.

<sup>42</sup> "'Ideal' Model Aeroplane Supplies," 1912, p. 26, 32-33, HTCC.

own labor for manufactured components. Indeed, for boys willing to accept propeller blanks, or small, uncarved wood blocks, in place of finished propellers, the company rewarded their efforts by discounting the price of the Peoli Racer kit by a dollar. This, of course, left open the prospect that should boys be unable to complete the task—or were unsatisfied with the results—they would be forced to order a pair of carved propellers for \$1.25; in effect, completely erasing the initial discount and transforming it instead into a costly penalty.<sup>43</sup>

Factory-assembled models seemed to violate the very definition of aeromodeling as a craft hobby, but the fact that Ideal offered these versions suggests that at least some boys—and their parents—welcomed this option, even if contest officials, advice writers, and many boys themselves often derided ready-mades as mere ‘toys.’<sup>44</sup> By 1918, when the price of the Peoli Racer construction outfit rose to four dollars—and the ready-made version, which included a “Patent Friction Winder,” an exorbitant nine—Ideal promoted the kit as a superior value, reminding potential customers that it was fifty cents cheaper than if components, plans, and instructions were purchased separately. Even if young consumers, for reasons of pride or price, shunned factory-assembled models, ready-mades enhanced the perceived value of lower-priced options by establishing a ceiling for the maximum cost of a finished model, which, in effect, fixed a dollar amount to hobbyists’ unpaid labor in terms of the money saved.<sup>45</sup>

When first offered, the pricing for a Peoli Racer construction kit was more or less in line with other manufacturers’ outfits for A-frame pushers, which, depending on the

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<sup>43</sup> Ibid., 11, 32-33, “Cecil Peoli Champion Racer,” instruction booklet, NASM Vertical Files.

<sup>44</sup> On attitudes toward ready-mades, see “New York Model Club,” *Fly*, January 1911, 18; Collins, *Boys Book of Model Aeroplanes*, 15, 17; “Boys’ Page for June,” 290.

<sup>45</sup> Peoli Racer prices in “Ideal Model Aeroplane and Supplies,” 1918, p. 12-13, HTCC.

size of the model and the quality of the components, retailed in 1912 for between \$1.50 and \$3.00.<sup>46</sup> These costs, however, did not include those relating to operation and maintenance.<sup>47</sup> Crashes and hard landings were routine and forced hobbyists to return to their workbenches to make repairs. Parts not salvageable required replacement, which meant additional purchases. Barring unforeseen accidents there were other considerations in keeping models functioning. Rubber strand for engines, regardless of quality, lost elasticity through normal use. At least one article published in *Youth's Companion* offered several tips for preserving the life of elastic motors—including avoiding prolonged exposure to heat and sunlight, detaching motors when storing models, and lubricating rubber strands with a light dusting of talcum powder. Preventive measures, however, only slowed the almost twenty-five percent loss of elasticity—and thus power—facing these engines in as few as several dozen long-distance flights.<sup>48</sup> For the optimum performance hobbyists desired and competition required, worn rubber

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<sup>46</sup> In 1910, Walter Phipps reported that early A-frame pushers available in London retailed for \$15 fully assembled. See, W. H. Phipps, "Flying Machine Models," *Aircraft*, July 1910, 188. The "Pierce Racer," another A-frame pusher design was available as plans, a construction kit, or a ready-to-fly version for 25 cents, \$3.50, and \$8.00 respectively in 1912, see "Aero-Models," catalog [1912], Pierce Scrapbook, NMAM. By comparison, the Model Supply House, which specialized, according to its 1915 catalog, in "real scientific models, patterned after the wonderful record holders," offered construction kits for between \$1 and \$2.50. See, Model Supply House, "Model Aeroplane Handbook," 1915, product catalog housed in the general collections, Library of Congress. See also Verrill, *Harper's Aircraft Book*, 61-62.

<sup>47</sup> On the maintenance of technology, see Kathleen Franz, *Tinkering: Consumers Reinvent The Early Automobile* (Philadelphia: University of Pennsylvania Press, 2005); Harper, *Working Knowledge*; Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance* (New York: Bantam, 1984); Orr, *Taking About Machines*. On building maintenance (and its opposite, demolition) see Betsy H. Bradley, "Maintenance Matters: Building Maintenance as Culture and Practice" (Ph.D. diss., Case Western Reserve University, 2002); Bernard Jim, "Ephemeral Containers: A Cultural and Technological History of Building Demolition," (Ph.D. diss., Case Western Reserve University, 2006); and Jeff Byles, *Rubble: Unearthing the History of Demolition* (New York: Harmony Books, 2005).

<sup>48</sup> "Boys' Page for June," 290. In time, one model expert recommended a lubricant for rubber strand concocted from water, glycerin, and "soft soap" at a ratio of six, two, and half-an-ounce respectively that was to be "boiled for some time and allowed to cool before being placed in a well-corked bottle for a day or so." See F. Alexander Magoun, "Notes on Building Model Airplanes," *Youth's Companion*, 15 April 1926, 296-297. This recipe originally appeared in V. E. Johnson, *Model Aeroplaning: Its Practices and Principles* (London: E. & F. N. Spon, 1922), 72-73, in a slightly different form, using one ounce of "soft soap" to half-an-ounce of soda or salicylic acid.

strand simply needed to be replaced. Mail order suppliers sold rubber skein in lengths costing roughly a penny per foot, but as models could use fifty to seventy-five feet of elastic cord per motor, total costs were significant.<sup>49</sup> For the popular A-frame pusher types requiring two engines, these expenses approached \$1.50 in 1912; costs which one *Aerial Age* writer decried was simply “too expensive for school boys.”<sup>50</sup>

While popular advice writer Francis Collins praised aeromodeling as “one of the most democratic of sports” because materials “cost but a few pennies,” the hobby’s true costs—from construction to maintenance—served to restrict participation to those from middle-class families.<sup>51</sup> Unlike poor or working-class children, middle-class children were both more likely to have the free time to devote to time-consuming technical hobbies like aeromodeling and their parents far more likely to finance their purchases. Middle-class children benefited disproportionately from the indulgent parenting styles that accompanied an expanding consumer economy, but thanks in large part to the spread of the social practice of providing allowances, these children also gained greater opportunities to act as purchaser participants in the consumer culture forming around activities such as aeromodeling.

By the early twentieth century, allowances received near universal praise from parents and experts who viewed the practice as a behavioral training strategy that would encourage saving, combat wasteful spending, and reduce temptations for the young to finance their consumption through more delinquent means like shoplifting or theft.

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<sup>49</sup> A. Neely Hall placed the price of replacing rubber skein at about one dollar for a 100-foot length, estimates consistent with those advertised by mail order supply houses. On pricing see, Hall, *Handicraft for Handy Boys*, 307-308; “Aero-Models,” catalog [1912], Pierce Scrapbook, NMAM; W. H. Phipps, “Model Aeroplanes and Supplies,” *Aircraft*, March 1911, 25; and, “‘Ideal’ Model Aeroplane Supplies,” 1912, p. 24, HTCC.

<sup>50</sup> “Model Aviation,” *Aerial Age*, August 1912, 13.

<sup>51</sup> Collins, *Boys’ Book of Model Aeroplanes*, 17. Collins’ observation was typical, see, W. H. Phipps, “Flying Machine Models,” *Aircraft*, October 1910, 288.

While experts and parents did disagree as to whether pocket money should be given freely, in exchange for chores, or—to the horror of many a parenting sage—as a bribe for good behavior, there was widespread agreement that children should receive at least some of their own money to spend. Allowances—and the spread of school-based thrift savings account programs—were seen by Progressive-era educators and others concerned with children’s spending, Lisa Jacobsen argues, as a means of fostering healthy spending habits by encouraging saving with a purpose; an arrangement which preserved parents’ ultimate veto power over whatever their children purchased. The idealized healthy child consumer served as the cultural middle ground between the wild spend thrift and the youthful hoarder, and gained new currency in the early twentieth century as a way to teach the young the value of a dollar.<sup>52</sup>

As the subject of children’s pocket money accrued moral significance, sociologists and social workers in the 1910s increasingly turned to the spending habits of children as a focus of inquiry. These studies found that boys, who benefited from greater freedoms to roam, routinely outspent girls, and used their pocket money to pick up toys, treats, and candy, but also, on occasion, to engage in gambling or make more objectionable purchases like admission to theaters and tobacco; all of which reinforced calls for parents to regulate children’s spending. While there were certainly exceptions, these studies discovered that middle-class schoolchildren could receive as much as twenty-five or even fifty-cents weekly in 1914. Working-class children too, who more commonly remitted their earnings to parents or guardians, were also permitted to keep a

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<sup>52</sup> Viviana A. Zelizer, *Pricing the Priceless Child: The Changing Social Value of Children* (New York: Basic Books, 1985), 103-110; Jacobsen, *Raising Consumers*, 56-92. On shoplifting, see Elaine S. Abelson, *When Ladies Go A-Thieving: Middle-Class Shoplifters in the Victorian Department Store* (New York: Oxford University Press, 1989).

small portion of their weekly wages (perhaps ten or twenty-five cents) to spend on their own.<sup>53</sup> Older middle-class children who took part time employment after school, or were paid for chores or odd jobs around the house, gained still greater opportunities to finance their consumption.

To be sure there were no guarantees that a family's financial situation was proportional to the size of weekly allowances—and Paul Garber later recalled that despite his family's wealth his father “never gave me much of an allowance.”<sup>54</sup> In general, children and adolescents growing up in the early 1910s seemed to have at least some of their own pocket money to spend, even if these amounts remained modest. Within the microeconomies of children's pocket money, boys' purchases for model airplanes remained large enough to require not only parental consent, but also several weeks' of saving. For adults, boys' purchases for craft hobbies like model airplanes were viewed as a healthy form of consumption that countered the dangers of street entertainments, reinforced accepted norms of technical engagement for boys, and conformed to the idea that saving with a purpose provided valuable lessons in delayed gratification that tempered the immediacy of consumer desire. For young purchasers, by contrast, decisions to buy model airplane materials or construction kits were fraught with anxiety and required fiscal restraint to avoid overspending elsewhere: pennies spent on models, after all, meant pennies not spent on treats or other amusements.

Boys' limited purchasing power meant that hobbyists and sympathetic adults routinely balked at the hobby's high costs and actively sought out less expensive paths to production. In 1914, one hobbyist chided “commercial interests” for charging

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<sup>53</sup> Zelizer, *Pricing the Priceless Child*, 103-110.

<sup>54</sup> Paul Edward Garber, interview by Miriam S. Freilicher, transcript, 23 April 1974, Record Unit 9592, Oral History Program, Archives and Special Collections, Smithsonian Institution (hereafter SIA).

“exorbitant prices,” which, he warned, could stifle beginners’ interest. In this regard, he suggested, belonging to a model airplane club made all the more sense, for while club dues could be significant—reaching perhaps one to three dollars annually—this investment proved worthwhile if members gained access to supplies “at ‘sensible prices’.” In Philadelphia, New York, and elsewhere, model airplane clubs touted as part of the benefits of membership access to inexpensive sources of wood, rubber skein, and other key materials alongside the potential for learning about model airplanes and socializing with boys who shared a common interest.<sup>55</sup>

While model airplane clubs became important places for boys to learn to become producers of models, clubs also provided opportunities, just as pricing for plans and construction kits did, for members to become smart shoppers as well. Boys who fashioned their own metal components from piano wire or learned to carve their own wooden propellers in effect freed themselves from relying on suppliers for expensive neatly finished parts. Homemade components also provided hobbyists with the added satisfaction of working from scratch and practice in improvising inexpensive solutions to technical challenges. Furthermore, these practices did more than provide intrinsic rewards, for in learning to carve propellers or fashion other components entrepreneurially minded hobbyists could supplement their allowances by selling parts or completed models to other neighborhood boys interested in aeromodeling. While some boys, such as Percy Pierce, established quite a trade through the mail, the efforts of others, such as thirteen-year-old Edward Pachasa—who in 1919 sold five of his “Skylark” twin pusher

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<sup>55</sup> Schloeder, “Killing the Goose that Laid Golden Eggs,” *Aircraft*, January 1914, 251. On club dues, see “Boys’ Page for June,” 290. For New York Model Aero Club dues in 1911, see Collins, *Second Boys’ Book of Model Aeroplanes*, 250. “Capitol Model Aero Club Activities,” *Aerial Age Weekly*, 26 December 1921, 377.

models to a toy seller in Cleveland—proved more modest. One advice manual reported that some boys even rented their models to retailers for use in window displays. Years later, one particularly enterprising ten-year-old worked out a deal with a manager at Burdine’s department store in Miami, Florida for the sale of assembled display models, for which he accepted construction kits and supplies as in kind payment. In short, the combination of clever tinkering and salesmanship allowed boys with some skill to supplement their pocket money and finance their consumption, which, in turn, allowed them to become more efficient producers.<sup>56</sup>

Given the overwhelming emphasis on the role of individual creation and achievement promoted by contests, product catalogs, and magazine articles for hobbyists, clubs also reinforced the collective nature of aeromodeling. Cooperative purchases for the establishment of a technical library of magazines, manuals, or expertly drawn plans, allowed club members to pool their limited financial resources and further their interests in ways not possible if they acted alone. Members of the Milwaukee Model Aero Club, formed in 1914, even utilized informal collective purchasing arrangements to gain bulk discounts of rubber skein and treated tissue paper ordered from east coast mail order supply houses. The boys also used their collective resources to shop locally, patronizing hardware stores, lumberyards, drugstores, and other merchants for material that was adapted for model making.<sup>57</sup>

While clever purchasing schemes provided some hobbyists ways in which to stretch the reaches of their thin wallets, access to affordable materials remained a

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<sup>56</sup> H. L. Schreiner, *Aviation’s Great Recruiter: Cleveland’s Ed Packard* (Kent: Kent State University Press, 2005), 11-12; Charles M. Miller, *Kitecraft and Kite Tournaments* (Peoria, IL: Manual Arts Press, [1914]; reprint, Davenport, IA, Gustav’s Library, 2004), 105; Walter Musciano, “The Autobiography of Walter Musciano,” typescript, [January 2003], Biographical Files, AMAHP.

<sup>57</sup> Jim Noonan, “Milwaukee Model Aero Club,” *Model Aviation*, April 1989, 68-70, 166, 168.



persistent challenge for boys interested in aeromodeling. It was perhaps fortunate then that the very models most popular could be—and were—built out of any number of lightweight woods. Published construction advice, ever mindful of boys' meager budgets, encouraged readers to seek out inexpensive woods available locally, rather than purchasing it from specialized model airplane dealers. One Los Angeles manual training instructor, for example, suggested that any number of soft woods, including “yellow pine, basswood, and even white cedar,” could be used for models' framework, but he personally favored spruce as the “most satisfactory.” Spruce—incidentally the wood of choice in full-scale airplanes—was available at most lumberyards, but, he added, boys could also obtain small quantities from local manufacturers, such as box factories, who were might be willing to “rip out spruce sticks in 25c. bundles for boys at about one penny each.”<sup>58</sup>

Advice literature on making models—and indeed most handicraft literature for boys—presumed readers were of limited means, but this advice was often fraught with contradictions. In 1911 the adolescent editor of *Fly*'s monthly model aeronautics column praised strip bamboo as “stronger, lighter and easier to out to size than any other soft wood to be had” in one issue, only to label bamboo a “treacherous” material—to be “very judiciously and in places where there is no great strain”—a few months later.<sup>59</sup> With little consensus among hobbyists themselves, specialized mail order houses stocked a

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<sup>58</sup> Miller, *Kitecraft and Kite Tournaments*, 11. Although Francis A. Collins dismissed kite-flying as “a very poor substitute for the actual conquest of the air” and A. Neely Hall suggested that model airplanes “required more skill” than kites, model airplanes did not completely supplant kites as a popular activity. In 1910, for example, kite-flying events were often carried alongside those featuring model airplanes and some viewed kites as the first stage in a progressive aeronautics education that would eventually give way to models and, eventually, person-carrying craft. See, Collins, *Boys' Book of Model Aeroplanes*, 3; Hall, *Handicraft for Handy Boys*, 298; “Boys' Page for June,” 290; F. W. Splint, “Boys Who Fly,” *American Boy*, July 1910, 280-81; 295; Hertz, *Complete Book of Model Aircraft*, 233-235.

<sup>59</sup> Philip McCutcheon, “How to Build a Curtiss Bi-plane,” *Fly*, March 1911, 11; Idem., “Model Building an Education,” *Fly*, August 1911, 27.

wide range of precut woods—including bass, silver spruce, white holly, maple, reed, bamboo, among others—deemed potentially useful in the years before balsa wood became the preferred wood of choice after it became more widely available at the end of the 1920s. While these commercial outlets presented a range of options, boys—and the writers of building advice—devoted considerable energy in the quest for cheaper alternatives.<sup>60</sup>

### ***Boy Bricoleurs and Plucky Tinkerers***

With the appearance of commercial model airplane firms, hobbyists were faced with two diverging paths to building a performance model: to purchase a construction outfit or to leave the task of procuring supplies by building from scratch. While the assembly process between the two remained quite similar, scratch-building was often seen as an attractive option not merely because it was less expensive, but also because it offered a more intimate view of the role of shopping in the craft hobby experience. Successful provisioning of model airplane projects rested upon prior knowledge of woodworking *and* shopping. Past projects provided hobbyists a basic familiarity with wood, such as the difference between hard and soft woods and the relative benefits of each, but the process of selecting wood from stores required careful inspection of available samples and the ability to imagine how this material could be used. The technique of shopping, in other words, proved as important as the ability to render this material into fuselages or frameworks for wings. Even seemingly simple decisions of purchasing one specimen or browsing for others required the tacit knowledge of shopping. These subjective skills,

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<sup>60</sup> Ideal Aeroplane and Supply Company, “‘Ideal’ Model Aeroplane Supplies,” (1911-1912), 2-3, trade catalog in the general collections, Library of Congress, Washington, DC; “‘Ideal’ Model Aeroplane Supplies,” (1912), 4-6, and “Ideal Model Aeroplanes and Supplies,” (1918), 2, 20-22, HTCC.

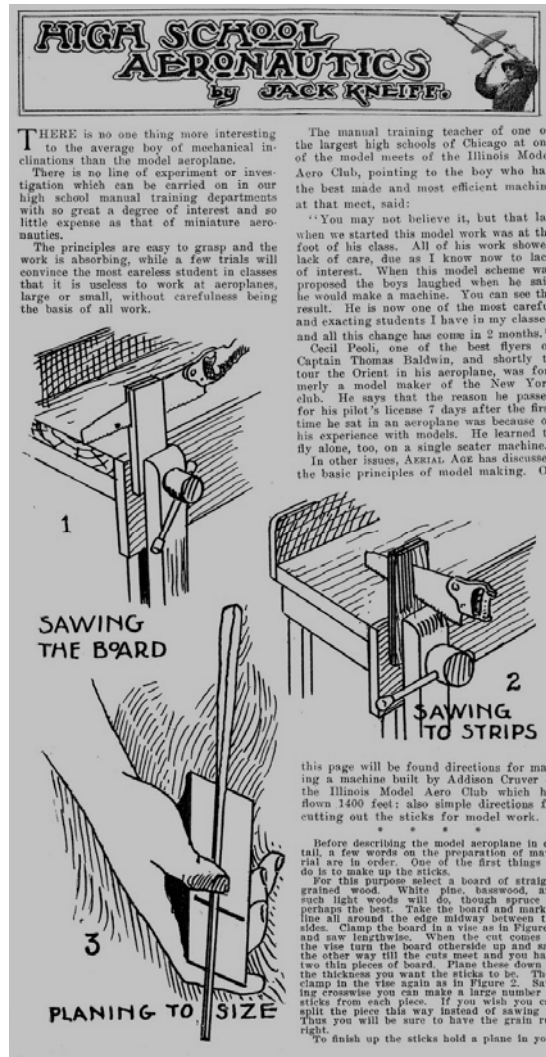
gleaned from past trips to lumberyards or hardware stores, allowed young purchasers to determine when materials were too expensive, but also how to substitute cheaper alternatives.<sup>61</sup>

While the young technologists at the center of inventive boy discourse were celebrated for their skill as makers of mechanical things, they were also lauded for their resourcefulness in supplying the projects they tackled. William B. Stout, the inventor and engineer who moonlighted under the playful pseudonym “Jack Kneiff” for the *Chicago Daily Tribune* and *Aerial Age*, reveled in boys’ limited financial resources as the perfect chance for boys to exercise their ingenuity. Bamboo and spruce, he admitted, were fine materials for building flying models, but white pine sticks were far cheaper and could yield enough stock—with the right effort—for several projects. With just a few hand tools, Stout suggested, boys could rip inexpensive solid pine boards into dimensions as small as “five-sixteenths by three-thirty-seconds of an inch.” To assist in visualizing this process, “Jack Kneiff” included three “*hands-on images*,” to borrow historian Joseph Corn’s term, detailing the steps required as pine boards were sawed, planed, and sanded into thin sticks for model construction (fig. 23). This advice—as with that of the anonymous writer in *Youth’s Companion* who suggested readers split five-foot lengths of bamboo into strips no thicker than a “match stick” using only a “a very sharp knife”—would have proven not only quite challenging, but also potentially dangerous, for boys with little experience with woodworking projects.<sup>62</sup>

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<sup>61</sup> On learning to shop, see Sharon Zukin, *Point of Purchase: How Shopping Changed American Culture* (New York: Routledge, 2004), 35-62.

<sup>62</sup> Kneiff, “Toy Monoplane that will Rise Off Ground,” *Chicago Daily Tribune*, 7 July 1912, and “High School Aeronautics,” *Aerial Age*, November 1912, 15-16; “Boys’ Page for June,” (emphasis in original); Joseph Corn, “Textualizing Technics: Owner’s Manuals and the Reading of Objects,” in *American Material Culture: The Shape of the Field*, ed. Ann Smart Martin and J. Ritchie Garrison (Winterthur, DE: Henry Francis du Pont Winterthur Museum, 1997), 169-194.



**Figure 23:** Ripping Strips from a pine board, images from Jack Kneiff (pseud.) [William B. Stout], "Model Aeronautics," *Aerial Age*, November 1912, 15-16.

The skills the imaginary boy craftsman routinely invoked in construction advice may or may not have corresponded with those readers actually possessed, but praise of inexpensive technical solutions saturated advice writers' praise of aeromodeling as a craft hobby. Given the importance of tools for this process, however, writers were often vague about those required. Stout's sketch, for example, pictured several tools—a hand saw, plane, vise, and workbench—but others missing from the diagram—such as rulers, straight edges, and sandpaper—were no less important. Francis A. Collins, author of the

most popular construction guide on aeromodeling published in the 1910s, too was largely silent on the topic of tools, a shortcoming he remedied only in part with his *Second Boys' Book of Model Aeroplanes* (1911).

Every model builders' tool chest, Collins advised, should contain a gimlet or awl, small hand drill, saw (the "finer the better"), chisel or penknife, and pair of pliers with a cutting edge. This list, nevertheless, fell far short of those required. Among those presumed in instructions, but never listed in his discussion of "Tools and Materials": rulers for making measurements, brushes for applying glue and varnish, as well as planes, sandpapers, hammers and nails, and even kitchen stoves and teakettles for steaming wood ribs to make curved or cambered wings. Each tool, which needed to be purchased, gifted, or borrowed, required knowledge of its use, a knowledge that, for Collins at least, would adhere to accepted gendered norms concerning the use of tools. While taking for granted boys knew how to use saws, drills, and pocketknives, when it came to sewing silk or linen wing covering, Collins encouraged readers to seek the assistance of older sisters or mothers, because, he explained, "boys are likely to be awkward with the needle."<sup>63</sup>

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<sup>63</sup> Collins, *Boys' Book of Model Aeroplanes*, 37, 45, and *Second Boys' Book of Model Aeroplanes* (New York: Century Co., 1911), 44-47. On gender and tool use, see Steven A. Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999), 181-183. Tools had long been viewed as key elements of boys' technical education in handicraft advice manuals, but this advice routinely fell short of outlining even a basic inventory of essential tools. Daniel Carter Beard's popular *American Boy's Handy Book* (New York: Charles Scribner's Sons, 1882; reprint, Lincoln, MA: David R. Godine, 1983) endorsed tool use generally without listing those "handy" boys should possess. A. Neely Hall and the *American Boy*, by contrast, devoted considerable energy to the topic of tool selection and use of tools, as did organizations like the Boy Scouts of America. See, Hall, *Handicraft for Handy Boys*, vi, 14-45, and *The Boy Craftsman* (Boston: Lee and Shepard, 1905); "Uncle Bill" Wood, "How to Keep and Use Tools" (n.d.), Boy Scouts, Warshaw Collection, NMAH Archives. For examples in the *American Boy*, see J. C. Beard, "How to Use Common Tools," *American Boy*, September 1904, 336; "Tools for the Boy Carpenter," *American Boy*, January 1905, 85; and, C. H. Claudy, "The Right Way to Use Tools," *American Boy*, March 1906, 156. By the late 1920s, writers of model airplane manuals were often more explicit in their discussion of tools required for aeromodeling projects, see Garber, *Building and Flying Model Aircraft*, 53-56; Edwin T. Hamilton, *Complete Model Aircraft Manual* (New York: Harcourt, Brace and Company, 1933), 8-10; Carl H. Claudy, *Beginner's Book of Model Airplanes* (Indianapolis: Bobbs-Merrill Company, 1930), 86-94; Merrill Hamburg, *Beginning to Fly: The Book of Model Airplanes* (Boston:

Even if Collins encouraged boys to get help from women in order to sew fabric wing covering, interestingly no similar suggestions had boys seeking the aid of fathers, uncles, or older brothers. While these older males surely lent aid to boys' projects, writers' silence on the subject spoke to their attempts to foster boys' independence, while at the same time inserting themselves into a pseudo-paternal role to their readers. This attitude about adult men, common in this genre of prescriptive literature, did occasionally border on outright hostility. Stout's *Boys' Book of Mechanical Models* (1917), for example, decried the "old"—in terms of unimaginative thinking and adults generally—as the primary obstacle "in our way of learning." The "boy of to-day," Stout suggested, "is more ingenious than his father, and is more handy at analyzing mechanical things." Fathers, in Stout's view, had allowed "their mechanical instincts" to atrophy through neglect, which, in effect, "killed" the very "possibilities in themselves." Boys could resolve this 'crisis,' however. With the right encouragement, and using only simple tools and cast-off resources (most notably wooden spools and empty cigar boxes), the modern, inventive boy "will make everything from a submarine to a flying machine." Inspired by the potential of inexpensive tinkering, Stout concluded: "give the *real* boy some tools and a workshop, and half the problem of bringing up the next generation is solved."<sup>64</sup>

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Houghton Mifflin Company, 1928), 74-78; Howard McEntee, "'Whats' and 'What Nots' of Model Plane Building," *Model Airplane News*, July 1932, 6-7, 39, 41.

<sup>64</sup> Stout, *The Boy's Book of Mechanical Models* (Boston: Little, Brown, and Company, 1917), viii-ix (emphasis added). Interestingly, Stout's book provided no instructions for models airplanes. Instead, he included directions for making models of cranes and railcars, threshers and grain elevators, wooden elephants and even a pair of "Fighting Wild [read: drunken] Irishman." For some of his other model ideas (many of which were reprinted in his *Boy's Book of Mechanical Models*), see his "Home Made Toys for the Boy" column in the *Chicago Daily Tribune*, including, "Home Made Toys for the Boy; For the Youth who Whittles," 4 June 1911; "Home Made Toys for the Boy; New Type of Model Flyer," 9 July 1911. Once Stout became the *Tribune's* technology reporter, he continued to write boys' columns for the paper under his pseudonym. See for example, Jack Kneiff, "Build a Real Flying Machine; A Model for Any Clever Boy," 12 November 1911, "How to Make a Racing Aeroplane," 19 January 1913, and "Here's a Railroad Any Boy Can Make," 12 April 1912. Stout's reporting for the *Tribune* focused mainly on the aviation beat, see Stout "Curtain Raiser of the Airship Meet: Chicago Youth Flies over the Lake Front," *Chicago Daily*

Stout's emphasis on "real" boys set technological engagement as an essential element in the development of a healthy boyhood, making those who lacked technical skills (such as fathers who squandered "their mechanical instincts") as inadequately prepared to shape the modern technological world. Elsewhere, he claimed "[i]t is as natural for boys to want to make things as it is for girls to play with dolls,—a thing the boy abhors." Technical drawings and descriptions, Stout contended, were "more interesting to a boy than a story," unless, of course, that story was about "something that will go." Calling for a consistent engagement with technology, Stout cited himself as an example. In providing instructions and sketches for a model "Writing Telegraph" based on a device he saw at the 1903 St. Louis World's Fair when he would have been about twenty-three, Stout recalled his excitement at seeing the device "as a boy" and his attempts to replicate the machine upon his return home. Modeling himself alongside his "writing telegraph," the ultimate lesson was not the successful completion of a working model, but rather the importance of a boy's acute awareness of his industrial surroundings. Reprinted in his 1916 guidebook, these instructions originally appeared in the *Youth's Companion* in 1905, but his observations as a "boy" suggested a not-too-distant past. By playfully representing himself as a boy—even into adulthood—the boy in the title of the *Boy's Book of Mechanical Models* referred not just to the one reading the book, but quite possibly the one who wrote it.<sup>65</sup>

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*Tribune*, 12 August 1911; "Newest Things in Aviation; Problem of Safety," *Chicago Daily Tribune*, 27 August 1911; and "Newest Things in Aviation; Inventor's Profit the Surest," *Chicago Daily Tribune*, 10 September 1911. "Jack Kneiff" also penned a series of articles for boys on invention and inventors. See the articles series "What's New? Here are Some Ways Genius Is Utilizing the Land, Sea, and Air," *Chicago Daily Tribune*, 23 March 1913, 30 March 1913, 6 April 1913, and 20 April 1913. See also Stout's autobiography, *So Away I Went!* (Indianapolis: Bobbs-Merrill Company, 1951), 35-36.

<sup>65</sup> Stout, *Boy's Book of Mechanical Models*, 59, 91-97, and "How to Make a Writing Telegraph," *Youth's Companion*, 15 June 1905, 289. Stout's boy inventor persona was echoed in one school textbook published in 1942, which referred to him as an "American Aladdin"—a Yankee conjuror of the genie of invention: a

Advice writers, such as Stout and others, wholeheartedly endorsed craft hobby projects as a way of providing boys independence from the perceived corruptive influence of the consumer marketplace. Purchasing items ready-made, these writers believed, sapped boys of their potential and placed them at the mercy of suppliers. Such mistrust of the social roles of shopping was widespread in this genre of prescriptive literature dating back to Daniel Carter Beard's *American Boy's Handy Book* (1882), whose frequently vague material lists almost never suggested where these items could be obtained.<sup>66</sup> Instead, the handy boy—as Beard imagined him—honed his skills in making while romping wildly in the untamed woods. Even if this ideal failed to conform to the realities of boys' lived experiences, the tension between the *purchased* and the *improvised* was a widespread theme within construction advice for boys published at the turn of the twentieth century.

Unlike Beard's handy boy who made his home in nature and viewed domestication and industrialization as dual threats to his autonomy, the clever inventive boy was, by contrast, deeply indebted to industrialization for inspiration and to mass market consumer culture for his raw materials. Chicago advice writer A. Neely Hall, for example, praised shipping containers from packing crates to barrels and cigar boxes as an inexpensive source of building supplies that would inspire boys' technical creativity. Salvaged wood, he suggested, could yield the raw materials for countless construction projects, from furnishing a boys' attic retreat to constructing simple trucks and mechanical toys for younger siblings. Toys made from scrap wood could also be sold to

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“rambling, ambling, informal, good-natured individual with a cracker-barrel manner and a big-face wrinkling, eye-twinkling grin that’s as infectious as a fever and much more wholesome.” See, Alice Cecelia Cooper and Charles A. Palmer, *Twenty Modern Americans* (New York: Harcourt, Brace, and Company, 1942), 257-259.

<sup>66</sup> Beard, *American Boy's Handy Book*.



parents of neighborhood children, which served as a clever way for the handy boy to supplement his spending money and a clear confirmation of future remuneration possible from recreational woodworking projects.<sup>67</sup> Stout too echoed these suggestions, arguing that with a pocketknife, “some ingenuity,” and common junk like cigar boxes, tin cans, or wood thread spools, the possibilities for boys to create and invent seemed endless. His only advice to readers of his *Boy’s Book of Mechanical Models*: “save up odds and ends” and get to work.<sup>68</sup>

Directions for making models airplanes similarly expressed advice writers’ concerns and were peppered with suggestions on recycling and reuse. Francis Collins thought reed, cane, and the small wooden dowels used by joiners as ideal for frameworks: lightweight and cheap—available for as little as “one cent apiece.” But, he admitted, it was often more rewarding to ‘shop’ for materials at home. Lightweight bamboo—which was popularly exoticized as an Asian wood—might prove “difficult to procure” in stores, he wrote, but could be had by taking a pocketknife to “[a]n old bamboo fishing-pole.” A. Neely Hall seconded this suggestion and added the bamboo handles of discarded umbrellas or parasols to the list. Hooks for attaching rubber strand motors, Collins ventured, could be fashioned from bent wire or women’s hairpins. Hatpins too, presumably also salvaged from mother’s things, served as ideal sources for propeller axles; as could a bicycle spoke, noted one *Youth’s Companion* writer. Wooden cigar boxes or old tin cans, with some effort, would yield fine, durable, and cheaply made propellers. Silk, Hall suggested, pilfered from “your mother[’s]...scrap bag” proved a

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<sup>67</sup> Hall, *Handicraft for Handy Boys*, 160-169, 178-188. Hall appears to have followed the minor celebrity gained in 1910 by Louise Brigham, a settlement house worker who furnished the homes of working-class families in New York using only barrels and shipping crates. See, Gelber, *Hobbies*, 211-215.

<sup>68</sup> Stout, *Boy’s Book of Mechanical Models*, vii-ix.

keen source for wing covering. Rubber strands for motors, Collins conceded, proved more difficult to improvise, but could be purchased in skeins by the yard or the pound, or concocted by roping together stationers' rubber bands. Even this could be subjected to resourceful tinkering, for Hall observed several clever boys in Chicago who extracted the rubber cores from used golf balls for exactly this purpose.<sup>69</sup>

While we have no way of knowing how widespread such practices were, recycling remained a viable tactic for boys short of cash, but long on inventive spirit. Boys who deployed such tactics gained ways to participate in consumer culture without large reserves of capital, but for those adults who encouraged them, salvaging and repurposing common junk fit within their larger strategy of limiting boys' reliance on the consumer marketplace. Moreover, adult praise of boys' *bricolage* resituated the power of technical creativity with the boy who recycled, rather than with things like pricey construction outfits. By extending the possibilities of "whatever is at hand," as anthropologist Claude Lévi-Strauss observes of *bricolage* generally, boys forged new meanings not just for umbrella handles, hatpins, or golf balls, but also themselves. Itinerant tinkerers and collectors, the idealized boy *bricoleurs* honored in advice literature not only stood ready to solve immediate and future problems, but *also* eased adults'

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<sup>69</sup> Collins, *The Boys' Book of Model Aeroplanes*, 35-37, 43, 51, 53-56, 89-90; Hall, *Handicraft for Handy Boys*, 306, 308, 311-312, 314, 320; "Boys' Page for June," 290. On the amount of rubber used for model airplanes, see Junior Editor, "Two Lucky Boys Win Junior Prizes," *Fly*, April 1911, 11; James Luddy, Jr., "Double Monoplane Type," and Louis I. Phillis, "Percy Pierce Type," in *Fly*, June 1911, 6.

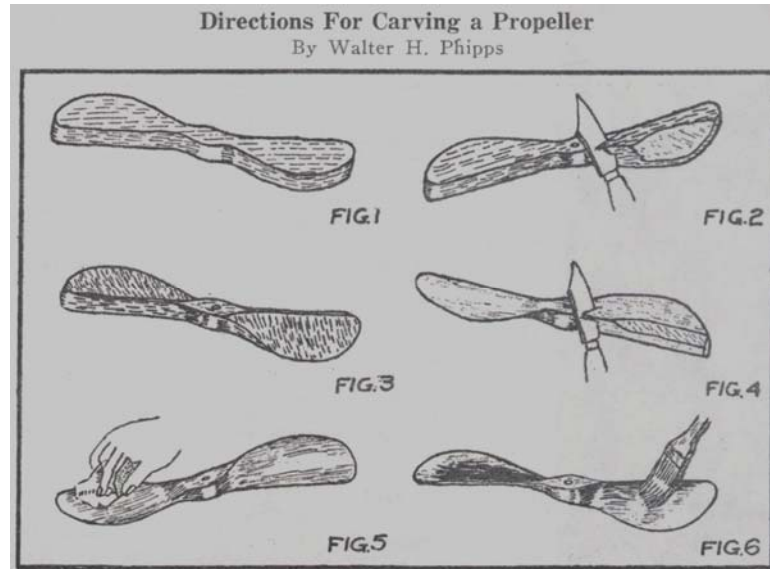
By the early twentieth century, bamboo was widely available in the United States and suggested for a number of craft projects, see Edward H. Young, "Kites," *Aircraft*, July 1910, 182; Kneiff, "Bamboo Squawker, a Joy to the Small Boy," *Chicago Daily Tribune*, 9 June 1912; J. Deltour, Inc. [New York], "Bamboo; Specially Selected for Aeroplanes," advertisement, *Aircraft*, January 1911, 406. Despite references to bamboo as a wood, in truth it is a species of grass widely distributed in tropical and mild-temperate climates, including in North and South America. It is unclear, however, whether the bamboo supplied by specialized dealers originated from the United States or was imported. On the distribution of bamboo, see F. A. McClure, *The Bamboos* (Cambridge, MA: Harvard University Press, 1966; reprint, Washington: Smithsonian Institution Press, 1993), 3-4. On bamboo as an exotic material, see, "The Land of Bamboo," *Youth's Companion*, 6 February 1913, 3

anxieties about the place of boys in early twentieth century. While on the surface the boy *bricoleur* stood at odds with an emerging consumer oriented society, even in limiting the scope his purchases, his salvaging was nonetheless deeply indebted to middle-class material culture. Boy-based *bricolage* may have relied on the “previous constructions and destructions” Lévi-Strauss identifies, but even more on earlier acts of consumption.<sup>70</sup> Just as Beard’s handy boy was powerless to break free from industrial society in the nineteenth-century, the boy *bricoleur* would not have been able to elude the grips of consumer culture in the twentieth. To purchase or salvage bamboo, in other words, served to position oneself within a consumer society, not escape it.

Boys’ *bricolage* presumed not just prior consumption of the parasols, fishing poles, and hatpins for fuselages and axles, but not all held such practices in such high regard. Even though recycling required the ability to see and recognize the potential in the salvaged, the values of *bricolage* could often run counter to boys’ own priorities to construct models that flew well. Indeed, A. Hyatt Verrill dismissed such practices as too often resulting in mere “makeshift” craft and instead urged readers to take “great care” in securing only “accurate and reliable plans and materials....from a reliable firm dealing only in such things.” The specialized production of model airplanes, in short, required the specialized consumption of “proper grades and qualities of wood, fabric, [and]

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<sup>70</sup> Claude Lévi-Strauss, *The Savage Mind* (Chicago: University of Chicago Press, 1966), 16-18, 1-33 (passim); Susan Strasser, *Waste and Want: A Social History of Trash* (New York: Henry Holt, 1999); Bernard L. Herman, “The *Bricoleur* Revisited,” in *American Material Culture*, ed. Martin and Garrison, 37-63. On trash, see Heather Rogers, *Gone Tomorrow: The Hidden Life of Garbage* (New York: New Press, 2005); Elizabeth Royte, *Garbage Land: On the Secret Trail of Trash* (New York: Back Bay Books, 2005); William Rathje and Cullen Murphy, *Rubbish! The Archaeology of Garbage* (New York: HarperCollins, 1992), and Ted Steinberg, *Down to Earth: Nature’s Role in American History* (New York: Oxford University Press, 2002), 226-238.



**Figure 24:** “Directions For Carving a Propeller” by Walter H. Phipps, Model Supply House, “Model Aeroplane Handbook,” 21.

rubber,” as well as “dainty carved propellers,” “Shafts, bearings, metal braces,” and other manufactured components that were “constructed solely for models.”<sup>71</sup>

Perhaps no single component proved as difficult to produce as propellers—which one writer later described as the “heart of the model airplane,” determining its “success or failure when launched”—and thus became the place where boys and advice writers accepted the wisdom of ready-made components.<sup>72</sup> Construction guides deployed a host of clever graphic aids to communicate the process of carving a propeller—from cut-away perspectives of finished propellers inside small wood blocks (see fig. 20, “Nealey Racing Monoplane”), to sequenced sketches (fig. 24) and traceable patterns. In the end,

<sup>71</sup> Verrill, *Harper’s Aircraft Book*, ix, 32, 36-40, 47, 55. Despite his praise for purchased components, Verrill stopped short of endorsing the “putting together parts” obtained from dealers, only because of the “greater satisfaction obtained by building an aeroplane model entirely by yourself.” On the commercialization of sport, see Stephen Hardy, “‘Adopted by all the leadings clubs’: Sporting Goods and the Shaping of Leisure, 1800-1900,” in *For Fun and Profit: The Transformation of Leisure into Consumption*, ed. Richard Butsch (Philadelphia: Temple University Press, 1990), 71-101, and Butsch, “The Commodification of Leisure: The Case of the Model Airplane Hobby and Industry,” *Qualitative Sociology* 7 (September 1984): 217-235.

<sup>72</sup> Hamilton, *Complete Model Aircraft Manual*, 84, 90-93.

however, the subjective experience of carving an efficient propeller proved as difficult to describe, as it was to execute.<sup>73</sup>

Learning to carve a propeller simply required hours of practice with knife to wood and trial-and-error experimentation. As a result, A. Neely Hall observed the task proved so “difficult” and cumbersome that many boys in Chicago spared themselves the trouble by simply purchasing propellers readymade.<sup>74</sup> A. Hyatt Verrill was more direct, admitting that some might be able “to whittle a single propeller...it is very hard to whittle out two exactly alike when twin propellers are used.”<sup>75</sup> Francis A. Collins, by contrast, acknowledged the temptation to buy propellers, but urged readers “to work out this problem,” for a homemade propeller “is easy to build, and costs practically nothing.” This ease, however, required boys’ careful attention to the propeller’s pitch, which Collins thought best executed at a ratio of “one in twelve; that is if the propeller-blade be twelve inches long, the curve should be one inch high.” In absence of additional clues, Collins merely created the opening for companies like Ideal to promote their “scientifically” designed propellers—made by “our own Aeronautical Engineer”—as the perfect solution for those “wandering around in a wilderness of doubt and experiment...waiting for some Moses to lead them out.”<sup>76</sup>

The commercial availability of carved propellers, miniature metal fittings, geared shafts, and other parts and accessories suggested the triumph of the engineered over the recycled, but in truth hobbyists relied upon a combination of the purchased and the

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<sup>73</sup> Walter H. Phipps, “Directions for Carving a Propeller,” in Model Supply House, “Model Aeroplane Handbook,” 21; George A. Cavanaugh, *Model Aeroplanes and Their Engines: A Practical Book for Beginners* (New York: Moffat, Yard, & Company, 1917), 8-17.

<sup>74</sup> Hall, *Handicraft for Handy Boys*, 321-22.

<sup>75</sup> A. Hyatt Verrill, *Harper’s Aircraft Book*, 30-40.

<sup>76</sup> Collins, *Boys’ Book of Model Aeroplanes*, 50-53; “‘Ideal’ Model Aeroplane Supplies,” 1912, p. 7-11.

improvised. Even in the 1930s, when questions about the relative merits, costs, and availability of bamboo, pine, or spruce—salvaged or purchased—were rendered moot with the universal adoption of inexpensive, lightweight balsa wood, practices of improvisation and *bricolage* in assembly remained common. Edwin T. Hamilton, for example, suggested to readers of his *Complete Model Aircraft Manual* (1933) that if small round-nosed pliers were unavailable to bend piano wire into axles or hooks, they could easily fashion a “simple wire bender” by hammering a couple of small nails into the end of a small broom handle or inch-thick wood dowel.<sup>77</sup> Walter Musciano, who built models as a boy in the 1930s, used hard surfaces outside his Brooklyn, New York home—such as cement sidewalks and brick walls—to file wooden parts that accompanied the construction outfits he routinely purchased: a resourceful and wide conception of what constituted a tool that supplemented his pocketknife and sandpaper.<sup>78</sup> The *bricoleur* and the engineer, in Lèvi-Strauss’s original formulation, were polar opposites, with one making do and the other changing tools and materials to the task. In practice, however, the choice between the two was never quite so stark; boys operated somewhere in between, purchasing what they could, recycling or improvising as needed.<sup>79</sup>

### ***Construction Kits and the Rise of the Boy Engineer***

While Collins and others encouraged boys to provision their projects with inexpensive woods and carve their own propellers, those who seemed to accept the benefits of ready-made parts suggests that the perceived stigmas of the purchased was not entirely

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<sup>77</sup> Hamilton, *Complete Model Aircraft Manual*, 33-34.

<sup>78</sup> Musciano, “The Autobiography of Walter Musciano,” 2.

<sup>79</sup> “‘Ideal’ Model Aeroplane Supplies,” (1912), 7-11, and passim, HTCC.

universal. Indeed, the popularity of model airplane contests seemed to invite commercialization for if the boy who salvaged wood from shipping containers and fashioned his own propellers was driven first by desires to make a model that flew well, then the existence of parts manufactured by specialized dealers carried the prospect that with these products, models might fly even better. Hobbyists insiders—such as John F. McMahon, the editor of *Aerial Age Weekly*'s "Elementary Aeronautics and Model Notes" department in 1919—not only praised ready-made accessories as potentially superior to those boy might be able to fashion at home, but also acknowledged that these parts "save time in construction" and often result in "better looking models." For McMahon and others, less time spent in making models left more time for their use.<sup>80</sup>

For those who warned of the potential perils of boys' idle free time, the very idea of time saved would have been considered anathema, but this notion merely echoed the emphasis on rationalization and efficiency promoted by engineering and of disciples of Frederick Winslow Taylor. As Martha Banta and others assert, the influence of Taylorism and his ideology of "scientific management" reached far beyond the shop floor where time-motion studies and rationalized production offered corporate capitalism the promise of a "one best way." Indeed, the 'gospel of efficiency' was felt in nearly all aspects of American culture in the early twentieth century, including the craftsman style, manufactured homes sold in Sears & Roebuck Company catalogs, Christine Frederick's kitchen efficiency movement, turn of the century ideas about environmental conservation, and, yes, even consumer craft hobby innovations like model airplane construction kits. As a cultural moment, Taylorism aimed to reorient the ways Americans viewed waste

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<sup>80</sup> John F. McMahon, "Elementary Aeronautics and Model Notes," *Aerial Age Weekly*, 22 September 1919, 61.

and work, while also anointing the professionally trained engineer as the high priest of modernity.<sup>81</sup>

The celebration of the professional engineer converged with the drive towards ordered play in the early 1910s with the explosive success of engineering-inspired construction toys, such as A. C. Gilbert's enormously popular Erector sets, but while outfits for making model airplane shared this lineage, they were also quite distinct from these toys in several important ways. Unlike "Erector Master Engineers," who worked from standard, pre-formed metal parts, aspiring aeronautical engineers who worked from construction kits found a great deal of effort was required to cut, form, and assemble wood components.<sup>82</sup> Additionally, unlike Erector sets, the physics of flight provided a vastly different set of challenges in operation that builders of Erector-made bridges or mechanical cranes never faced. Perhaps the fundamental distinction between Erector sets and model airplane outfits lay in the fact it was possible to assemble and reassemble

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<sup>81</sup> On Taylorism, see Frederick Winslow Taylor, *The Principles of Scientific Management* (New York: Harper & Brothers, 1911; reprint, Mineola, NY: Dover Publications, 1998); Robert Kanigel, *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency* (New York: Viking, 1997). On the impact of scientific management, see Martha Banta, *Taylorized Lives: Narrative Productions in the Age of Taylor, Veblen, and Ford* (Chicago: University of Chicago Press, 1993); David Hounshell, *From American System to Mass Production, 1800-1932: The Development of Manufacturing Technology in the United States* (Baltimore: Johns Hopkins University Press, 1984); Hugh G. J. Aitken, *Scientific Management in Action: Taylorism at Watertown Arsenal, 1908-1915* (Princeton: Princeton University Press, 1985); Edwin Layton, *The Revolt of the Engineers: Social Responsibility and the American Engineering Profession* (Cleveland: Press of Case Western Reserve University, 1971); David F. Noble, *American By Design: Science, Technology, and the Rise of Corporate Capitalism* (New York: Oxford University Press, 1977); Ruth Oldenziel, *Making Technology Masculine: Men, Women, and Modern Machines in America, 1870-1945* (Amsterdam: Amsterdam University Press, 2004); Janice Williams Rutherford, *Selling Mrs. Consumer: Christine Frederick and the Rise of Household Efficiency* (Athens, GA: University of Georgia Press, 2003); Samuel O. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Pittsburgh: University of Pittsburgh Press, 1999). Ideas about conservation predated Taylor, as Anson Rabinbach argues convincingly in his provocative exploration of the cultural influence of ideas about the Second Law of Thermodynamics. See his, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (New York: Basic Books, 1990).

<sup>82</sup> A. C. Gilbert Co. [New Haven, CT] "Hello Boys! Now For Fun!" advertisement, *American Boy*, November 1918, 28-29, and "Hello Boys! Become an Erector Master Engineer," advertisement, *Good Housekeeping*, November 1916, 175, reprinted in Cecelia Tichi, *Shifting Gears: Technology, Literature, Culture in Modernist America* (Chapel Hill: University of North Carolina Press, 1987), 103.



Erector sets in an infinite number of ways, whereas aeromodeling kits only contained the materials for a single project. Indeed, in direct contrast to the much-lauded boy *bricoleur* in prescriptive literature, these kits embraced the ephemeral qualities of single-use and disposability: if kit constructors made major errors in assembling the model, or if the model cracked-up in a crash landing, it was quite possible that very little—beyond the manufactured metal components—could be salvaged to produce another. While sharing engineering as a point of reference, aeromodeling kits skirted the boundaries between engineering and craft: a condition that, interestingly, mirrored the reality of the full-scale aircraft industry of the era.<sup>83</sup>

While model airplane kits diverged from other so-called career-orientated construction toys in their conception of craftwork, what they shared was a rationalization of the processes of procurement.<sup>84</sup> Unlike the vision of aeromodeling promoted by handicraft advocates, which emphasized scratch-building techniques and improvised shopping, construction outfits delivered all the required materials. Instead of running to stores for wood, rubber, and other supplies, or even rummaging through junk piles or the detritus of middle-class homes, the kit fundamentally reoriented the shopping experience by reducing it to a single purchase. In rationalizing the experience of shopping, the construction kit benefited not just the purchaser, but also the seller. In packaging all that was required to make a model airplane into a single consumer good, manufacturers of these products opened the experience of catering to a new consumer market to

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<sup>83</sup> On craft production of full-scale airplanes, see John S. Olszowka, “A Look at Aviation’s Pioneering Spirit from the Shop Floor: The Ideology of the Aircraftsman, 1914-1934,” paper presented at the Annual Meeting of the Society for the History of Technology, Washington, DC, 18-21 October 2007.

<sup>84</sup> According to Steven A. Gelber, the first kits for craft hobbies likely first appeared in the mid-nineteenth century with the simplified “Berlinwork” needlepoint projects marketed to middle-class women. See, Gelber, *Hobbies*, 166-167, 261-267

department stores and other retailers with little expertise in aeromodeling. In taming the process of procurement for an emerging mass market, these kits, however, did not eliminate the technical challenges associated with assembly. Rather, as a hybrid consumer-producer good, construction outfits merely refocused the energies of those who used them more fully towards production.

Even after purchase, constructing a model from a kit remained challenging, required a minimal degree of technical competency, and held no guarantees the resulting work would perform as expected. Spon & Chamberlain marketed the outfit for the Pierce Flyer, for example, as a “*Complete Set of Materials* in the rough,” which contained a small amount of roughly hewn spruce, bamboo, rubber, aluminum strip, and silk, along with a set of large format drawings and seven-page instruction booklet, required for the project. Except for the added convenience of having raw materials in a single place, the processes involved in making the model from the kit was identical to those who instead just purchased the plans and instruction booklet from the manufacturer for fifteen cents. Forming the framework for the planes and landing gear, for example, required several key steps. After the strip bamboo was cut to length, this material was heated over a candle flame or a spirit lamp to make it pliable. To complete the task, constructors would have had to consult the drawings and instructions repeatedly, measuring their work to ensure proper sizing and curvature, before they sponged the flexible bamboo with cold water to stiffen the framework. Once complete, constructors repeated this task for the other sections. Novices might have also found difficulty in making the aluminum propeller and covering the planes with the silk fabric to ensure a taut fit. The Pierce Flyer kit, as with most construction kits, was filled with opportunities for error and instructions

could prove a most unsympathetic guide, warning ominously: “Careless work means failure.”<sup>85</sup> Even after assembly, nothing guaranteed that the model would perform like the original. Louis Phillis, who related his experience in *Fly* magazine, expended considerable energy toying with his Pierce Flyer before he improved the initial flight of several dozen feet to 120 feet; a flight that was respectable for the time, but nevertheless short of the 152 foot flight its designer achieved with the model at the end of 1909.<sup>86</sup>

Making a Pierce Flyer was filled with technical and cognitive challenges, but this was part of the design of model airplane construction kits. If kit makers eliminated this uncertainty they risked debasing the craft hobby altogether, transforming it solely into a consumer act. While those purchased a kit—or received it as a gift from parents or others—did receive a tangible good, ultimately the commodity purchased was the process of production. As with published construction advice, kits assumed a basic level of technical literacy in terms of the knowledge of tool use and the ability to decipher graphic and written instructions. The tools required by kit constructors and scratch-builders were virtually identical, for both required saws, pocketknives, planes, various grades of sandpapers, hand drills, hammers and nails, and other repurposed household technologies, such as candles, spirit lamps, or tea kettles. While tools were essential, the completion of models rested on users’ ability to decipher graphic and written cues. The cognitive operations of reading drawings rested upon users’ abilities to convert two-dimensional instructions into three-dimensional mental images of the completed project and to relate this imagined model inside constructors’ heads to the ones forming on their

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<sup>85</sup> “Percy Pierce Flyer,” instruction booklet, NASM Vertical Files.

<sup>86</sup> W. H. Phipps, “Model Aeroplanes and Supplies,” advertisement, *Aircraft*, December 1910, 371, and, Pierce Flyer advertisement, [n.d.], V0000205, Catalogs # 2, Models, NASM Vertical Files; Phillis, “Pierce Type,” 6; Schloeder, “Chronology of Model Aviation,” 182-184.

workbenches. To aid this process, commercial model airplane suppliers produced large format plans complete with orthographic projections, detailed assembly views, and explicit dimensions, all of which communicated in precise detail the steps of a model's construction. In the end, these plans were of little use if hobbyists could not read them.<sup>87</sup> Users' individual skill, after all, remained that essential ingredient impossible to package.

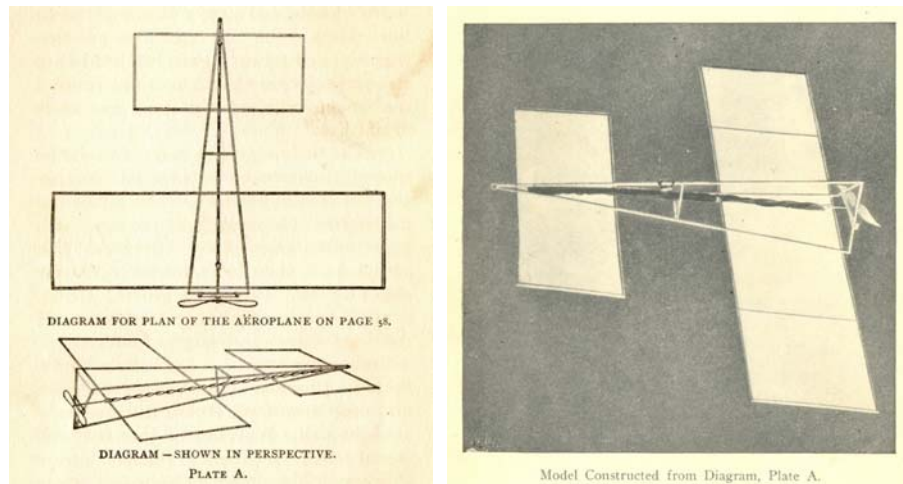
Purchased model airplane plans did more than guide construction, for they conveyed the symbolic power of technical knowledge. The drawings for the Pierce Flyer represented one adolescent boy's skill as a designer of model aircraft, but also his ability to be conversant in the language of engineering; a language he learned as a student at a technical high school like Stuyvesant. Indeed the drawings, complete with specific dimensions and perspective views, reinforced the primacy of print culture in early twentieth century technological thought. Without the plans, the boy was merely an anonymous tinker, but with them, he was a model engineer. The model he first flew in the contests in 1909 evidenced his skill, to be sure, but the drawings themselves—and the prospect that others would be able to reproduce his work—conveyed his status as an insider with specialized knowledge; they reflected his fluency in, to borrow Anthony F. C. Wallace's telling phrase, the “grammar of the machine.”<sup>88</sup>

If orthographic projections reinforced Percy Pierce's status as an insider, their absence could do just the opposite. Even descriptions of ‘simple’ craft, such as Collins' monoplane for beginners, undermined his authority as an expert while also exacerbating the challenges for those who followed his instructions. Drawing communicated the

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<sup>87</sup> Eugene Ferguson, *Engineering the Mind's Eye* (Cambridge, MA: MIT Press, 1992), 3, 23, 87. On education and technical literacy, see Edward W. Stevens, Jr., *The Grammar of the Machine: Technical Literacy and Early Industrial Expansion in the United States* (New Haven: Yale University Press, 1995).

<sup>88</sup> Wallace, *Rockdale*. See also Stevens, *Grammar of the Machine*.



**Figure 25:** Drawing and photograph of finished model, from Collins, *Boys' Book of Model Aeroplanes*, 28, 58.

principal elements of the model, but precise measurements appeared only in written instructions for the outside dimensions of the rectangular flat surfaces and the lengths of the three sticks used to form the fuselage (fig. 25). Others, as when he instructed readers to “slightly sharpen” the ends of the three sticks forming the fuselage “so that when brought together they will form a prism whose base is about one fourth their length,” were provided in relative terms. Placement of bracing too was described approximately, as was the location of the wings and stabilizer: a “complicated problem” the “beginner” was left to solve on their own. Words like “about” and “slightly” joined “thin” and “strong” to describe the thread that tied joints and the glue that soldered them. Analogies dominated discussion of finishing, for framework was to shine “like a piece of fine furniture” or, alternatively, “a violin.” Instructions for carving propellers had builders attacking small blocks of wood with a knife until “blades are one eighth of an inch or less in thickness”; making Ideal’s invocation of the exodus even more telling.<sup>89</sup>

<sup>89</sup> Collins, *Boys' Book of Model Aeroplanes*, 30, 35-52, and “A New Sport For Boys; How to Make and Fly Model Aéroplanes,” *St. Nicholas*, August 1910, 880-884.

Compared with the lack of specificity in Collins' directions, magazines like *Aerial Age Weekly* conveyed a wealth of insider knowledge for readers. Whereas Collins provided formula for wing dope—a “thin solution of paraffin dissolved in benzene”—he failed to provide the ratio of wax to solvent.<sup>90</sup> *Aerial Age Weekly* by contrast provided formula for wing dope concocted by combining three parts of varnish to one part linseed oil for silk, muslin, or linen fabric covering, as well as a “very good dope” for paper covering brewed from acetone and banana oil—an isoamyl acetate with a fruit smell of bananas—at nine to one.<sup>91</sup> In addition to practical tips, editors also offered encouragement. In one issue published in 1919, “Model Notes” editor John F. McMahon revealed that while the “secret of long-distance flight”—“fairly large wings, very little resistance, light weight, and large propellers turning slowly”—could prove challenging, “it can be obtained if the model builder takes time and thinks of what he is doing or trying to do.” “No model champion,” he concluded, “has ever been proficient by faithfully copying some other model; instead, he has thought out improvements that would add to the efficiency and flying qualities of some other successful model and gained thereby.”<sup>92</sup> Not all advice was so consciously motivational. In one particularly telling—and unguarded—moment, a representative from the Illinois Model Aero Club asserted: “MODEL flying requires a lot of hard work and patience which seems to be a combination which few boys possess.”<sup>93</sup>

If magazines like *Aerial Age Weekly* offered encouragement for the “few,” these sources suggest that even with the primacy of A-frame twin pushers and other racing

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<sup>90</sup> Collins, *Boys Book of Model Aeroplanes*, 44-45.

<sup>91</sup> “Covering and Proofing Model Aeroplane Records,” *Aerial Age Weekly*, 3 March 1920, 787; “Model Aeroplane Details,” *Aerial Age Weekly*, 19 June 1922, 353.

<sup>92</sup> McMahon, “Elementary Aeronautics and Model Notes,” *Aerial Age Weekly*, 15 September 1919, 25.

<sup>93</sup> W. H. DeLancey, “What a Model Club Can Do,” *Aerial Age Weekly*, 3 October 1921, 87.

types at contests, questions about scale replication and performance were far from resolved. Although the magazine continued to publish articles, plans, and tips for competitive flyers, far more space was devoted in its weekly model aeronautics' features to scale model projects. In addition to publishing plans for scale models of the latest full-scale airplanes (as well as information where larger drawings could be purchased), editors frequently published reader-submitted photographs and descriptions, which revealed that boys were still very much interested in making scale miniatures. In one issue, editors praised a photograph of readers' model for its display of "fine workmanship" and clear "evidence of his skill and interest in aeronautics." Another praised one Brooklyn hobbyist whose work made "no attempt...to sacrifice detail for sake of weight." The model was a poor flyer, of course, but editors felt its "fine appearance is ample reward for the work put on it."<sup>94</sup> The descriptions of one Washington, D.C. hobbyist's biplane, similarly, spoke in aesthetic terms:

The fuselage is made of veneer and built up of wood members in a manner similar to the real machine; that is, veneer extends from the radiator to the pilot's cockpit. The rear of the body is covered with Bamboo paper. A radiator is mounted in front, with shutters. The imitation Hispano engine is cowled over with aluminum hooks. A machine gun is mounted on the top wing.

With such a great attention to detail, and owing to its builder's use of gross of nails, the thirty-nine inch wingspan model proved "rather heavy for flying," but, editors added forcefully if not convincingly, "it glides perfectly."<sup>95</sup>

Hobbyists' continued interest in building poor-flying scale replicas in the 1920s raises interesting questions precisely because the existence of performance models

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<sup>94</sup> "Hydro Models Giving Good Performance," *Aerial Age Weekly*, 15 May 1922, 233; "Model Aeroplane Club Activities in Chicago, Washington, and New York," *Aerial Age*, September 1922, 469; "A Scale Model of the Thomas-Morse Scout," *Aerial Age Weekly*, 2 January 1922, 401; "Fokker Model Built by Bruce Mapes," *Aerial Age Weekly*, 7 November 1921, 209.

<sup>95</sup> "S. E. V. Model Built by W. G. Eldridge, Jr.," *Aerial Age Weekly*, 31 October 1921, 185.

provided alternatives. Indeed, whereas in 1910 scale replication was viewed as a liability, by the early 1920s these craft were praised for offering greater technical challenges. F. J. Camm, the author of several book-length construction guides, wondered in 1920 why “So many clubs were content to adhere to the ‘flying stick,’ rather than launch into a more technical sphere.”<sup>96</sup> Building a scale model was no more “technical” than those constructed for competition and Camm’s opinion would have seemed strange to those elite hobbyists who by 1921 were mining airfoil-testing data released by the National Advisory Committee for Aeronautics for a competitive advantages over their peers.<sup>97</sup> Even ‘aging’ designs like the A-frame twin pusher showed continued improvement, for in 1922 one Illinois Model Aero Club member recorded a flight of 5,337 feet, or just over one mile.<sup>98</sup> In light of these developments, however, poorly flying scale models merely enhanced the status of the model maker who could get one to fly. As one *Aerial Age* writer observed: “Scale models are interesting and worth while because a scale model is almost a proportionate copy of the larger machine and because of the difficulty which are encountered in flying this type of model” provided “more satisfaction in flying...than the ‘racing’ type.” To build and fly a scale model—even if was but a ‘short hop’—carried intrinsic rewards for the model maker; rewards impossible to quantify with the trophies, medals, and prizes offered by contest officials.<sup>99</sup>

The emphasis on the intrinsic rewards of building scale models over performance types expressed in technical magazines like *Aerial Age* merely echoed the visions

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<sup>96</sup> F. J. Camm, “Running a Model Aero Club,” *Aerial Age Weekly*, 2 February 1920, 605; *The Design of Model Aeroplanes* (London: Benn Brothers, 1919); *Model Aeroplanes* (New York: Funk & Wagnalls Company, n.d.).

<sup>97</sup> “Model Builders Employ Standard Wing Sections,” *Aerial Age Weekly*, 19 September 1921, 41.

<sup>98</sup> “Latest List of Model Aeroplane Records,” *Aerial Age*, October 1922, 516.

<sup>99</sup> “The Loening Monoplane Scale Model,” *Aerial Age Weekly*, 2 October - 3 November 1919, 219.



commercial manufacturers for aeromodeling. Indeed, in direct opposition to the flights of popular competitive flyers like the A-frame twin pusher, advertisements from leading firms like Ideal recast performance models as static and unchanging, whereas working scale miniatures of the latest aircraft offered the true embrace of modernity and the pace of technological progress. This hierarchy of scale versus performance models was perhaps most clear in the layout of one Ideal advertisement that appeared in the December 1921 issue of *American Boy* magazine (fig. 26). An idealized middle-class boy—dressed in shirt, tie, and neatly fitted jacket—reigns over the cluttered advertisement. The boy atop the advertisement works on his scale version of a Curtiss ‘Jenny’ biplane; his workbench covered with the ingredients—a jar of cement, some tools, rubber strand, thread and two sections of the wings—that allowed it to take shape. The wall behind the figure is papered with newspaper clipping and plans for the model. An open window behind the boy’s left shoulder idyllically frames the open fields and calm skies where the model would soon take its trial flight.

The advertisement’s middle section contains copy and images of four of scale models, reinforcing the company’s progressive model building program while recapitulating the technological developments in aviation of the past decade. Together, the images create a formation of aviation’s recent progress, starting with a Nieuport Monoplane (the “leading French Scout Plane,” \$5.00); a Bleriot (the “first machine to fly across the English Channel,” \$5.00); a Curtiss Jenny (“A perfect model of the Plane used for training pilots and the one most frequently seen in the air at the present time,” \$7.00). Topping the formation: a De Havilland Mail Plane (“An exact duplicate...of the famous battle plane now used for carrying mail,” \$7.50). Popular racing models, while present,



## Build and Fly Your Own 3 ft. Ideal Model Aeroplane

Here's the way to get a \$50 Model Aeroplane for \$5.00 to \$7.50,  
if you Build it Yourself

MODEL AEROPLANES are worth a lot of money. A good one would cost \$25.00 to \$50.00 if you bought it ready built. But you can build one yourself and save a lot of money. Building a Model Aeroplane is the most interesting work you ever tackled. It develops your mechanical ability, keeps you fascinated every minute and shows you how big Aeroplanes are constructed. And when you get it finished you can make trial flights and have heaps of sport. IDEAL Complete Construction Outfits make building easy. They contain everything needed to build the complete model; plans, drawings, charts and full instructions. These Model Aeroplanes are true copies of real machines. They are in exact proportion and have all the constructional features of regular Aeroplanes. Every boy wants to build a Model Aeroplane—and here's your chance to do it.

### Pick Yours Now—Get it for Christmas!

These pictures show four popular types of planes. Build the one you like best. They are GUARANTEED to fly when correctly constructed according to directions. They rise from the ground and fly in the air under their own power. Read the specifications for each one and decide now which one you're going to get for Christmas.



**Ideal DE HAVILLAND Mail Plane**  
3 ft. Model—Shown Above  
An exact duplicate, 1:14 actual size, of the famous battle plane now used for carrying mail. Has parts and fittings like a big Aeroplane; rubber-tire disc wheels, aluminum hood, hand-carved propeller, ball-bearing propeller shaft, etc. Will rise from the ground under its own power and fly in the air. Complete Construction Outfit, including full directions. **\$7.50**



**Ideal CURTISS JN4D-2 Training Plane**  
3 ft. Model—Shown Above  
A perfect model of the Plane used for training pilots and the one most frequently seen in the air at the present time. Has parts and fittings like the original. Guaranteed to fly when correctly constructed. A sturdy model one boy will be proud to build. Complete Construction Outfit with full directions. **\$7.00**



**Ideal BLERIOT Monoplane**  
3 ft. Model—Shown Above  
An accurate model, 1:12 actual size, of the Blériot XI, the first machine to fly across the English Channel in 1909. Guaranteed to fly. Complete Construction Outfit with full directions. **\$5.00**



**Ideal NIEUPORT Monoplane**  
3 ft. Model—Shown Above  
One of the leading French Scout Planes and an especially pretty type. Very easily constructed. Complete Construction Outfit with full directions. **\$5.00**

**Plans for Model Aeroplanes**  
25c each, Postpaid  
Accurate Scale Drawings, with Building-Flying Directions for making any one of these 3 ft. Model Aeroplanes.

DE HAVILLAND Mail Carrying Plane  
JN4D-2 CURTISS Training Plane  
N4C4 Naval Seaplane  
CURTISS Military Trainer  
NIEUPORT Monoplane  
BLERIOT Monoplane  
TAURUS Biplane  
(These are the same Plans and Directions included with the Complete Construction Outfit listed above)

**Send 5c for This Aeroplane Book**  
Contains 48 pages of interesting information about Model Aeroplanes, Racing Aeroplanes and Flying Toys. A book every boy interested in Model Aeroplanes should have.

### These Racing Aeroplanes Fly Fast, Far and High—Get One for Christmas!

IDEAL Racing Aeroplanes (not Models of real 'planes) are fast flying record breakers. They fly perfectly and furnish days of real sport for every boy who owns one. IDEAL Flying Toys, too, get wonderful performance that please the youngsters. Here are several favorites. Select yours now and get it for Christmas.



**IDEAL O-PLANE**  
A wonderful, double-propeller Racing Aeroplane; the largest ever made for boys. Measures 48 in. from tip to tip. Strong, well made and will not get damaged easily in use. Ready to fly when eggs are in. Will soar 1,000 feet to 15,000 feet. The picture shows a boy and more. The picture shows a boy and more. The picture shows a boy and more. **\$7.00**



**Completed Pull Racer**

**CECIL PROLL RACER.** The American Record Breaking Racing Aeroplane. Flies at the right, guaranteed to fly over 40 feet at high speed. Very light and strong. Complete Construction Outfit, ready for you to build the RACER, with full, easy instructions. **\$4.50**

**IDEAL PULL RACER.** A strong Racing Aeroplane, guaranteed to fly over 40 feet. Very simple to make and a wonderful performance. Complete Construction Outfit. **\$3.00**

**IDEAL SPEED-O-FLYER.** 2-foot Racer that flies over 40 feet. Finished Racer (not don't have to make it) ready to fly when you get it. It's really like that! **\$2.00**

**BLUE BIRD Racing AEROPLANE.** A beautiful, swift-flying Racer, 22 in. long. All ready to fly when you get it. **\$1.50**

**IDEAL LOOP-the-LOOP GLIDER.** An aerial loop, a thrilling thing to do. The complete "glider" is in the air. **\$1.00**

Ask for these IDEAL Racing Aeroplanes and Flying Toys at your favorite sporting goods or department store. If you cannot get the one you want or want full size order direct by mail, postpaid, at the prices listed above. (Write if Denver, Colo., and in Canada, add 5c to these prices.)

**IDEAL AEROPLANE AND SUPPLY COMPANY**  
Making Model Aeroplanes Since 1911  
161 Wooster Street, Corner West Houston Street, New York City

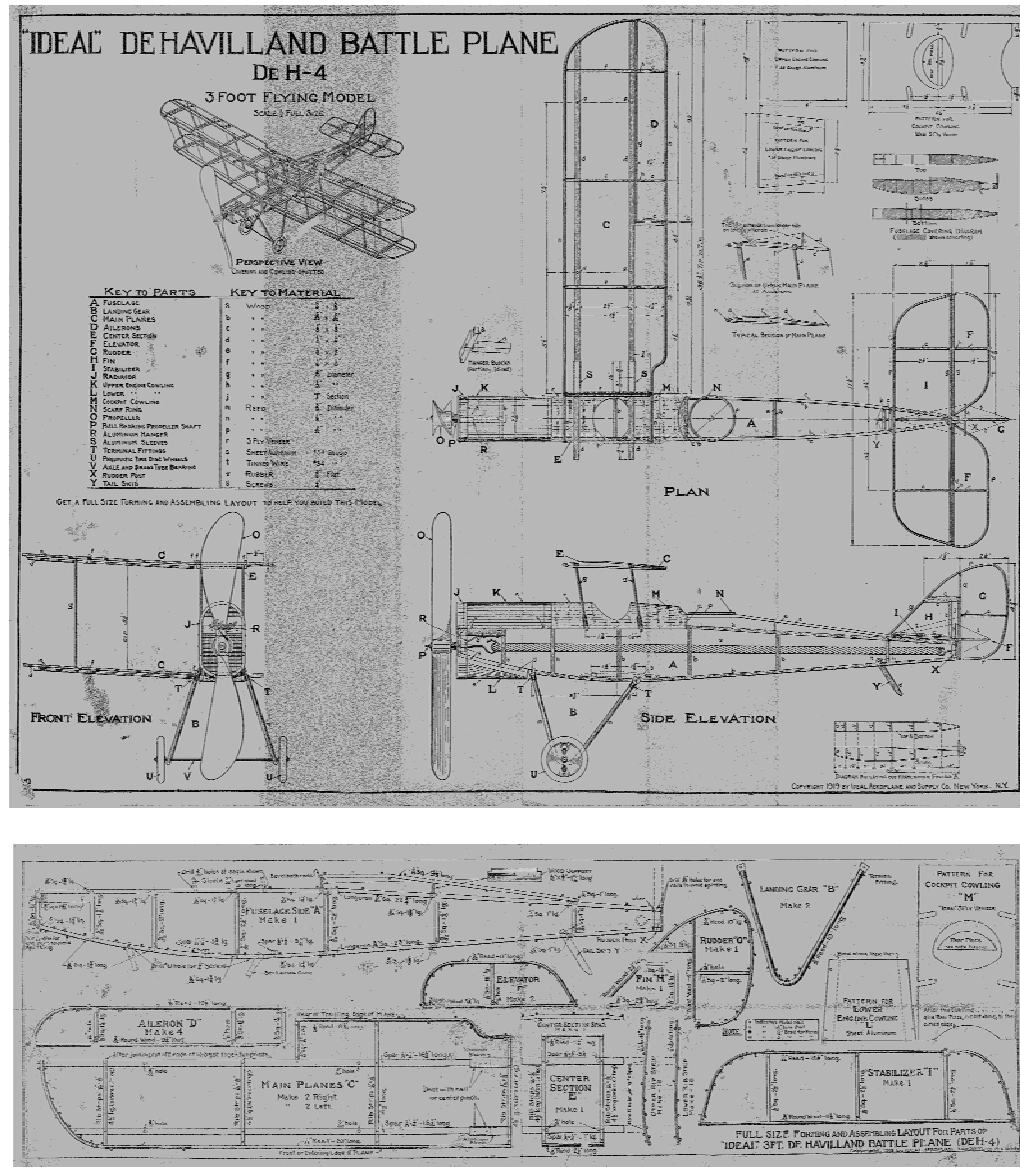
Figure 26: Ideal, "Build and Fly Your Own 3ft. Ideal Model Aeroplane," advertisement, *American Boy*, December 1921, 29.

were listed at the base of the page alongside various “IDEAL Flying Toys” that were sure, copy suggested, to “please the youngsters.” Images reinforced the copy’s appeal to age and featured a young boy dressed in a sailor suit reading the launch of his “IDEAL-O-PLANE” twin pusher. Unlike the older boy above whose body looms over his project, the younger boy, by contrast, seems dwarfed by his. The boy atop the page is remarkably similar to those very real ones in “Two Boys with Model Airplanes,” but unlike the boys photographed by Lewis Hines, who had A-frame pushers at their disposal should they desire a long-distance flight, Ideal’s illustrator offered no such escape. For maturing adolescent boys, the company suggested, it was scale model airplanes or nothing: the simple thrills of flying a racing model were simply immature; flying for sport or amusement was merely frivolous play.<sup>100</sup>

While we have no way of knowing if the two unnamed boys in Hines’ photograph saw this advertisement or others, they did—at least in part—agree with its premise when they set aside their performance models for scale replicas. The boy who tried his hand at the de Havilland DH-4, however, did more than embrace of modernity in form, for in working from the construction kit he submitted himself to its logic. The DH-4 kit rationalized the shopping experience, but also, it turned out, the process of production as well. The large format, half-scale drawings were supplemented with a full-size pattern sheet to assist constructors in forming the ribs for the fuselage, wings, and stabilizer (fig. 27). After laying the pattern on a smooth board, constructors next tapped small brad nails at point marked on the pattern, in order to for a jig to allow softened wood (boiled in water for twenty-minutes) to dry and stiffen into shape. While there were certainly ample

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<sup>100</sup> Ideal, “Build and Fly Your Own 3ft. **Ideal Model Aeroplane**,” advertisement, *American Boy*, December 1921, 29.



**Figure 27:** Ideal Aeroplane & Supply Co. [New York], plans, above, and pattern sheet, below, for De Havilland DH-4 scale model, 1926, Hubbard Collection.

opportunities for error, the inclusion of pattern sheets introduced a degree of uniformity and standardization over the craft hobby process—and hobbyists' bodies—as never before. As a product of convenience, the construction kit was also a product of control. But in purchasing the kit and conforming their movements to those detailed by Ideal's

“aeronautical engineer,” users were complicit in this process and submitted themselves to the rationalization of their own leisure.<sup>101</sup>

For a society struggling with the diverging aims of encouraging boys’ independence and restricting their movements, the construction kit was the ultimate form of enclosure. Not only did its purchase eliminate the need to venture outside to purchase supplies, the added complexity of projects like the de Havilland DH-4 (with its 144 wood pieces to cut and form), meant that successful completion of the model required boys to remain inside and working.<sup>102</sup> And beyond even the technical challenges in assembly, the DH-4 kit’s \$7.50 price tag reinforced boys’ dependency on adults to purchase these kits on their behalf.

In this respect, the copy in Ideal’s 1921 *American Boy* advertisement is revealing for its conception of value. Finished models, the company claimed, could be worth nearly fifty dollars assembled, “But you can built one yourself and save a lot of money” and engage in the “most interesting work you ever tackled.” In listing the benefits, copywriters promised:

It develops your mechanical ability, keeps you fascinated every minute and shows you how big Aeroplanes are constructed. And when you get it finished you can make trial flights and have heaps of sport. IDEAL Complete Construction Outfits make building easy. They contain everything needed to build the complete model; plans, drawings, charts and full instructions. These Model Aeroplanes are true copies of real machines. They are in exact proportion and have all the

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<sup>101</sup> Ideal Aeroplane & Supply Co. [New York], advertisement, “Build and Fly Your Own 3ft. **Ideal Model Aeroplane**,” *American Boy*, December 1926, 29; idem., “How to Build an Improved ‘Ideal’ De Havilland (DE H-4) Battle and Mail Plane,” instruction booklet and construction kit, 1926, Hubbard Collection. LeRoy Weber, Jr., “The Autobiography of LeRoy Weber, Jr.,” 1, undated typescript, AMAHP. Ideal’s construction methods proved remarkably consistent. See also, Ideal, “How to Build an ‘Ideal’ Curtiss Training Plan (JN4D-2),” instruction booklet, 1920, Hubbard Collection. In some ways, this assembly process is reminiscent of the skilled artificers common among those practicing the “American System” of manufactures in the mid-nineteenth century. See, Robert B. Gordon, “Who Turned the Mechanical Ideal into Mechanical Reality?” *Technology and Culture* 29, no. 4 “Special Issue” Labor History and the History of Technology” (October 1988): 744-778; Hounshell, *From American System to Mass Production*.

<sup>102</sup> “How to Build an Improved ‘Ideal’ De Havilland (DE H-4) Battle and Mail Plane.”

constructional features of regular Aeroplanes. Every boy wants to build a Model Aeroplane—and here’s your chance to do it.

The advertisement’s justification for construction kits, in short became the script for young consumers to goad their parents into ensuring a kit would appear under the tree on Christmas day. The advertisement, which appeared alongside the *American Boy*’s “How to Make Money” feature, echoed the resourcefulness of the columns’ stories of plucky boys who hustled for pocket money by doing odd jobs or selling homemade contrivances. Indeed, just at the “How to Make Money” title caption featured an illustration of several boys loading sacks of ingredients marked “Energy,” “Persistence,” “Ingenuity,” and “Pep” into a hand-cranked ‘money mill,’ Ideal’s advertisement suggested instead the influence of the plucky boy persuader; a figure no less resourceful than the boy *bricoleur* who received so much praise in advice literature.<sup>103</sup>

As an innovation in the consumer craft hobby experience, the construction kit reminds us of boys’ marginal status generally, for parents, as purchasers or providers of pocket money, proved that essential element in the ecology of practice in the hobby production of model airplanes. While a combination of desires—from commercial kit manufacturers and boys themselves—raised the image of the engineer to new heights, these feeling only intensified in the 1930s as construction kits became more sophisticated and new lightweight materials like balsa offered ways to bridge the divide between replication in appearance and replication in action. The honored position of the engineer in the aeromodeling hobby, however, did not completely supplant the romantic appeal of the pilot hero. While an editorial published in 1912 stated confidently that aviation would progress only with “More aeronautical engineers” and urged “high school boys” to

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<sup>103</sup> Ibid.; “How To Make Money,” *American Boy*, December 1921, 29

widen their “ambitions” beyond that of “becoming an aviator,” the pilot remained the public face of aviation. Indeed, in light of the acclaim Charles A. Lindbergh received in 1927 after he completed the first nonstop solo flight across the Atlantic, the writer’s prediction in 1912 that within a few years the “airman” would “occupy no more distinctive position in society than the automobile chauffeur of today” seems as quaint as it was inaccurate.<sup>104</sup>

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<sup>104</sup> “Editorial,” *Aerial Age*, October 1912, 16.

## CHAPTER FOUR

### Under Lindbergh's Wing

*His faultless engine, breathing its ceaseless  
rhythm through the lone air wastes,*  
became the poem of American Youth's  
aspiration.

*He spoke of the place as an equal partner  
in a guest enterprise and found a million  
echoes in the hearts of boys who know that  
things of wood and steel can live.*

Anonymous, 1928<sup>1</sup>

In the early twentieth century, countless American observers—inspired by the revolutionary technological developments that transformed the dream of flight into reality—announced the dawning of a new age of the air. For some, this era began with the Wrights' first flight. But for the majority of Americans the new aerial age *truly* began with Charles A. Lindbergh's solo nonstop transatlantic flight in 1927. Lindbergh alone did not create American excitement for aviation, but his accomplishment engendered a mass-cultural spectacle that allowed public sentiments for flying to coalesce around a single individual. As a cultural moment, the Lindbergh phenomena revolutionized popular views of aviation, transformed the flier into a potent object for children's

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<sup>1</sup> Unattributed poem "Lindbergh," in *The Lone Scout of the Sky: The Story of Charles A. Lindbergh* by James E. West (Philadelphia: John C. Winston Co. for the Boy Scouts of America, 1928), 13 (unnumbered, emphasis in original).



admiration, and thrust aeromodeling from the margins of American popular culture—from inside improvised workshops and flying fields—into the mainstream. As a result, the aeromodeler's world was very different (and far more crowded) after May 20, 1927, than before.

At the end of the 1920s, Lindbergh became an icon of modern boyhood. Indeed, there seemed no shortage of commentary assessing what Lindbergh meant for the nation's boys. Some stressed Lindbergh's superior moral character and much-lauded modesty as a model of masculinity, while others saw in his transatlantic flight the ultimate realization of national technological supremacy. Still others—such as his supporters in the aviation industry—cast Lindbergh as the perfect spokesperson to rally public support for aviation. Not surprisingly, promoters of aeromodeling also saw a seemingly limitless set of opportunities in Lindbergh's fame. And while it seemed possible for Americans to read any number of meanings into Lindbergh, the fact that he himself traded on his own image by becoming a spokesperson for aviation, a possessor of modest-heroism, and an endorser of boys' model airplane building, simply lent greater credibility to their efforts.

Symbolic portrayals of Charles A. Lindbergh—constructed both by him and for him—proved sufficiently malleable to be called into service of modern boyhood. Lindbergh's celebrated public image capitalized on preexisting meanings of youth, masculinity, and technological prowess afforded previously to inventors and engineers, and proved as deliberately manufactured as the technology that made his transatlantic flight possible. As Americans refashioned inventive boy discourse to fit the needs of the latest boy hero, the distinction between “physical modeling” and “role modeling” blurred

as abstract character traits became embodied in the spirit in which boys underwent their aeromodeling work. As never before, the popular activity of building and flying model airplanes became, explicitly, an exercise in character formation. For the young who took Lindbergh as the inspiration to take up aeromodeling, the physical act of making model airplanes proved essential to the cultural construction of Lindbergh as their hero.

As a historical moment, Lindbergh's celebrity serves as a case study of the convergence of hero worship with a maturing consumer culture for children. As much as Lindbergh seemed heroism personified, he was also in many respects heroism commodified. This chapter, which explores the nature of Lindbergh's celebrity and his honored position as a role model for children at the end of the 1920s, sees in adults' commentary on Lindbergh the continued attempt to identify the values they prized for all boys. While this remained, as we have seen, a remarkably consistent element within inventive boy discourse in earlier decades, these previous expressions seemed, in retrospect, but a preamble to what would be unleashed in Lindbergh's wake. Indeed, nothing had reached the scale and intensity of the public adoration of Lindbergh. He garnered attention not solely for his transatlantic flight, but also his subsequent tours of the United States, Central and South America in the *Spirit of St. Louis*, and soon became the most celebrated individual in the history of aviation.

In order to demonstrate the depth of the Lindbergh phenomenon, this chapter traces what Lindbergh—as a person and as a symbol—meant to the American public, his transformation into a boy hero, and the processes in which this celebrity image took shape in commodified forms. Like the inventive boy before him, Lindbergh's public image was elaborated in the press, popular biographies, children's periodicals, and other

forms of prescriptive literature. Lindbergh, the aviation industry, children's welfare groups, and others, seized upon one another to create new meanings for aeromodeling. The ultimate success of these efforts, however, was due largely to the convergence of the various celebrations of Lindbergh's achievement and character with consumer culture. Consumption served as the avenue through which Lindbergh became the hero for boys interested in aviation. In placing boys under Lindbergh's wing, as it were, Americans embraced air age values and air age views. In hindsight, these visions advanced the development of a consumer culture for children. In the end, this campaign proved more successful than even his most fervent admirers could have imagined.

### *A Hero for a New Age*

Charles A. Lindbergh's transatlantic flight in 1927 was far more than a notable technological feat: it was a mass cultural spectacle. Media coverage of the flight, its meanings, and its pilot filled newspapers across the country. Larger papers, like the *New York Times* and the *Washington Post*, devoted several pages to the story; a shrewd editorial decision designed to feed public desire for news about Lindbergh, not sate it. Indeed, newspaper sales seemed limited only by the pace at which presses could print them; in some markets sales increased two to five fold, and across the country newspapers collectively consumed nearly 25,000 tons more newsprint than usual.<sup>2</sup> And the response was far from limited to the print media. According to one contemporary estimate, Lindbergh had received well over 32,000 telegrams from well-wishers both at home and abroad after the first week of June; by month's end, this number swelled to

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<sup>2</sup> Daniel Boorstin, *The Image: Or, What Happened to the American Dream* (New York: Atheneum, 1962), 66-73.

more than 100,000. While impressive, these figures paled in comparison to the nearly 3,500,000 letters sent to Lindbergh that summer. By mid-June, one newsreel company claimed to have more than 7,430,000 linear feet of footage documenting Lindbergh's public appearances.<sup>3</sup> For a person largely unknown to the American public just weeks earlier, the level of public adoration was, by every measure, simply unprecedented.<sup>4</sup>

The celebrations welcoming Lindbergh's triumphant return home dwarfed those held in Europe. Honored dignitaries representing all levels of American polity and industry attended ceremonies held in Washington, D.C. on June 10. President Calvin Coolidge, speaking before a crowd of some 250,000 spectators gathered in the grassy park surrounding the Washington monument—and an estimated 50,000,000 who tuned into radio broadcasts at home—proclaimed that although Lindbergh looked but “a boy,” he was “a boy who has done a man's job and followed it up by conducting himself as one.” Looking to Army Air Corps reports, Coolidge recounted Lindbergh's admirable

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<sup>3</sup> “Telegrams for Lindbergh Total More than 32,000,” *Washington Post*, 11 June 1927; A. Scott Berg, *Lindbergh* (New York: G. P. Putnam's Sons, 1998), 160-161; “Films on Lindbergh Set Speed Record,” *New York Times*, 14 June 1927.

<sup>4</sup> The scholarship on Lindbergh is massive and daunting, yielding several avenues of inquiry. On Lindbergh's role in shaping public perceptions of flight, see Dominick A. Pisano, “The *Spirit of St. Louis*—Fact and Symbol: Misinterpreting a Historical Cultural Artifact,” in *Reconsidering a Century of Flight*, ed. Roger D. Lanius and Janet R. Daly Bednarck (Chapel Hill: University of North Carolina Press, 2003): 242-262, and Joseph J. Corn, *The Winged Gospel: America's Romance with Aviation, 1900-1950* (New York: Oxford University Press, 1983). Pisano and F. Robert van der Linden, *Charles Lindbergh and the Spirit of St. Louis* (Washington, D.C.: Smithsonian National Air and Space Museum, in association with Harry N. Abrams, 2002) is a concise popular treatment. On the Lindbergh phenomena, see Orrin E. Klapp, “Hero Worship in America,” *American Sociological Review* 14 (February 1949): 53-62; John W. Ward, “The Meaning of Lindbergh's Flight,” *American Quarterly*, 10 (Spring 1958): 3-16; and Charles L. Ponce de Leon, “The Man Nobody Knows: Charles A. Lindbergh and the Culture of Celebrity,” in *The Airplane in American Culture*, ed. Pisano (Ann Arbor: The University of Michigan Press): 75-101, which focuses specifically on the interactions between Lindbergh and the press to reveal Lindbergh's active role in establishing—and shaping—his public identity. For Lindbergh's entire career—including his ties with Nazism, disillusionment with technology, and embrace of environmentalism, see Walter S. Ross, *The Last Hero: Charles A. Lindbergh* (New York: Harper & Row, 1976); Susan M. Gray, *Charles A. Lindbergh and the American Dilemma: The Conflict of Technology and Human Values* (Bowling Green, OH: Bowling Green State University Popular Press, 1988); and Leonard S. Reich, “From the *Spirit of St. Louis* to the SST: Charles Lindbergh, Technology, and Environment,” *Technology and Culture* 36, (April 1995): 351-393. Perry D. Lockett, *Charles A. Lindbergh: A Bio-Bibliography* (Westport, CT: Greenwood Press, 1986) is an exhaustive bibliography relating to Lindbergh. A. Scott Berg's biography, *Lindbergh*, is both definitive and highly readable.

qualities, itself a veritable listing of the masculine ideal: “Intelligent,” “industrious,” “energetic,” “dependable,” “purposeful,” “alert,” “quick of reactions,” “serious,” “deliberate,” “stable,” “efficient,” “frank,” “modest,” “congenial,” “a man of good moral habits and regular in all his business transactions.” In presenting the Distinguished Flying Cross—and elevating him to the rank of Colonel—Coolidge praised Lindbergh for his apparent “absence of self-acclaim, the refusal to become commercialized, which has marked the conduct of this sincere and genuine exemplar of fine and noble virtues,...endear[ing] him to every one.” Coolidge added that Lindbergh had, in essence, “returned unspoiled.” Echoing the President’s spoken remarks, a *New York Times* correspondent dispatched to cover the event observed confidently: “It is the same Lindbergh who returns.”<sup>5</sup> In truth, Lindbergh *had* changed: he had come back better.

The ceremonies in Washington merely foreshadowed those to come. For several days, Lindbergh attended breakfasts, luncheons, and dinners in Washington given his honor. Meanwhile the city of New York hurried preparations for an even larger and more elaborate series of celebrations, ones that would feature both the transatlantic flyer and his craft, and where, the welcoming committee chair promised in advance of the program, the “keynote of the reception will be the spirit of young America—courageous, modest, and loyal.”<sup>6</sup> Unfortunately, mechanical difficulties prevented the *Spirit of St. Louis* from attending, and so Lindbergh, in a borrowed Curtiss P-1 biplane, left Washington in the early morning hours on June 13, and, accompanied by the Army Air Corps’ legendary

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<sup>5</sup> Berg, *Lindbergh*, 152-155; “50,000,000 in Huge Radio Hook-up Hear Welcome to Flier,” *Washington Post*, 12 June 1927; “President Leads Capital Tribute for Ocean Flier,” *Washington Post*, 12 June 1927; Calvin Coolidge as quoted by Fitzhugh Green in his appendix to Charles A. Lindbergh, *We*, (New York: G. P. Putnam’s Sons, 1927), 275; Russell Owen, “It is the Same Lindbergh who Returns,” *New York Times Magazine*, 12 June 1927, 2, 18.

<sup>6</sup> “Lindbergh’s Plane to be in Parade Here,” *New York Times*, 26 May 1927.

First Pursuit Squadron, headed north. Along the way, Americans poured onto the streets of cities along the East coast—in Baltimore, Wilmington, Philadelphia, and Trenton—to cheer the formation onward. When the group landed in New York shortly after noon, the usual business of the city—from municipal offices and public schools to the stock exchange—was halted. In announcing the decision to cancel school for the day, officials from New York’s Board of Education encouraged schoolchildren to see first-hand the celebrations held in honor of “this courageous and modest American boy who has kept his head while receiving honors such as few American boys have received.” June 13 was declared officially “Lindbergh Day,” but as much as it was a day for Lindbergh, it was more so a day for all New Yorkers—for all Americans—to bask in his accomplishment. All told, nearly four million spectators turned out to witness the parade, braving throngs of people and a summertime blizzard of ticker tape just to catch a glimpse of their hero.<sup>7</sup>

Americans young and old penned glowing letters of congratulations to Lindbergh. Many wrote requesting photographs of Lindbergh and his plane. Others pressed for autographs or replies written in his hand. In light of the sheer volume of mail he received, few of these requests were honored.<sup>8</sup> Pleas from autograph seekers proved only one of several ways that the public hoped to forge some small, personal connection with the aviator. A grade school teacher in Massachusetts forwarded one her student’s drawings of his hero with the note: “I know you’re still boy enough to appreciate all the

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<sup>7</sup> “Program is Issued for Lindbergh Week,” *New York Times*, 9 June 1927; Berg, *Lindbergh*, 155-158; “City Vast Gallery of ‘Lindy’ Pictures,” *New York Times*, 14 June 1927; “5,000 Cubic Yards of Paper in ‘Snowfall’ for Lindbergh,” *New York Times*, 14 June 1927.

<sup>8</sup> J. H. Young to Charles A. Lindbergh (hereafter CAL), 4 June 1927, letter with enclosed newspaper photograph; Earle M. Jackson to CAL, 30 August 1927; Chester Brown to CAL, 22 September [1927], General Correspondence, 1925-1975, Charles A. Lindbergh Papers, (hereafter Lindbergh Papers), Manuscripts and Archives, Sterling Memorial Library, Yale University, New Haven, Connecticut.

work and love he put into the pictures.”<sup>9</sup> Another young man, who, like Lindbergh, had dropped out of the University of Wisconsin, proposed they return to college together to finish their degrees, and even offered to become Lindbergh’s roommate, promising they would fast become “pals” at “good old ‘U’.”<sup>10</sup> Parents enclosed photographs of babies christened in his honor, including one “Charles Lindbergh Barfield” from Florida.<sup>11</sup> Countless others wrote letters containing small amounts of cash, or checks and money orders made payable to the celebrated aviator for equally modest sums. A postmaster in North Dakota enclosed a money order for a dollar as “our bit to the fellow who does things.”<sup>12</sup> A bank employee, who took up a collection from those who worked at his small Illinois bank, forwarded a five-dollar check to show, in his words, “our appreciation of your wonderful achievements as an aviator and as an Ambassador of Peace.”<sup>13</sup> These small sums became a clear measure of the public’s approval, but checks—once endorsed—also provided a clever way to obtain a much-coveted autograph. To a one, these checks—including one for one hundred twenty-five dollars from an admirer in New York—went uncashed.<sup>14</sup>

Lindbergh’s youngest admirers rushed to department stores and other retail outlets to purchase aviation-inspired toys and amusements from merchants only too willing to

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<sup>9</sup> Leonora A. Columbo to CAL, 10 June 1927, General Correspondence, Lindbergh Papers.

<sup>10</sup> Ray Winters to CAL, 23 August 1927, General Correspondence, Lindbergh Papers.

<sup>11</sup> Mr. and Mrs. Clarence Booth to CAL, [26 August 1927]; G. L. Barfield to Evangeline Lindbergh, 15 September 1927, General Correspondence, Lindbergh Papers.

<sup>12</sup> A. D. Cochrane to CAL, 7 June 1927, letter and enclosed money order for one dollar, General Correspondence, Lindbergh Papers.

<sup>13</sup> J. Stanley Weis to CAL, 6 June 1927, letter and check for five dollars, General Correspondence, Lindbergh Papers.

<sup>14</sup> V. Ludovici to CAL, 7 June 1927, note and check for one dollar; Fred B. Rasmussen to CAL, 7 June 1927, letter and check for one dollar; Ross H Rohrer to CAL, 7 June 1927, letter noting the inclusion of five dollars; Pietro Dapolonia, to CAL, 9 June 1927, letter and money order for one dollar; Margaret Merkel to Lindbergh, [June 1927], original and typewritten translation noting the inclusion of coin for 10,000 marks; Eleanor Baird to CAL, 9 June 1927, letter and check for one hundred twenty-five dollars, General Correspondence, Lindbergh Papers.

transform public enthusiasm into private profits. One toy industry observer praised retailers in January 1927—months before the public at large had ever heard of Charles A. Lindbergh—who took advantage of newspaper accounts of “dirigible accidents” or other aviation-related calamities to increase the sales of “toy aeroplanes and dirigibles of all types and kinds.”<sup>15</sup> Nothing could have prepared retailers for the demand for these goods in the wake of Lindbergh’s fame. Indeed, if the ringing of cash registers served as the soundtrack to past disasters, the cacophony of these bells marking sales in toy stores proved, by comparison, almost deafening in light of technological success.

Officials at R. H. Macy & Co. reported a flood of “young customers” to the store’s toy department soon after Lindbergh landed in Paris. With few exceptions, boys marched in to buy “materials to build toy airplanes,” a fact that was, in their estimation, a “tangible tribute from the youngsters who will some day follow him through the air.”<sup>16</sup> The industry publication *Toys and Novelties* reported that many New York department stores marked the celebrations with window displays of model airplanes and aviation-inspired toys—a move, which, naturally, resulted in a brisk trade in these items. Lord & Taylor reported a “marked increase in the sale of toy airplanes,” as did Gimbel Brothers, who “played airplanes up strongly.” Philadelphia’s Wanamaker’s too took advantage of the spirit of the times by featuring, according to *Toys and Novelties*, a “very attractive” model airplane imported from Japan centered in their display. The managers of toyshops—both large and small—offered similar reports from across the country. The intensity of young consumers’ demands surprised retailers, but so too did the fact that it

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<sup>15</sup> E. J. Clary, “Public Events That Affect Toy Demand, Dealers Acknowledge Reaction to Matters on the Public Mind,” *Toys and Novelties*, January 1927, 348.

<sup>16</sup> “Among the New York Retailers,” *Toys and Novelties*, October 1927, 77.



showed little sign of slowing once the initial festivities surrounding Lindbergh's homecoming had subsided.<sup>17</sup>

Regardless of how Americans responded—by queuing up at toy stores, penning glowing letters of congratulations, or gathering near radios and attending official celebrations—Lindbergh's transatlantic solo flight was seen as a national achievement, a collective victory for a country that had years earlier relinquished its role as the source of cutting-edge aviation technology to Europe. Lindbergh's success heralded the nation's enthusiastic return to technological predominance in aviation, engendering a cultural celebration that allowed the public to reposition the nation's collective identity around the airplane in ways not seen since the Wright brothers' pioneering flights decades earlier. And in celebrating the latest technological hero, Lindbergh served as a screen for projecting images of America's best qualities.

In Lindbergh, Americans saw a clear confirmation of the values they held most dear. One advertising executive saw Lindbergh's transatlantic flight—that “great advertising feat”—as a way to promote America's self-image to the world, an opportunity to show the nations of Europe, in his words, what “99½ per cent. [sic] of Americans really are—men and women of the same type of Charles Lindbergh”—full of “native courage and American pluck.”<sup>18</sup> An Episcopalian minister in New York went

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<sup>17</sup> “Toy Departments Report Increased Sale of Airplanes Due to Lindbergh's Flight,” *Toys and Novelties*, June 1927, 74; “Display Idea in New York Stores,” *Toys and Novelties*, June 1927, 48-49. On window displays generally, see “Neighbor—That's GOLD in your TOY WINDOW,” *Toys and Novelties*, April 1929, 72, and William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Pantheon, 1993).

<sup>18</sup> William H. Rankin, “Another Lindbergh Role,” (Letter to the Editor) *New York Times*, 11 June 1927. See also, “Lindbergh Big Advertising Man, Says William Rankin,” *Washington Post*, 19 June 1927. Rankin's observations captured the very essence of celebrities as social mirrors that, as historian Renée Sentilles' asserts, reflect and reinforce social and cultural boundaries by exaggerating valued qualities, while minimizing less desirable flaws. See her *Performing Menken: Adah Isaacs Menken and the Birth of American Celebrity* (New York: Cambridge University Press, 2003), 6. On the role of the press in

further, crediting Lindbergh with “sav[ing] souls” by “restor[ing] humanity’s belief in human nature” and reassuring the nation’s faith in the “ability to do big things.”<sup>19</sup> These sentiments were echoed in countless Sunday services that June, where, according to one *New York Times* correspondent, Lindbergh’s “courage, his skill, his clean life, his modesty, his simplicity, furnished the theme for many sermons” around New York and elsewhere. “He was,” the reporter continued, “extolled as a model and inspiration for youth, as a symbol of faith and religion, as a bond between nations replacing world strife with international brotherhood, [and] as an example of perfect sportsmanship.” The Reverend Dr. Fritz W. Baldwin, speaking before the graduating class at Adelphia College in Brooklyn, scoffed at the “Lucky Lindy” nickname circulating in the press, claiming “it was not luck but ideas and ideals” that was the root of his success. Another posited Lindbergh’s modest nature as the antidote to boastful, “ground flier” types who merely *talked* about achieving greatness.<sup>20</sup>

Even Lindbergh’s colleagues in the technical press were not immune from praising his character. “A doer, not a talker,” wrote *Aero Digest*. The kind of man who—without a trace of “personal exploitation or press agency”—became a “youthful conqueror of the elements, the ocean, yes and even time itself.” Even Lindbergh’s own admission that he briefly flirted with the idea of aborting the trip and returning to New York proved he was no “super man.” For this, editors added, “he deserves far greater praise,” for it demonstrated that Lindbergh “is like the rest of us—and still did it!”<sup>21</sup>

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constructing—and dismantling—celebrity, see Ponce de Leon, *Self-Exposure: Human Interest Journalism and the Emergence of Celebrity in America, 1890-1940* (Chapel Hill: University of North Carolina Press, 2002).

<sup>19</sup> “Asserts Lindbergh Restored Our Faith,” *New York Times*, 30 May 1927.

<sup>20</sup> “Lindbergh Flight Hailed in Pulpits,” *New York Times*, 13 June 1927.

<sup>21</sup> “Ray for Lindy!” *Aero Digest*, June 1927, 560.

Rival publication *Aviation* similarly marveled at Lindbergh's modesty and his consistent efforts to support aviation's cause. "No diplomat," one editorial read, "skilled in the art of appearance or grown old in the service of courtesy, could have been more at ease than he. He was sure of himself and unafraid, yet modest." Lindbergh, *Aviation* noted approvingly, "has raised the art which he so skilfully [sic] practices to the pinnacle of scientific achievement."<sup>22</sup>

The potent combination of youth and technical mastery helped elevate Lindbergh to heretofore-unprecedented levels of heroism. And in constantly singling out his youth, Americans spoke for the aviation industry as a whole, because, admittedly, it too was young and full of promise, serious yet full of youthful optimism. A poem appearing in the *Washington Post* heralding Lindbergh's arrival in Paris opined, "Youth triumphs, through all prophecies of woe" foiling attempts "to outface America's smiling boy!"<sup>23</sup> The archbishop of New York, in meeting Lindbergh at St. Patrick's Cathedral, stated simply, "I greet you as the first and finest American boy of the day."<sup>24</sup> A fictionalized account of Lindbergh's flight published in the *American Boy* described him simply as the "boy in the silver ship." One corporate advertiser saw him as the "boy in the cockpit."<sup>25</sup> Lindbergh's transformation into a 'boy' honored his wondrous achievements, but also—by extension—celebrated the potential of real boys who looked upon him with admiration.

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<sup>22</sup> "America Welcomes Colonel Lindbergh," *Aviation*, 20 June 1927, 1350; "Lindbergh," *Aviation*, 30 May 1927, 1119.

<sup>23</sup> Harry Kemp, "Lindbergh," *Washington Post*, 22 May 1927.

<sup>24</sup> "Cardinal Blesses Lindbergh; Calls Him Finest American Boy," *New York Times*, 14 June 1927.

<sup>25</sup> Thomson Burtis, "The Boy in the Silver Ship; The Thrilling Story, in Fiction Form, of Lindbergh's Daring Flight," *American Boy*, August 1927, 17-19, 44-45, 48-49; B. F. Goodrich, "The most Critical sixty seconds of LINDBERGH'S flight were made on SILVERTOWNS!," advertisement, *Aero Digest*, July 1927, 33.

While most Americans marveled that someone so young could accomplish such an achievement, Lindbergh's youth was, according to Presbyterian minister Henry Smith Leiper, the primary ingredient for his success. In writing to the editor of the *New York Times*, Leiper observed that "when all America is rejoicing in the triumph of Charles Lindbergh and feeling amazement at his youth it is interesting to recall that many of the great discoveries and achievements that have thrilled the world were made by men about his age." Lindbergh, just twenty-five, was surely worthy of comparison—in Leiper's mind—with Galileo and Newton, Watt, Edison, and Westinghouse, Einstein and countless other scientific and technological visionaries who made their most important discoveries in their twenties. In this context, Lindbergh represented yet another confirmation of the fruitful marriage of youth and technoscientific discovery. That Lindbergh was neither a scientist nor an inventor mattered little in Leiper's estimation, for by equating Lindbergh with such luminaries in the history of Western science and invention served as an attempt to solidify his legacy as more than a pilot. He was, instead, a deliverer of a new epoch and a realization of modernity's promise.<sup>26</sup>

Despite Leiper's suggestions to the contrary, part of Lindbergh's overwhelming appeal was that he *was* a pilot—a member of a technological elite quite distinct from the non-flying public. Pilots, of course, had been the objects of public adoration since they first appeared on the American scene, viewed, by turns, as serious pioneering technologists and daring risk-takers—potentially divergent views to be sure, but ones that nonetheless reflected deep-seated praise of rugged individualism in American culture. Unlike heroic scientists or inventors whose mental energies or mechanical proclivities

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<sup>26</sup> Henry Smith Leiper, "Youth Often Lead in Great Achievement," (Letter to the Editor) *New York Times*, 19 June 1927.

called forth the creation of new machines and processes, pilots were praised instead for using modern technology to collapse space and time. Moreover, the airplane the pilot required for flight did more than merely physically separate pilots from the ground for it also provided the cultural isolation necessary to transform these figures into new models of masculinity. Nowhere was this more clear than in popular views of fighter pilots—probably *the* most celebrated cultural legacy of the Great War. The image of the fighting ace used modern technology to sever, and ultimately sanitize, these figures from the horrors of the landscape of modern industrialized warfare. Popular culture honored these individuals for their heroic deeds while at the same time afforded the military aviator access to romanticized views of war simply no longer possible soldiers on the front line. Moreover, remembering the romanticized vision of the fighting ace of the Great War allowed subsequent generations to forget those infantrymen in the trenches, whose world—filled with tanks, machine guns, and poison gas; mangled bodies, broken souls, and the overwhelming stench of death—cast a much darker and far more hopeless view of the destructive power of modernity.<sup>27</sup>

In tandem with American praise of optimistic modernity, this tradition of honoring pilots only intensified in the 1920s as several aviators gained public acclaim for setting many ‘firsts’ in the history of flight. In 1926, Richard E. Byrd, accompanied by Floyd Bennett, gained fame for making the first flight over the North Pole. In early June

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<sup>27</sup> A. Bowdoin Van Riper, *Imagining Flight: Aviation and Popular Culture* (College Station, TX: Texas A & M University Press, 2004); David T. Courtwright, *Sky as Frontier: Adventure, Aviation, and Empire* (College Station, TX: Texas A&M University Press, 2005); Dominick A. Pisano, Thomas J. Dietz, and Joanne M. Gerstein, *Legend, Memory, and the Great War in the Air* (Seattle: University of Washington Press, 1992). See also, Paul Fussell, *The Great War and Modern Memory* (New York: Oxford University Press, 1975). For the image of the pilot in the space program, see Michael L. Smith, “Selling the Moon: The U.S. Manned Space Program and the Triumph of Commodity Scientism,” *The Culture of Consumption: Critical Essays in American History, 1880-1980*, ed. Richard Wightman Fox and T. J. Jackson Lears (New York: Pantheon Books, 1983): 177-209.

1927, Clarence Chamberlain and Charles Levine completed a successful flight from New York to Germany—a journey, it turned out, that was longer than Lindbergh’s own in terms of overall flight-time and distance traveled. Unlike Chamberlain and Levine, however, Lindbergh flew first and had flown alone, and for this, he was without equal.

Reporters dispatched to cover the Lindbergh beat repeated any number of monikers he collected through his days as a barnstormer, army pilot, and air mail carrier—“Daredevil Lindbergh,” the “Flying Fool,” “Slim,” “Lucky Lindy,” and others.<sup>28</sup> But the public persona of Colonel Charles A. Lindbergh—the Lindbergh the American public came to know in 1927—differed sharply from these earlier labels. In newspapers articles and editorials, Lindbergh emerged as rational and modern, a risk-taker to be sure, but one who took calculated risks; he was seen as a knowledgeable and competent technologist whose present accomplishments were matched only by his much-lauded modesty, trustworthiness, and youthful appearance. Unlike the trial-and-error experimentation of the beloved backyard inventor, Lindbergh represented the measured coolness of professional aviation: a new model of masculinity for an emerging air age. In describing, in their words, the “most astounding feat in the history of aviation,” the *American Boy* credited Lindbergh’s “almost superhuman achievement” to his “quiet courage, a habit of thought fully weighing his chance, and, above all, a trait that has characterized him all through his boyhood—a desire to know ‘why’.” Endowed with a scientist’s curiosity, editors scoffed at the way he was “victim[ized]” with so “many nicknames.” Correcting this injustice, the magazine committed another, pinning him with: “‘Why’ Lindbergh.” They justified this new moniker, quite simply, because

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<sup>28</sup> “Nickname Record Broken by Lindbergh; He has 11,” *Washington Post*, 24 May 1927.

Lindbergh “was never satisfied until he knew.”<sup>29</sup> In retrospect, the transatlantic flight became nothing short of a glorious public inquiry into the natural world and not—by implication—just a clever technological stunt.

Celebrations of Lindbergh’s attributes crept into discussions of the technology that made his flight possible, in effect making praise of one, praise of the other. These elements, as it turned out, were in place before American welcomed Lindbergh home in early June. A Goodrich advertisement heralding Lindbergh’s departure announced that with their “Silvertowns [tires] across the sea....springing evenly and safely off their dependable resilience” Lindbergh “hopped off at Curtis Field on his history making transatlantic flight to Paris.” With the pilot, who spent a year assembling his craft “quietly at San Diego, counting on its mechanical perfection as well as his skill and courage to carry through to the goal,” the company assured readers that Lindbergh’s skill, not luck, would bring the craft—then “speeding over seas”—to Paris safely. Noting the “perfectly equipped airplane, instruments, and parts” were carefully assembled and ably piloted, the journey was, in their words, as “nearest to perfection” as could be conceived.<sup>30</sup>

The allegedly perfect technological design of the *Spirit of St. Louis* in Goodrich’s advertisement equated the characteristics of modern aviation technology to Lindbergh himself, a transitive act echoed in P. W. Wilson’s assessment of Lindbergh’s character published in the *New York Times*. In referring to the pilot’s preparations, Wilson observed, “he left nothing to chance that could be safeguarded by thought and skill. His loops and his nose dives are evidence not of a mere bravado, but of a scientific

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<sup>29</sup> “LINDBERGH Found Out Why,” *American Boy*, July 1927, 63 (emphasis in original).

<sup>30</sup> B. F. Goodrich, “LINDBERGH OFF to Paris on Goodrich Silvertowns,” advertisement, *Washington Post*, 21 May 1927. See also, Goodrich, “The most Critical sixty seconds.”

confidence in prior industry.” This confidence, moreover, was not rooted in mere blind faith, for Lindbergh, Wilson added, “inspects his plane...with the eye of an X-ray.” A “type” more than an individual, Wilson boasted that “Lindbergh Symbolizes the Genius of America,” a reflection of the “mechanical genius” that gave rise to some of the nation’s greatest inventions and inventors. For all of his admirable qualities, Lindbergh could only have emerged, in Wilson’s view, “in the atmosphere of a country where boys, untaught in physics, can build a radio and detect, by ear, in which of a dozen spark plugs there has developed a hint of iniquity.”<sup>31</sup>

In the press, according to historian Charles L. Ponce de Leon, Lindbergh embodied the seriousness of professional aviation—“an authentic hero who refused to allow himself to be ‘cheapened’ or ‘spoiled by his fame or fortune.” Lindbergh greeted his newfound celebrity unevenly, preferring to speak publicly about technical aspects of aviation, the need for more airports, or other pro-industry causes, rather than indulging the reporters’ inquiries to reveal details about his personal life. As Ponce de Leon convincingly argues, Lindbergh’s refusal to participate in reporters’ creation of “chatty profiles,” merely enhanced his carefully constructed public persona, which Ponce de Leon terms the “Scientific Lindbergh.” Lindbergh’s seeming reticence to advance his own fame—and his consistent appeals to aviation’s ‘cause’—thus allowed him to assume the role as *the* public face of aviation.<sup>32</sup>

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<sup>31</sup> P. W. Wilson, “His Ship ‘The Spirit of St. Louis’ Typifies the Spirit of Mechanical Triumph—He Himself is Also a Type, But With A Difference,” *New York Times*, 12 June 1927.

<sup>32</sup> Ponce de Leon, “The Man Nobody Knows,” 75-101 (quote on page 77). Ponce de Leon finds that the press initially acquiesced to Lindbergh’s vision, but soon found the contraction between his apparent absence of self-acclaim and his own willingness to afford himself of the privileges of his celebrity too great. As a result, the press soon developed an increasingly hostile relationship with Lindbergh, which, Ponce de Leon asserts, raised the stakes to dismantle his celebrity. See also his *Self-Exposure*, 2, 103-104, 131-132.



Representatives of the aviation industry clearly recognized his value and in July 1927 Lindbergh left on a three-month tour of the United States in the *Spirit of St. Louis* sponsored by the Daniel Guggenheim Fund for the Promotion of Aeronautics. The tour, which brought him directly to the public to speak about the importance of encouraging air transport, was planned in cooperation with the Aeronautics Bureau of the U.S. Department of Commerce and represented the industry's official response to Lindbergh phenomenon. According to the *New York Times*, the tour was designed "to stimulate interest in" aviation, to enlist public support in the "use of present aerial transportation facilities for mail, freight and express and passengers and other services now performed by aircraft," and to remind all Americans of the necessity for the industry's continued expansion.<sup>33</sup> Regardless of the stated objectives, the tour became a display of pure corporate showmanship.

At every stop on Lindbergh's American tour, thousands turned out to show their support. The tour, which started in Hartford, Connecticut on July 20, moved north through New England before heading west to Cleveland and Pittsburgh in early August. Lindbergh continued west over the next several weeks before returning east through the South in late September. In October, Lindbergh completed his tour in New York City. By the time he was done, Lindbergh had visited 75 cities in all 48 states. At each stop the public turned out in droves to see him, to hear him speak, and to admire his famous plane. In December, Lindbergh followed up his U.S. tour with a goodwill trek across Central and South America and the Caribbean. Before he retired the *Spirit of St. Louis* in the spring of 1928, perhaps as many as 50 million American spectators, and countless others

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<sup>33</sup> "Lindbergh Starts Air Tour Next Week," *New York Times*, 2 July 1927.

in Central and South America, saw his plane.<sup>34</sup> Recognizing his own role in history, Lindbergh placed his plane into the care of the Smithsonian Institution, where it was put on display at the United States National Museum. One newspaper correspondent mourned the dissolution of the “famous partnership of ‘We’,” but added that the “most famous airplane in the world has found a resting place where in future years boys and embryo fliers may got to look at it and wonder.” Expectantly, thousands turned up when the exhibit opened to the public on May 13. Recalling that Sunday afternoon, Paul Edward Garber, who was in charge of aeronautics artifacts for the museum, said “there was a mob out extending all over the Mall! Thousands of persons came in...to see it and no one had ever done that for any previous exhibit, no matter what it was.”<sup>35</sup>

### ***Narrating the Boy Lindbergh: Popular Biography and the Lore of Boyhood***

Lindbergh’s Guggenheim tour capped a months long publicity campaign that began in the summer of 1927 and secured his status as the country’s most prominent spokesperson for aviation; a campaign that coincided with the publication of his memoir. The manuscript, which he completed in just three weeks before he began his U.S. tour, appeared as ‘We’ (1927) and became an instant success. Advance orders alone thrust the book to the top of bestsellers lists and the book sold close to two hundred thousand copies in its first month; six hundred and thirty thousand by 1928. ‘We’ went through numerous printings, was

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<sup>34</sup> “Lindbergh Starts Air Tour Next Week,” *New York Times*, 2 July 1927. One the Guggenheim Fund and Lindbergh’s tour, see Richard P. Hallion, *Legacy of Flight: The Guggenheim Contribution to American Aviation* (Seattle: University of Washington Press, 1977). For estimates of the number of people who saw the *Spirit of St. Louis*, see Pisano, “The *Spirit of St. Louis*—Fact and Symbol,” 254.

<sup>35</sup> “‘We’ Fly Together on Final Journey,” *New York Times*, 1 May 1928; “Lindbergh Gives Plane to History,” *New York Times*, 6 May 1928; “Lindbergh’s Plane Taken to the Smithsonian; Will be Hung and Place on View Tomorrow,” *New York Times*, 12 May 1928; Paul Edward Garber, interview by Miriam S. Freilicher, transcript, 7 May 1974, Record Unit 9592, Oral History Program, Archives and Special Collections, Smithsonian Institution (hereafter SIA).

translated into several languages, and, in 1928, was repackaged as a special Christmas gift edition for boys. The financial success of *'We'* injected cash into Lindbergh's, its publisher's, and retailers' coffers, but for the book-buying public the book also provided a means in which they could participate in the Lindbergh phenomenon. Neil Loving, who received a copy of *'We'* for Christmas in 1928, along with an "imitation leather [aviator's] helmet complete with goggles," recalled, decades later and with lasting fondness, "there wasn't a happier 12-year-old boy in the neighborhood that day."<sup>36</sup>

The publisher's choice of the plural pronoun for the book's title echoed Lindbergh's own public use of the term to explain that his flight was a collective endeavor, an invocation that merely reinforced Lindbergh's celebrated modesty, his purported absence of self-acclaim, and his attempts to cast himself as serious professional in the eyes of the his admirers. *'We'* ambiguously pointed to the author, his airplane, his financial backers, and the public at large, but the narrative itself, which outlined Lindbergh's early life and his preparations for the New York to Paris flight, only reinforced his celebrated public image. Moreover, when it came to flying itself, Lindbergh's account was seldom reflective, describing the transatlantic flight in just eight of the book's two-hundred and thirty pages.<sup>37</sup> The book's title confirmed Lindbergh's claim to a modest heroism, as did his noticeable silence on the struggles of completing the New York to Paris jaunt. Lindbergh further enhanced the public perception of his much-lauded modesty by leaving the discussion of his reception in Paris, Brussels,

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<sup>36</sup> Berg, *Lindbergh*, 166-167; Neil V. Loving, *Loving's Love: A Black American's Experience in Aviation* (Washington: Smithsonian Institution Press, 1994), 12.

<sup>37</sup> Lindbergh, *"We."* Only once in the volume did Lindbergh approach the feeling of flight, noting: "The first solo flight is one of the events in a pilot's life which forever remains impressed on his memory. It is the culmination of difficult hours of instruction, hard weeks of training and often years of anticipation. To be absolutely alone for the first time in the cockpit...is an experience never to be forgotten" (43). In referring to this experience, Lindbergh merely locates it, leaving the mysteries of a pilot's first solo to those who shared this experience as the only ones who could divine its true meaning.

London, Washington, and New York to journalist Fitzhugh Green in an eighty-five page appendix. In essence, Green's contribution enabled Lindbergh to address his numerous awards via proxy. The book's narrative arc proved essential to fortifying Lindbergh's public persona. If Lindbergh had structured his account differently, by including, for example, his battles fighting off mental and physical exhaustion during the transatlantic flight—as he did in his Pulitzer Prize winning memoir published twenty-six years later—, or a first-hand account of the celebrations that awaited him, he would have risked advancing his own heroism and violating the very foundations of his celebrity image. In forging the elements of his celebrity, Lindbergh was also—ultimately—constrained by its very tenets.<sup>38</sup>

Readers took notice. Horace Green, in his review of *'We'* for the *New York Times*, asked pointedly: “Where is the ‘inside’ story that 50,000 advance buyers of the volume have been led to expect?” “For the young flying Colonel, as his friends know, has no imagination in the personal sense, but great imagination in the mechanical sense. His mind works without embroidery. He thinks and speaks in condensed terms suitable for his purpose.” Green dismissed all nicknames as “wide of the mark,” for the author of *“We”* was simply more careful than such nicknames allowed. The ‘real’ Lindbergh, Green asserted, “shows that his plans are exact, careful and weighed in the balance.” In short, the account had its intended effect, for it displayed nothing more than “His Practical Genius.”<sup>39</sup>

Clearly, *'We'* advanced Lindbergh's own degree of mythmaking. But for a culture weaned on decades of inventive boy discourse, the public required a boyhood

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<sup>38</sup> Lindbergh, *The Spirit of St. Louis* (New York: Charles Scribner's Sons, 1953).

<sup>39</sup> Horace Green, “‘We’ Reveals Lindbergh as More Careful Than Lucky,” *New York Times*, 7 August 1927.

worthy his achievements, a need quickly filled by several industrious popular biographers. Of these, Dale Van Every and Morris Dehaven Tracy's *Charles Lindbergh: His Life* (1927), which appeared on store shelves alongside *'We'*, reflected the imperatives to conform Lindbergh's life to the rigors of inventive boy discourse. The book, culled from fictionalized newspaper accounts, recognized that Lindbergh's "bashful manner" and "boyishness" readily appealed to the "to the popular imagination," and as with all heroic technologists, he required an equally fabled boyhood worthy his status.<sup>40</sup> Pressed for details about Lindbergh's early years, the two reporters mined half-truths and fictitious tales, and wove a biographical portrait that honored the very potential of boyhood.

Lindbergh's early childhood experiences, in Every and Tracy's hands, moved into the realm of the inventive boy, where "play" became "experiments" and no anecdote proved too small—or fantastic—to demonstrate Lindbergh's supposed natural affinity with technology. As a boy, they imagined, young Charles was "constantly working," never idle, and always "preferred to play a lone hand." Boyhood visits to his maternal grandfather's dental laboratory found in young Lindbergh's "playing" the pursuits of a budding young technologist wherein he displayed his "natural inclination towards mechanics and experimentation," attributes, which eventually, "served...as one of the bases of his Paris flight."<sup>41</sup> Elsewhere, Every and Tracy revealed that little "Charlie Lindbergh" gained his first exposure to aeronautics by playing with "toy balloons" and tiny homemade "parachutes," which he fashioned from cloth weighted with small pebbles or "scraps of iron." Neighborhood boys who witnessed "Charlie" "hurl one of his

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<sup>40</sup> Dale Van Every and Morris Dehaven Tracy, *Charles Lindbergh: His Life* (New York: D. Appleton and Company, 1927), 2.

<sup>41</sup> *Ibid.*, 23.

parachutes”—and watched with wonder as they sailed gently through the “summer winds”—were “naturally attracted” to the pastime. Even though the authors claimed that “parachute sailing” quickly “became a major sport in Little Falls, [Minnesota]” that summer, expectantly “Charlie’s” always glided far past the others.<sup>42</sup> More remarkably—and according to accounts credited simply to “villagers”—Every and Tracy claimed that as a boy young “Charlie” purportedly “hoist[ed] his bicycle” into a tree so that he could “climb aboard it, and sit there dreaming that he was flying.” These same villagers, the writers continued, recalled seeing young “Charlie” nestled atop him perch for hours, just “daydreaming.” In imagining the content of these dreams, Every and Tracy mused: “[i]t doesn’t seem incredible that as he sat there looking far away into the skies and dreaming the dreams of childhood, that the flight to Paris was begun.”<sup>43</sup>

Every and Tracy’s book traced Lindbergh’s later years as he acquired greater and more sophisticated technologies—a motorcycle, an automobile and eventually his very own airplane—all of which fed his “craving for speed and for the wind beating full upon his face as he cut through the air.” Lindbergh’s natural passion for technology provided a mean to escape from the pressures of modern society. As a result, riding his motorcycle at “break neck speeds” while an engineering student at the University of Wisconsin, became a formal “protest against the social life of the school.”<sup>44</sup> Although the hagiographers acknowledged his early departure from the school, they reasoned this away with the explanation that Lindbergh was simply *too* independent for university life and *not* for any lack of ability. As ever, Lindbergh was a natural scientist who “enjoyed [the] experimental work” he conducted in “College laboratories” and always “completed his

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<sup>42</sup> Ibid., 34.

<sup>43</sup> Ibid., 35.

<sup>44</sup> Ibid., 35.

experiments with great care and fine results.” His apparent natural ability as an experimenter, however, was not matched with a willingness to complete research reports; or at least that is how “college tradition” spoke of his short university career.<sup>45</sup>

The desire to cast Lindbergh as a natural experimenter cloaked Lindbergh’s formative years in an aura of science. As a six-year-old, “Charlie” apparently dropped a neighbor’s cat from a second floor bedroom window to see if it would land on its feet. In hindsight, this episode became an early inquiry into mysteries of the natural world. Youthful cruelty to animals, they wrote, was “probably the first manifestation, or at least the first practical application, of the urge to experiment and to test each statement which interested him.” This “urge,” they continued, “has led Lindbergh on through many episodes” throughout his life and “was one of the underlying impulses which caused him to attempt his world-startling flight.”<sup>46</sup>

While youthful tossing of pets and parachutes enhanced their subject’s early claims to science, Every and Tracy’s account departed from the realities of Lindbergh’s life to such a degree that it strained the very limits of credibility. As a popular biography, *Charles Lindbergh: His Life* can only be understood within the context of inventive boy discourse, for in creating a mythic fictional past for Lindbergh its authors did far more than narrate the early life of a celebrated technologist. Rather, they sought to locate the origins of who Lindbergh was imagined to be in 1927. This, as we have seen earlier, entailed an imaginative revisionism that transformed ‘Charlie’ into a smaller version of the person with whom America had fallen in love. As with the public discussion of Orville and Wilbur Wright’s toy *hélicoptère*, the fact that these fictionalized and falsified

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<sup>45</sup> Ibid., 38.

<sup>46</sup> Ibid., 40-42.

tales routinely bore little resemblance to the truth mattered little, for it merely confirmed the expectations of how his childhood was supposed to appear.

Not surprisingly, Lindbergh himself viewed the book's publication with incredulity, marking his own copy with the inscription: "This book is full of errors—pure imagination in many places." Decades later, Lindbergh returned to the Every and Tracy's biography, drafting a thirty-one page typewritten memorandum to himself recounting, page-by-page, its many inaccuracies. Of the accounts of his formative years, Lindbergh flatly denied having ever hoisted a bicycle into a tree, writing simply, "This is pure fiction." Of the toy parachute, Lindbergh declared, "I did not construct and experiment with toy parachutes. This is the type of fiction typical of such biographies." Moreover, he wrote assuredly, "I never saw a toy parachute on the farm or in Little Falls, to say nothing of it 'becoming a major sport'." Lindbergh refuted Every and Tracy's account of his college career in its entirety, denying that his experiments were "completed with great care and [achieved] fine results," explaining, "My marks showed this clearly....I found little interest in [the] mechanical-engineering courses I was taking." Rather, "I wanted to enter aviation and learn to fly." Interestingly, while Lindbergh denied much of what Every and Tracy had written, he did confirm the episode about the neighbor's cat—if not their conclusions of its significance—explaining that as a young child he simply did not know any better. In the end, Lindbergh concluded, "Forty years ago, I was so disgusted by its inaccuracies that I read only portions of this book."<sup>47</sup>

While Lindbergh did play an active role in shaping his public image, he was ultimately powerless to control it. The financial success of *'We'* inspired countless other

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<sup>47</sup> Charles A. Lindbergh, typewritten notes on Dale Van Every and Morris Dehaven Tracy, *Charles Lindbergh: His Life* (1927), 29 November 1968, 1-2, 6-8, 31, CAL Notes RE: Biographical Treatments of Himself (hereafter CAL Notes), Lindbergh Papers.



writers to hurry to press a number of unauthorized biographies in order to feed the public's demand. And just as with Every and Tracy's account, the lore of bicycles in trees, toy parachutes, and other minor exploits soon became standard elements in the popular mythology of Lindbergh's boyhood. Collectively these books reinforced the impression that Lindbergh's technological abilities were, at the same time, gifted naturally and nurtured through the freedoms of his boyhood. One account cast his grandfather's laboratory as "a miracle room" full of wonders that excited a boy Lindbergh, and probably young readers as well.<sup>48</sup> Another, found Lindbergh as "a small boy" ordained with a "fondness for mechanics" as he was "always tinkering at things trying to find out 'what made it go' and if there wasn't some way of making it 'go faster'."<sup>49</sup> In yet another, George Buchanan Fife described a young Lindbergh as a loner whose dog was his only companion, adding that not much changed in later years excepting that "planes became his pets."<sup>50</sup>

For *Youth's Companion*, Lindbergh's act in hoisting his bicycle into a tree was an exercise in boyish pragmatism, for "*When Lindbergh was a Boy~* THERE were no racing model planes. To get his first experience in aviation," editors continued, "he climbed a tree with his bicycle, tied it to a limb, and pedaled for all he was worth" in an attempt to pilot "an airplane through the air in his imagination." In offering readers a model airplane kit as part of a promotion to increase the sales of annual magazine subscriptions, *Youth's Companion* promised, "YOU can have the fun Lindbergh missed," adding, "If

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<sup>48</sup> Earl Reeves, *Lindbergh Flies On! A Story of a Hero, and of the Pioneers, and 'Empire Builders of the Air' Who Followed Him* (New York: R. M. McBride & Company, 1929), 6.

<sup>49</sup> Richard J. Beamish, *The Story of Lindbergh, the Lone Eagle; Including the Development of Aviation, Epoch-Making Flights of the World's Greatest Airmen, and the History of Efforts to Bridge the Distance Between the Old and New Worlds* ([Philadelphia]: The International Press, 1927), 154-155.

<sup>50</sup> George Buchanan Fife, *Lindbergh, The Lone Eagle: His Life and Achievements* (New York: A. L. Burt Company, 1927), 41.

you uncover an unsuspected talent in yourself, you may be a famous pilot or builder of tomorrow. Remember,” editors reminded, Lindbergh “had much less to go on and yet [he] is today the world’s best known aviator.” The following year, *Youth’s Companion* invented a new fiction in a similar advertisement, assuring readers that Lindbergh started on his path to becoming a pilot by building model airplanes. Still, editors quickly added, “Colonel Lindbergh Never Had a Plane Like This!”<sup>51</sup>

The spate of fictionalized biographical treatments represented the convergence of Lindbergh’s fame with the demands of youth consumer culture, but while biographers recycled the supposed events in Lindbergh’s early life based on second or third-hand fictions, others took even greater license. Two reporters, Gerald R. Gage and James Lindbergh (no relation to Charles), writing under the pseudonym Gage Lindbergh crafted perhaps the most outlandish account that touted itself as a biography. Just as their pseudonym blended the real authors’ names together, “*Plucky*” *Lindbergh* (1927) too combined widespread stories accepted as truth with fanciful tales. The fictional ‘Gage Lindbergh’ narrates this strange book as an Old West teller of tall tales, transforming Lindbergh into a modern cowboy and a conqueror of the new frontier of the sky.<sup>52</sup> Added to sections that included Lindbergh’s travel log, public reaction to his transatlantic flight, and standard elements of his boyhood seen elsewhere, the authors included a sampling of some of his unbelievable feats. Heroic rescues of passengers from burning airplanes, joined tangles with bullies and even farm work performed using his airplane as

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<sup>51</sup> “*When Lindbergh was a Boy~*” advertisement, *Youth’s Companion*, September 1928, 471; “Colonel Lindbergh Never Had a Plane Like This!” advertisement, *Youth’s Companion*, August 1927, 103. For a fuller discussion of magazine premiums, see Chapter 5 this volume.

<sup>52</sup> Gage Lindbergh [Gerald R. Gage and James Lindbergh], “*Plucky*” *Lindbergh: Incidents in the Life of Colonel Charles Lindbergh and Brief Biography; Log of His Transatlantic Trip and Receptions, Recording All Important Facts* (Los Angeles: Gem Publishing, 1927). For a treatment of the ideology of the frontier in popular views of aviation, see Courtwright, *Sky as Frontier*.

a plow. More incredibly, the book's opening chapter featured the ever-heroic Lindbergh rescuing a couple from an unusually vicious ostrich, who possessed, in the narrator's words, an apparently deadly claw that could "easily rip a man to death with one kick." Spying this creature from the sky, "Charley" lassos the feathered menace using a spare towrope he carried aboard (presumably for just this sort of emergency), allowing the shaken, though physically unharmed, couple to escape. Even with these tales, Gage and Lindbergh echoed the admiring depictions of Lindbergh's skill standard in other popular biographies. Criticizing "many so-called mechanics" for their inability "to think out something original or progressive," they concluded, "'Plucky' Lindbergh" was simply "one in a million," a preternaturally-gifted technologist who would never "overlook the minutest detail" and possessed a "stick-to-it-iveness" that made him seem predestined to greatness.<sup>53</sup>

Even as Gage Lindbergh, in "Recording all the Important Facts," ended up with a "biography" that was more fiction than fact, creators of children's series fiction often stuck closer to the 'real' Lindbergh in capitalizing on his fame. As literary scholar Fred Erisman observes in his recent study of the genre, the "Lindbergh mystique" fused elements of "youth, democracy, courage, activism, carefulness, and technical competence," and inspired a growing industry of fictional pilot-heroes.<sup>54</sup> Of these, the popular "Ted Scott" series—created by the Stratemeyer Syndicate in 1927 under the pseudonym Franklin W. Dixon—is unmistakably Lindbergh. The narrator describes the title character—who, as required by the genre, is an orphan who lives with his aging foster parents—as "tall, slender, with brown hair and eyes"; a small town boy whose

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<sup>53</sup> Gage Lindbergh, "Plucky" *Lindbergh*, 15, 52.

<sup>54</sup> Fred Erisman, *Boys' Books, Boys' Dreams, and the Mystique of Flight*, (Forth Worth, TX: Texas Christian University Press, 2006), 110-111.



**Figure 28:** Frontispiece to Franklin E. Dixon’s *Over the Ocean to Paris* (1927) showing Ted Scott, one of several fictional Lindbergh-inspired heroes, circling the Eiffel Tower before landing.

“modesty was equal to his courage.” A “natural mechanic” who worked in the assembly department of a local airplane manufacture, Ted serves as Stratemeyer’s idealized vision of a faithful employee who “loved his work, loved everything connected with flying, and was fully determined to become an aviator as soon as possible.”<sup>55</sup>

In character and appearance, Ted Scott is somewhat similar to Lindbergh, but once he meets Mr. Walter Hapworth, a wealthy man from St. Louis who becomes his benefactor, the similarities become more pronounced. The literary device of the chance encounter—itself a clear recognition of the lasting power of Horatio Alger’s influence over series fiction—presents the opportunity for future success. Hapworth offers to pay for the costs associated with flight school because he admires Ted’s skill, but also

<sup>55</sup> Franklin E. Dixon [pseud.], *Over the Ocean to Paris, or Ted Scott’s Daring Long Distance Flight* (New York: Grosset & Dunlap, 1927), 13, 19.

because “I’ve got more [money] than I know what to do with.”<sup>56</sup> As expected, Ted excels at flight school, moves quickly to the top of his class, and becomes an airmail pilot before he, predictably, decides to attempt an Atlantic crossing between New York and Paris. Mr. Hapworth again agrees to underwrite Ted’s latest scheme (perhaps for the same odd reasons) and, in an expression of gratitude, Ted names the plane *The Hapworth* in honor of his patron. The details of the flight parrot Lindbergh’s own account, with the expected displays of character upon landing. As he exits the cockpit of the *Hapworth* upon his arrival, Ted announces simply, “I am Ted Scott,” echoing the phrase often credited to Lindbergh (much to his great annoyance): ‘I am Charles Lindbergh.’<sup>57</sup>

While some books, such as the Ted Scott series, provided young readers access to fictionalized versions of Lindbergh, James F. West’s popular biography demonstrated most explicitly Lindbergh’s appeal as a youth role model. West, the Chief Scout Executive for the Boy Scouts of America and, since 1923, editor of *Boy’s Life*, transformed Lindbergh into the *Lone Scout of the Sky* (1928). West’s glowing account, which contained brief contributions from aviation luminaries such as Commander Richard E. Byrd and Clarence D. Chamberlain, was assembled from Lindbergh’s “We” and reporting from the *New York Times*. West’s use of source material, allowed, in essence, West to amplify Lindbergh’s own official presentations. Lindbergh’s example provided just the lesson young readers needed, for, as West understood it, boyhood was a potentially hazardous period of life filled with challenges overcome only through displays of active assertion and tests of will. In his subject, West found nothing short of

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<sup>56</sup> Ibid., 68.

<sup>57</sup> Ibid., 204; Bergh *Lindbergh*, 129.

Scouting's exemplar of modern manhood; Lindbergh was, quite simply, the "Scout of Scouts."<sup>58</sup>

The poem, "Lindbergh," which appeared in the book's forward, foreshadowed the famous flier's meaning as a testament to masculine individual achievement. It opens,

Every man longs to be a hero to some boy.  
*Overnight Charles Lindbergh became the  
hero of ten million American boys.*  
The lone Pathfinder, blazing a trail through  
the arch of the sky *called to the blood of  
the pioneer in every American boy.*

According to the anonymous poet who penned these words, the pioneering spirit of adventure evident in Lindbergh's flight lay dormant within every boy and awaited the actions of heroic men to stir. In highlighting his meaning for boys, the poem shifts its focus away from Lindbergh's beloved pronoun, in favor of an admired, though unwritten, him. Moving from the subjective to the objective point of view allowed the poet to give Lindbergh's celebrated modesty greater weight. Abandoning the meter set elsewhere, the poem closes:

He walked with modesty in high places and  
courtesy in low. Neither cupidity nor flattery  
could tempt him. In the moment of triumph  
he thought not of himself but his cause  
*And America made him not only its hero,  
But the Symbol of its Idealistic Youth.*<sup>59</sup>

In singling out Lindbergh for a biographical treatment, West co-opted Lindbergh's fame to advance Scouting's agenda. Beneath his subject's "tower of fame,"

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<sup>58</sup> West, *Lone Scout of the Sky*, 257; Boy Scouts of America, "Thirty Years of Service: Tributes to James E. West," (1941), Boy Scouts, Warshaw Collection of Business Americana (hereafter Warshaw Collection), Archives Center, National Museum of American History, Smithsonian Institution, Washington, D.C.

<sup>59</sup> "Lindbergh," in *The Lone Scout of the Sky*, 13 (unnumbered, emphasis in original). See also, West, "Lindbergh's Own Story," *Boys' Life*, September 1927, 13, 64.

West asserted, lay the “training, skill and courage that made him the greatest flyer of his day,” but without the “boyhood and the character foundations...he would have toppled from the dizzy heights to which he was carried, as a house of cards goes over when its building limit has been reached.”<sup>60</sup> In constructing this building metaphor, West appropriated not the airplane—whose foundation in the air was suspect—but the dominant symbol of urban modernity—the skyscraper—to underscore the moral development the group projected for all boys. Lindbergh was the masculine ideal in every way, for his success, West suggested, lay not with new and greater technologies, nor with ambition, imagination, and financial backing. These were, to be sure, all helpful—and to more critical readers, essential—but in West’s view Lindbergh’s achievements were ultimately forged from the rock-solid foundations of his character; a lesson oft repeated in the text.

West echoed Lindbergh’s stated aim that he did not to attempt to fly between New York and Paris to seek fame and fortune, but rather for the “advancement of aeronautical science.” Ever faithful to Lindbergh’s own vision, West dismissed stories of parachutes and dreams in treetops as having “no basis whatever in fact,” adding, “there is a practical twist to everything Lindbergh did even in his boyhood and a fanciful picture gives a wrong impression even of his play.” While correcting errors common elsewhere, the chance to imagine Lindbergh’s youth proved tempting. As Lindbergh was just seventeen when the Orteig Prize for the first nonstop flight between New York and Paris was announced, West wondered: “Did he dream as he followed his father’s plow, or as he raced his motorcycle along the streets of Little Falls, Minnesota, that he would be the knight to pick up that gauntlet and answer its challenge?” This question, performed

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<sup>60</sup> Ibid., 85.

directly for his young readers, suggests that if Lindbergh sought out largely outdated modes to frame his celebrity, as Ponce de Leon suggests, then, Dr. West's hagiographic wonderings also possessed a similar patina. The Chief Scout Executive commented that Lindbergh "had as a natural endowment, a superb constitution, hardened by years of outdoor life....His superb confidence was based in every respect, and to the fullest extent possible, on careful preparation." "Not for nothing," West added, "does Lindbergh say in his message to Scouts: 'Your motto 'BE PREPARED' is the greatest factor of success in life.'"<sup>61</sup>

Perhaps more than any other popular treatment of Lindbergh's life, James West's book was a character manual cloaked in the covers of a biography, but his inclusion of plans and instructions for readers to build their very own miniature of the *Spirit of St. Louis*, served to reinforce the potential links between hero worship and aeromodeling. The plans, drawn by occasional *Boy's Life* contributor Elmer Allen, provided boys a way to make material their admiration of Lindbergh. Allen's plans—which he described as “true and accurate in every detail” of the “actual plan of the large machine”—were, in his words, the “next best thing” to the “real” airplane and would “provide the finest possible opportunities for experiment and study.” If, Allen added, this model “can be made to fly,” all the better, for nowhere could boys so readily learn the principles behind the airplane, while also receiving much “pleasure and entertainment.”<sup>62</sup> That Lindbergh himself endorsed aeromodeling gave Allen's prescriptions greater weight. In receiving

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<sup>61</sup> Ibid., 23, 154, 26, 94; Ponce de Leon, “The Man Nobody Knows,” 75-101.

<sup>62</sup> Elmer L. Allen, “A Flying Model of the *Spirit of St. Louis*,” In West, *Lone Scout*, 222-223. Allen's plans were reprinted in the model airplane construction guide, *Model Airplanes* by the Boy Scouts of America ([New York]: Boy Scouts of America, 1929), as well as Allen's own *Model Airplanes: How to Build and Fly Them* (New York: Frederick A. Stokes, 1928). Allen's book paired plans for a *Spirit of St. Louis* model with those other scale models—including a Bleriot monoplane, Curtiss ‘Jennie’ biplane, and Fokker tri-motor monoplane. Arranged chronologically, the book recapitulated aviation's development, with the *Spirit* last becoming the pinnacle of technological progress.



Scouting's Silver Buffalo Award in 1928 for "His Distinguished Service to Boyhood," Lindbergh addressed his "Fellow Scouts" as the "fliers of tomorrow," and encouraged them to obtain the group's merit badge in aviation. The badge was ideal, Lindbergh explained, for it required Scouts to learn the "important phases" of the history of aviation, the basic principles behind mechanical flight, and the successful completion of a model airplane. Building models provided a means to put theory into practice and remained, in Lindbergh's estimation, the best way to learn about the airplane as a mechanical ideal and symbol of the future. As a result, Lindbergh pressed all Scouts to "make an intensive study" of the activity as a way of preparing themselves for the future.<sup>63</sup>

### ***Commodifying 'Lindy': Lindbergh and Commercialized Boy Culture***

Scouts would have welcomed Lindbergh's encouragement, but in light of the consumer cultural response to his fame, his endorsement was not required. The widespread celebrations at the center of the Lindbergh phenomena engendered more than the creation of numerous unauthorized popular biographies and series books. Indeed, book publishing proved just one of the many industries that sought to trade in his image. As the most famous man in America, Lindbergh was a bankable commodity—and not just for the aviation industry to which he eventually aligned himself. Within a month of his return to the United States, Lindbergh received—and subsequently rejected—countless business offers worth, in total, millions of dollars. Propositions from cigarette

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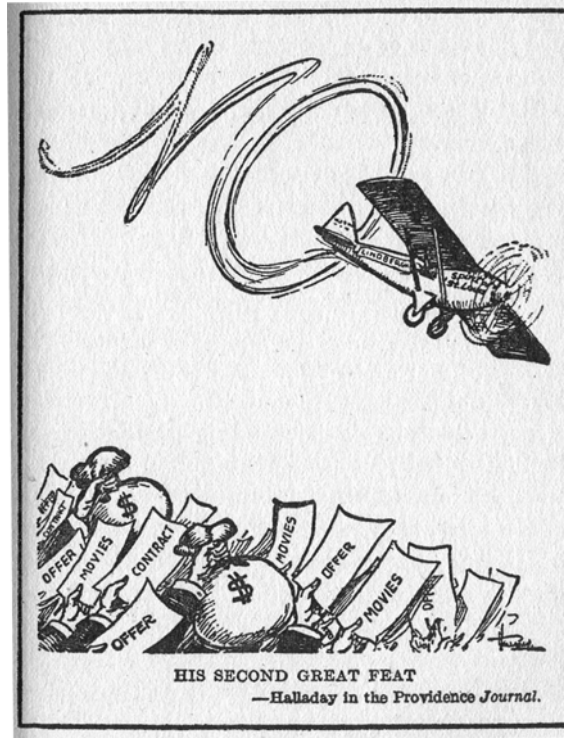
<sup>63</sup> "Boy Scouts Honor Lindbergh at Annual National Meeting," *New York Times*, 22 April 1928. Charles Lindbergh to the Cincinnati Council, Boy Scouts of America (n.d.), reprinted in West, *Lone Scout*, 198. The Boy Scouts again expressed their gratitude when, at West's insistence "to be alert and watchful and cooperative in every way possible in seeking clues or information," Scouts joined in the search for the missing Lindbergh baby, which resulted in A. Scott Berg's estimation "another 914,840 boys and young men...into the field." See his, *Lindbergh*, 247.

manufacturers and producers of breakfast cereals joined those proffered by smaller firms seeking Lindbergh's permission to grace his image upon commemorative calendars, letter openers, pencils, pens, and other goods. One company proposed a line of "Lindbergh Razor Blades," while a group of wealthy investors dangled the prospect of a Lindbergh Airline. The entertainment industry provided some of the most potentially lucrative offers: \$105,000 for a fifteen-week tour from one promoter, \$250,000 for five appearances in South America from another. Just about every major movie studio cooked up ways to have Lindbergh appear in feature films, attempting to entice him with contracts that would have made him an instant millionaire. That Lindbergh refused to participate in these various schemes only endeared him all the more to the public. One editorial cartoon, which featured the *Spirit of St. Louis* flying high above a dozen outstretched hands holding contracts and sacks of cash, spelled out his reply in a trail of smoke across the sky: "NO." For this, the cartoonist labeled Lindbergh's steadfast refusals of the business opportunities his fame afforded "His Second Great Feat" (fig. 29).<sup>64</sup>

In the end, Lindbergh's unwillingness to commercialize his image mattered little, for countless others were willing to do it for him. The street level celebrations welcoming Lindbergh home in New York proved that the public's adoration poured not just from American hearts, but also American pocketbooks. Enterprising vendors enjoyed a spirited trade in buttons, ribbons, lapel pins and other commemorative trinkets bearing his likeness that were quickly snatched up by revelers. One newspaper correspondent proclaimed that Fifth Avenue had become a "Vast Gallery of 'Lindy'

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<sup>64</sup> Berg, *Lindbergh*, 161-163; "His Second Great Feat," editorial cartoon reprinted in West, *Lone Scout of the Sky*, 97.



**Figure 29:** “His Second Great Feat.” This editorial cartoon originally printed in the *Providence Journal*, highlights Lindbergh’s rejection of several lucrative commercial offers. A “feat,” it suggests, that rivaled his transatlantic flight. Image from West, *Lone Scout of the Sky*, 97.

Pictures,’ as his image was reproduced on “half-inch lapel buttons to half-acre portraits on the walls of skyscrapers.” His face, his name, and his plane appeared on men’s neckties, hats, and cufflinks, on brooches and jewelry that adorned women’s bodies, and across pennants waved by all. Merchants sold stamped medallions and Lindbergh’s face—or the outline of his plane—was embossed or cast in all forms of metal—tin, lead, gold, silver. One vendor sold soap bearing his smiling face. Another sold lead trinkets “cast...while you wait” in two sizes for a quarter and fifty cents. For the day, one reporter concluded, “Fifth Avenue was a Lindbergh Museum.”<sup>65</sup>

The dozens of popular biographies published about Lindbergh joined the countless consumer goods that attempted to tap into the opportunities opened by

<sup>65</sup> “City Vast Gallery of ‘Lindy’ Pictures.”

Lindbergh's fame. In the process, "Lindy" was transformed into one of the most recognizable national brands at the end of the 1920s, capable of being mustered for the sale of any number of consumer products. Manufacturers produced Lindbergh-inspired board games and bookends, commemorative plates and jewelry. Bottlers of soft drinks released "Lindy beverage" drinks and music publishers profited from the trade in sheet music for tunes like *Charlie Boy* and *Plucky Lindy's Lucky Day*. There were cheap ceramic ashtrays and expensive wristwatches for men.<sup>66</sup> Applications for design patents poured into the United States Patent Office, which featured scores of product designs resembling the *Spirit of St. Louis*.<sup>67</sup> Even more than the widespread acclaim he received in the popular press, the consumer cultural response became *the* primary drive that transformed Lindbergh's celebrity into a nationwide phenomenon.

For a time it seemed that any product that could bear his name, his image, or that of the *Spirit of St. Louis*, did; existing products or services that could be marketed in his name, were. Products and services that bore little or no obvious connection with aviation nevertheless were marketed using Lindbergh's name. V. M. Pierce, a physician from Buffalo, New York who served as the founder, president, and proprietor of the "Invalids

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<sup>66</sup> Unknown manufacturer, "Spirit of St. Louis Transcontinental Game," [A20040289043], Parker Brothers, Inc. "Lindy Hop-off," [A20040289048]; Bookends, unknown manufacturer [A20040292073, A20040292078]; Cream of Wheat 'Spirit of St. Louis' breakfast bowl, [A20040291019]; unknown manufacturer, *Spirit of St. Louis* gold bracelet, [A20040287051]; Coca-cola, "Lindy Beverage" bottle, [A20040291011]; Beauce, Inc. 'Lindy's' Ashtray, [A20040292000]; Century Cigar & Candy, Co., "Our National Hero" Ashtray, [A20030292001]. These items are part of the Stanley King Collection of Lindbergh memorabilia housed at the National Air and Space Museum. A more complete inventory of the King Collection, including photographs and item description, can be found in NASM's collections database (Objects, Aeronautics, Social and Cultural) at: [http://collections.nasm.si.edu/code/emuseum.asp?emu\\_action=collection&collection=1477&collectionname=Aeronautics%3A%20Social%20and%20Cultural&currentrecord=1&moduleid=1&module=](http://collections.nasm.si.edu/code/emuseum.asp?emu_action=collection&collection=1477&collectionname=Aeronautics%3A%20Social%20and%20Cultural&currentrecord=1&moduleid=1&module=) (accessed 22 April, 2008). On sheet music, see, for example, Ballard Macdonald and Mary Earl, *Charlie Boy (We Love You)*, (New York: Skidmore Music, 1927); Charles Abbott and Dale Winmbrow, *Plucky Lindy's Lucky Day*, (New York: United Publishing, 1929); Aeronautics, Sam DeVincent Collection of Illustrated Sheet Music, 1790-1980s, Archives Center, National Museum of American History (NMAH), Smithsonian Institution.

<sup>67</sup> Corn, *Winged Gospel*, 23.



**Figure 30:** The makers of consumer goods routinely marketed their products by invoking Lindbergh’s name or imagery, many of which had little discernable relationship to aviation. This undated fruit label for the “Lone Eagle” brand features a cartoon illustration of Lindbergh’s plane, clearly marked with the registration number assigned to the *Spirit of St. Louis* (N-X-211). Image of label in author’s collection.

Hotel,” produced a free promotional booklet to honor Lindbergh and to bring attention to Pierce’s patent medical cures and “physio-therapeutic apparatus” his establishment offered. The promotional power of Lindbergh’s fame was not limited to the quackery of X-ray and electric light therapies.<sup>68</sup> A fruit-packer in Exeter, California created a “Lone Eagle” brand, whose label was emblazoned with an illustrated depiction of Lindbergh’s famous airplane (fig. 30).<sup>69</sup> One bottler in Boston promoted their soft drink with the invitation, “Be a Lindbergh,” while a maker of novelty advertising pencils offered clumsy copy for businesses like “COLONEL LINDBERGH Has Confidence in His Monoplane People Have Confidence in the FARMERS NATIONAL BANK, Reading, Pa.” Advertisements that used Lindbergh’s name or reprinted his photograph filled the pages of newspapers and popular magazines and occasionally brought recriminations from the law firm hired to protect Lindbergh’s interests. In countless official letters, attorney Henry Breckinridge posed the same query: “Will you please inform me by what authority you have made use of his name and picture in connection

<sup>68</sup> V. M. Pierce, “America in the Air” [ca.1927], Aircraft Booklets, Aviation Ephemera III, Special Collections and Archives, Paul Laurence Dunbar Library, Wright State University, Dayton, Ohio.

<sup>69</sup> Blue Anchor Fruit Exchange [Exeter, CA], “Lone Eagle” fruit label, n.d., author’s collection.

with this advertisement?”<sup>70</sup> Demands to cease-and-desist commercial activities in Lindbergh’s name often proved effective in obtaining violators’ compliance, but this strategy worked only for those Lindbergh’s attorneys could catch. In the end, there were simply too many to stop.

Even while Lindbergh neither sanctioned nor approved of these attempts to commercialize his image, his inability to wrestle control of his representations proved a consistent source of his frustration with his fame. Lindbergh’s public appearances and promotional efforts on behalf of the aviation industry not only failed to hold back the tide of his more commodified forms, but ironically did quite the opposite by only perpetuating the strength of the public’s demand. The numerous products created—or marketed—using his name, it is worth noting, were not, in the end, produced for Lindbergh, but for those Americans who consumed them. And in buying these various goods, American consumers signaled their approval to this commercial exploitation, even if the most vocal among them often stated the contrary. The consumer cultural response provided the non-flying public a means to participate in Lindbergh’s success and, in essence, allowed them access to Lindbergh’s exclusive world. Regardless of how Lindbergh—or his lawyers—viewed these commercial activities, the commodified Lindy became the means in which the consuming public took possession of their hero—a condition most readily apparent in the goods produced for the young.

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<sup>70</sup> Arthur F. Meehan to Breckenridge, Shonk, & Kelly, 26 June 1927; Breckenridge To Haffenreffer & Co. , 19 September 1927; Breckenridge to Storey Thorndike Palmer & Dodge, 26 September 1927; Storey et. al. to Breckenridge, 24 September 1927; Breckenridge to Storey et. al., 28 September 1927; W. S. Gallatin to Breckenridge, et. al, 26 August 1927, letter with enclosures (including “Lindbergh Copy Suggestions”), Breckenridge, et. al. to the *Sacramento Union*, 26 September 1927; Breckenridge, et al to the Loew’s State Theatre, 28 February 1928; Breckenridge et al. to Gill Medicine Co., 15 March 1928; Breckenridge et. al. to Kane’s Jewelers, 16 March 1928, with attached advertisement “Lindbergh wears a Benrus” [*Albany News*, 29 February 1928], General Correspondence, Lindbergh Papers.

If makers of all consumer goods took liberties with Lindbergh's image, toy retailers proved among the more egregious—and ultimately successful—violators. Soon after word spread of Lindbergh's success, manufacturers and retailers packed store shelves with Lindbergh-inspired toys. Toy makers often repackaged and rebranded existing inventory to meet the demand. The managers of Ted Toys, a New Bedford, Massachusetts toy maker, for one, rechristened one mechanical toy airplane—complete with “whirling propeller and roaring motor noise—the “‘Lindy’ Teddy Aeroplane” after a production manager removed the co-pilot seated in the cockpit of the single engine monoplane<sup>71</sup> Other toy makers quickly followed suit.<sup>72</sup> One manufacturer reminded potential retail buyers that the “exploits of our Lindberghs, our Chamberlains, our Byrds, and all the rest” had transformed airplanes into the “season's favorite toys.” Another observed, “Every child, boy or girl, is thinking and talking—**airplanes!**” The Kingsbury Manufacturing Co. boasted: “EVERY boy has dreamed of flying an airplane....[,] pictured himself in the U.S. airmail service....[,] worships the heroes of the air....Every boy delights to play at aviation, and every boy”—referring to their latest product—“wants an airplane like this.”<sup>73</sup> In promoting its “N.Y. to Paris Airplanes,” one toy manufacturer asked prospective buyers: “What boy in your town wouldn't be crazy to

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<sup>71</sup> Ted Toys [New Bedford, MA], “Going Great *all over the Country!*” advertisement, *Toys and Novelties*, June 1927, 55 (emphasis in original); “‘Lindy’ Flies Alone,” *Toys and Novelties*, July 1927, 74.

<sup>72</sup> Kingsbury Manufacturing Co. [Keene, NH], “Two New Motor Driven Monoplanes,” advertisement, *Toys and Novelties*, July 1927, 14. Erector too, got into the airplane business with their non-flying mechanical model, see Gilbert Toys [New Haven, CT], “Erector Air-plane set C,” advertisement, *Toys and Novelties*, January 1929, 77; “Gilbert Goes in for Aircraft,” *Toys and Novelties*, February 1929, 99; American Flyer, “New Airplanes,” advertisement, *Toys and Novelties*, March 1929, 8.

<sup>73</sup> Kingsbury Manufacturing Co., “PLANES!,” advertisement, *Toys and Novelties*, September 1927, 8; Pressed Metal Products Company, “Aviation—the Spirit of the Times,” advertisement, *Toys and Novelties*, January 1929, 364 (emphasis in original); Kingsbury Motor Driven Toys, “EVERY BOY WANTS,” advertisement, *Toys and Novelties*, June 1927, 48-49 (emphasis in original).

own a realistic miniature airplane?” Adding, “Cash in on This Opportunity—Sell Airplanes Now!”<sup>74</sup>

In 1927, it seemed that not a month went by without some toymaker unveiling some new Lindbergh tie-in, and soon countless Lindbergh-inspired aviation merchandise appeared on store shelves in time for the traditional Christmas toy-buying season. There were “Lindy” and “Spirit of the Air” toy airplanes cast in iron and aluminum, as well as small electrically powered mechanical toys emblazoned with explicit references to the *Spirit of St. Louis*. Consumers found in toy stores “Lindy” wagons and wheeled carts shaped like airplanes, and a “Flying Fool” toy glider that was shot from a pop gun. Middle-class American shoppers, still reveling in the heady atmosphere of Lindbergh’s achievement, snapped up these goods for their children as soon as they were produced. The maker of the “Lucky Aviation Kid”—a doll decked out in flight suit, aviator’s cap, and goggles—reported that they had cleared their entire stock in just ten days.<sup>75</sup> Even some of Lindbergh’s original financial backers cashed in on the trade, investing in the St. Louis-based Metalcraft Corporation, which produced “Lindy’s ‘Spirit of St. Louis’ Aeroplane Construction Set.” The outfit, which consisted of 120 metal parts, was designed, according to company promotions, for the “ambitious youngster” to make twenty-five or more “true-to-life models.” No matter what this clever lad decided to

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<sup>74</sup> Broadfield Toy Co. [Hempstead, NY], “JUST OUT! N.Y. TO PARIS AIRPLANES,” advertisement, *Toys and Novelties*, July 1927, 43.

<sup>75</sup> “Two Popular Items of the Hubley Mfg. Co.,” *Toys and Novelties*, September 1927, 70; Aluminum Industries, Inc. [Cincinnati, OH], “A Sturdy Aeroplane and Two Real Racing Cars to Appeal to Your Boy Trade,” advertisement, *Toys and Novelties*, November 1927, 31; “Gendron Brings Out ‘Lindy’ Model,” *Toys and Novelties*, July 1927, 74; Toledo Metal Wheel Co. [Toledo, OH], advertisement for “Blue Streak Line,” *Toys and Novelties*, February 1929, 18; United Electrical Manufacturing Co. [Adrian, MI], “The Spirit of St. Louis,” advertisement, *Toys and Novelties*, October 1927, 50; A. E. Rettenhouse Co. [Honeoye, NY], “Rittenhouse Electrical Air Toys,” product catalog [1930?], Toys, Models, and Hobbies, Warsaw Collection, NMAH Archives; “The Flying Fool,” *Toys and Novelties*, February, 1929, 115; “Lindy Loves the Ladies—The Ladies Love Lindy,” *Toys and Novelties*, July 1927, 75.



make—from single-engine monoplanes to tri-motor monoplanes or tri-motor biplanes—all were clearly displayed the words “Spirit of St. Louis” plastered across its fuselage.<sup>76</sup> The transgression of inaccuracy did little to dampen sales: Metalcraft moved 200,000 units in just two months and had advance orders for another 200,000 more. In October 1928 alone, according to *Scientific American*, Metalcraft sold \$140,000 worth of the toy to wholesale dealers. By year’s end, aviation toys brought more two million dollars for American manufacturers in the domestic toy industry.<sup>77</sup>

As toy manufacturers fed the demands of the aviation toys with often-clumsy attempts to approximate the *Spirit of St. Louis*, young consumers’ demands for more accurate scale models of the most famous airplane in America were just as pronounced. Writers of hobby craft literature produced plans and instructions for boys to build their own scale replicas, and established firms like Ideal Aeroplane & Supply enjoyed a spirited trade in construction kits with promises that with their construction kits “any bright boy can build this model.”<sup>78</sup> Countless other firms joined Ideal in hurrying their own versions of the *Spirit of St. Louis* to market. One manufacturer produced the “‘MOCAR’ Monoplane,” a construction outfit that boasted all-aluminum parts, and whose advertisement in the *Playground* in 1928 featured a healthy image of the middle-class air-minded boy consumer assembling the model (fig. 31)<sup>79</sup>

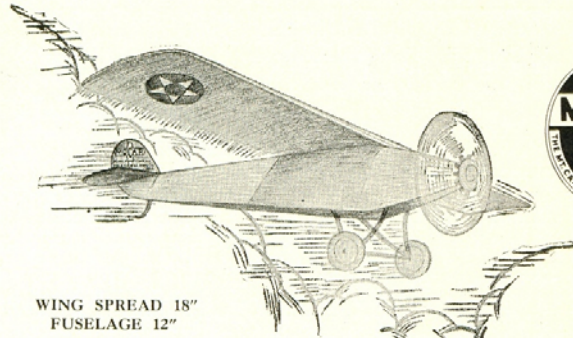
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<sup>76</sup> “The ‘Spirit of St. Louis’ Aeroplane Construction Set Meets Fine Reception,” *Toys and Novelties*, December 1927, 228; Metalcraft [St. Louis, MO], “‘Chain-Of-Sales’ Plan,” advertisement, *Toys and Novelties*, August 1929, 17.

<sup>77</sup> G. Anderson Orb, “The Juvenile Aircraft Industry,” *Scientific American*, October 1930, 294-295.

<sup>78</sup> On plans, see A. Neely Hall’s directions for the “Yankee Spirit” model in his *Building Miniature Airship Models* (Denver: Boy Stuff Publications, 1928), 26-33, and Fred O. Armstrong, *How to Make and Fly a Model Aeroplane* (Elizabeth, NJ: Practical Arts Publishing, 1927). Ideal Aeroplane & Supply Co. [New York], “Build and Fly a 3 ft. Model of **Lindbergh’s New York-Paris Monoplane**,” advertisement, *American Boy*, August 1927, 45.

<sup>79</sup> Mount Carmel Manufacturing Co. [Mount Carmel, CT.], “Model Airplanes That Fly!,” advertisement, *Playground*, July 1928, 243.





## MODEL AIRPLANES THAT FLY!

WING SPREAD 18"  
FUSELAGE 12"

Powerful Motor  
Ball-Bearing Propeller  
Rubber-Tired Disc Wheels



SET L-100  
Showing card layout as it comes from shipping box ready to place before pupils.

Weight only about 2½ oz.  
Note the practical design and sturdy method of building.

## THE "MOCAR" MONOPLANE

"MOCAR" airplanes are especially made for manual instruction and recreation. These planes fill the immediate demand for airplane building material.

All parts are made of aluminum. Simple instructions furnished.

When completed, this plane will actually fly, taking off from the ground. It is strong—and will stand considerable abuse. Replacement parts are furnished at small cost.

L-50 Construction set designed to meet the specifications of the Playground and Recreation Association of America, for use in contests conducted by them. L-50 set is so designed that boys must cut parts to shape and bend them to form. Blueprints and templates are furnished with this set. We also furnish the cement and aluminum dope, pliers, file and brush. Price \$1.50 plus 10c postage. On six or more postage prepaid.

Different planes will be made in a series of projects. Set No. L-100 illustrated ready for immediate delivery. Set L-50 also ready for delivery. Both sets make the same completed plane. The difference being in the amount of working.



SET L-100

This is a practical, simply designed, real model plane that fills the urgent need for instructive airplane construction material at a moderate cost. Complete with rivets, nuts, bolts, wheels, wing and fuselage covering material, etc., ready for pupils to start work immediately.

Write for full information to cover your requirements. Send \$1.25 for sample set, postpaid in U. S. A. (\$1.10 each for six or more). Orders filled strictly in rotation.

### THE MOUNT CARMEL MFG. COMPANY

DEPT. B, MOUNT CARMEL, CONNECTICUT

*Designed and Made by School Men for School Use*

Please mention THE PLAYGROUND when writing to advertisers

**Figure 31:** The all-aluminum "MOCAR" Monoplane" aimed to "fill the immediate demand for airplane building material." Advertisement from *Playground*, July 1928, 243.

The Chicago-based Aero Model Company, declared their “Silver Ace” the most accurate scale version available commercially. The balsa wood-framed and silk-covered Silver Ace arrived at stores completely assembled, painted, and ready-to-fly, but cost a whopping ten dollars. While there had been more expensive ready-to-fly models earlier—such as Ideal’s twenty dollar Wright Flyer in 1911—these were more typically marketed as didactic teaching aids for museums and lecture halls, and not as playthings for children. In spite of its target market, the Silver Ace’s pricing was justified, according to the industry publication *Toys and Novelties*, because it was not a toy, but a true aviation model “expertly designed and built by aero engineers.” The magazine was confident that Aero Model’s crack management team—made up of aeronautical engineers and former Air Corps veterans—possessed the inside knowledge that allowed them to understand this “very interesting special market.” The Silver Ace was, in the estimation of *Toys and Novelties*, a sure-bet for toy retailers looking to ensure “repeat sales” and encourage “all year demand” in their stores.<sup>80</sup>

Young consumers’ continued demand merely inspired new entrepreneurs to attempt to cash in on the thriving market for model airplanes. For Edward Pachasa, a twenty-one year old employee with the Atlantic Aircraft Corporation in Newark, New Jersey, the demand for model airplanes was like nothing he had ever witnessed, and led to his decision to leave the world of full-scale aviation to found the Cleveland Model & Supply Company. Pachasa, who constructed his first model airplane a decade earlier, had

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<sup>80</sup> Aero Model Company [Chicago, IL], “Silver Ace,” advertisement, *Toys and Novelties*, April 1929, 103; “Silver Ace Airplanes Win On Merit,” *Toys and Novelties*, January 1929, 354. On the “Silver Ace,” see Dave Thornburg, *Do You Speak Model Airplane?: The Story of Aeromodeling in America* (Albuquerque, NM: Pony X Press, 1992), 44-45. On the Wright Flyer model, see Ideal Aeroplane and Supply Company [New York], “‘Ideal’ Model Aeroplane Supplies,” (1911-1912), 22, trade catalog housed in the general collections, Library of Congress, Washington, DC. Balsa wood, the remarkably lightweight wood imported from Central and South America, had only recently become widely available on the American market.

always nurtured the youthful dream of becoming an aeronautical engineer in the growing aviation industry. As a member of Cleveland, Ohio's vibrant immigrant working class population, however, this dream proved quite simply out of reach. Instead, he settled with night school drafting courses and temporary employment as an upholsterer for a number of small airplane manufacturers in the Midwestern and Eastern United States.<sup>81</sup> By August 1927, he finally saw a way of becoming the professional aeronautical engineer he had always dreamed and announced, in a letter to his mother: "I'm going to start into the model airplane business!" "Ideal can't handle their business now," he explained, adding, "Other men are making money in [model airplanes], so why not us"? Pachasa pleaded with his mother to get his younger brothers involved in the venture, explaining, "We're all mechanically inclined." Having already contacted several New York suppliers where he could get materials "for next to nothing," he promised to seek out others before returning home to Cleveland. In the meantime, he urged his mother to instruct the younger Pachasa boys to get the "model plane material all ready[,] to use the wood rack in the garage for storing model wood, etc., [and] also get prop. patterns, etc. ready." If they moved quickly, he added, "we can horn in on this Christmas's business yet."<sup>82</sup>

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<sup>81</sup> H. L. Schreiner, *Aviation's Great Recruiter: Cleveland's Ed. Packard* (Kent, OH: Kent State University Press, 2005), 11; Lillabell Wetterman to Edward Pachasa (hereafter ETP), [postmarked 3 June 1924]; Laura E. Turner to ETP, [postmarked 3 June 1924?]; Bland L. Stradley to ETP, 3 December 1925; Gordon Hood to ETP, 28 May 1926, and 3 June 1926; Lyle Rakestraw to ETP, 7 June 1926, Correspondence, Edward T. Packard Personal Papers, Cleveland Model and Supply Company Records (hereafter CM&S Papers), Western Reserve Historical Society, Cleveland, OH. Pachasa later anglicized his name—Packard—sometime after the end of his first marriage. For the sake of accuracy, I use the original surname here in reference to his earlier years.

<sup>82</sup> ETP to Andrew Pachasa, n.d.; ETP to Emma Pachasa, 8 August 1927, Correspondence, Packard Papers, CM&S Papers. Pachasa's decision was not without financial risk to his family who had come to rely on part of his wages to supplement the family income. After one particularly grueling week of overtime, Pachasa mailed home \$45 of the \$61.56 he received in his pay envelope. Although this contribution was far above the ordinary, it does provide some impression to the percentage of his pay to which his family

Manufacturers' impressions of the strength of the market for model airplanes were echoed by reports from retailers compiled by *Toys and Novelties*. A buyer in Wichita, Kansas, credited sales of models and other airplane-related merchandise for the store's seventy-one percent increase in toy sales over the previous year. Another Wichita-retailer reckoned Kansas' reputation as an "air center in the United States" as the main reason for the "large volume [of] business on children's vehicles" and especially "toy airplanes" at their store: a fact that seemed all the more remarkable for a store which chiefly specialized in the sale of girls' dolls. Elsewhere, San Diego's Hale Bros. department store reported shortages "of airplanes of all kinds." One retailer in Little Rock, Arkansas reported that boys clamored for "everything modern, everything up in the air." Even while conveying some sense of the trend, this report likely underestimated its strength.<sup>83</sup> As one retail window-display observed the "Modern Boy is Air-minded."<sup>84</sup>

Given the financial incentives—and the words and actions of the members of the toy and hobby industry—it is tempting to view the efforts to commodify "Lindy" an example of crass commercialism. Such a view, however, fails to capture the potential meanings that "Lindy" merchandise had for the consuming public. The act of purchasing commemorative buttons and ribbons, crude mechanical toys, or accurately rendered *Spirit*

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relied on. See, ETP to Andrew Pachasa, n.d., above. This confirms the general impression offered in Schreiner's interviews with Packard in his biography. See, his *Aviation's Great Recruiter*, 9.

<sup>83</sup> "Reports from Dealers Show Wonderful Vitality of Toy Business," *Toys and Novelties*, January 1929, 277-287. The report of toy sales in 1928, listed mechanical toys (which included toy and model airplanes) as the most popular items for the year, followed by dolls, children's vehicles, construction toys, games, and electric trains. It is possible the categories led to some confusion. At least some retailers were confused as to whether to put model airplane kits under the category of mechanical toys or construction toys. For example, one retailer from Mobile, Alabama, specifically cited "Airplanes" as separate from "airplane construction sets" and another in Joliet, Illinois, listed "airplanes, mechanical toys, small wheel goods, large wheel goods, play house accessories, low and medium priced dolls" as its six best sellers. Others likely had similar difficulties. The flaws in the questionnaire's design might have led to an undercounting the number of model airplanes sold. *Toys and Novelties'* editors acknowledged this, asserted the "great popularity" of airplane models and toys meant that even if excluded from other mechanical toys, they would have "received enough votes by themselves to place them among the six best sellers."

<sup>84</sup> "The Modern Boy is Air-minded," *Toys and Novelties*, April 1929, 67.

of *St. Louis* model airplanes, was part of the process in which Americans of all ages participated in the Lindbergh phenomenon and grabbed a piece of “Lindy” himself. Moreover, the various copies of the *Spirit of St. Louis* allowed the young to approach a miniature of the real thing, which—because of the relationships between the thing and the viewer—empowered users, inverted the scale between their model and the real thing, and, in effect, placed them in control of Lindbergh’s plane. The commercial availability of small copies of the *Spirit of St. Louis* allowed the young to cast themselves in Lindbergh’s role—a condition that seems to confirm Walter Benjamin’s assertion about the potential superiority of replicated objects that can be placed “into situations...out of reach for the original itself.”<sup>85</sup>

The heightened possibilities for imaginative play offered by *Spirit of St. Louis* miniatures also highlights the importance of young consumers in forging new meanings for everyday objects. Indeed, in light of the numerous copies of Lindbergh’s plane available, it was—it is worth stressing—the children themselves who transformed these goods into precious artifacts for their ultimate devotion. Consuming, building, and playing with a scale version of the *Spirit of St. Louis*, allowed the young to construct elaborate fantasies for these objects, and also, for themselves. In describing the “cultural biography of things,” anthropologist Igor Kopytoff sees objects placed between opposing processes of “singularization” and “commoditization.” In Kopytoff’s formulation, the singularized object—such as a precious family heirloom—signifies a thing’s removal from the market, while its commoditized form serves as its opposite. These polarities reflect the power of consumer markets generally, but also hint at the importance

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<sup>85</sup> Walter Benjamin, “The Work of Art in the Age of Mechanical Reproduction,” in *Illuminations*, ed. Hannah Arendt (New York: Harcourt Brace & World, 1968; reprint, New York: Schocken Books, 1969), 220-221.

consumers in forging deeper meaning for consumer goods. In short, it is the meanings consumers attach to objects that allow things like toys and model airplanes to move into the realm of the singularized. Boys who consumed the various toys and models available, remade the physical expressions of the commodified “Lindy” into precious and deeply personal objects of their childhoods. And while ready-to-fly inversions of the *Spirit of St. Louis*, like the “Silver Ace” provided a way for children to engage tactilely and emotionally with Lindbergh’s plane, Aero Model’s monopoly on the model’s physical production only hampered this process. In essence, boys’ unpaid labor over a model airplane kit bestowed ownership over the finished model and, thus, aided the kits’ migration from box filled with wood pieces, metal parts, and paper instructions into a singularized object. Regardless of how many model airplane kits manufacturers produced and retailers sold, the end user who built a *Spirit of St. Louis* from these kits made the completed model unlike any other.<sup>86</sup>

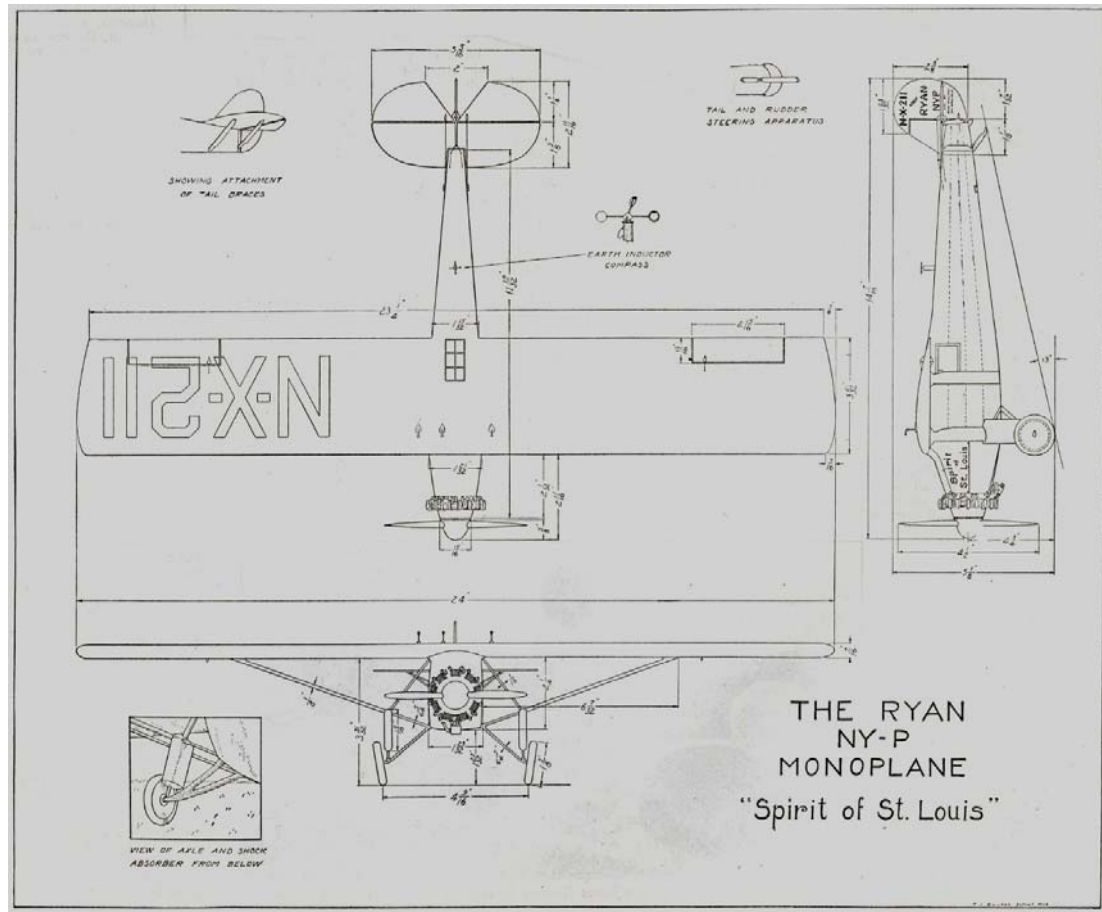
In describing his directions for building a model *Spirit of St. Louis*, advice writer and boys’ aeromodeling advocate Merrill Hamburg immediately hit upon the potential the model held for imaginative play (fig. 32). The “mechanical half of ‘We’,” Hamburg asserted, had already “been duplicated by thousands of boys in their airplane model workshops.”<sup>87</sup> Boys who built their own *Spirit of St. Louis*, he suggested, extended their admiration of Lindbergh by reifying it. Moreover, constructing the model became a way to imagine Lindbergh’s experience as one’s own. Like any “honest-to-goodness

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<sup>86</sup> Igor Kopytoff, “The Cultural Biography of Things: Commoditization as Process,” in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (New York: Cambridge University Press, 1986), 64-94. A useful application of Kopytoff’s theory can be found in Bernard L. Jim, “‘Wrecking the Joint’: The Razing of City Hotels in the First Half of the Twentieth Century,” *Journal of Decorative and Propaganda Arts*, 25 (2005): 288-315.

<sup>87</sup> Merrill Hamburg, “Build a 24-inch ‘Spirit of St. Louis’,” *American Boy*, June 1928, 25, 66.





**Figure 32:** Elevations and plan of the *Spirit of St. Louis* from Merrill Hamburg, "Build a 24-inch 'Spirit of St. Louis'," *American Boy*, June 1928, 25.

American," he wrote, boys had already imagined themselves alongside Lindbergh during his transatlantic flight. Very likely, he ventured, "You took off with him," "battled fog and sleet with him," and when he arrived in Paris, "you landed" with him as well. In describing his drawings for the famous craft, Hamburg invited readers to extend these imaginative journeys by reconstructing—in all senses of the word—Lindbergh's preparations for his transatlantic flight. Through the act of construction, Hamburg assured, a boy could watch "his plane grow from steel tubing and fabric into the silver bird that was to be the mechanical half of 'We'." With their model becoming the real *Spirit of St. Louis*, prospective builders became Lindbergh supervising the airplane's



construction. In guiding readers through the plans, Hamburg served as an indulgent docent, inviting readers to sit in the cockpit and take in the views: to your right, the door to “admit the pilot to the cabin,” on your left, the window that provided “side visibility and some front visibility.” Hamburg’s guided tour of the cabin’s interior, returned the drawings to their original size and transformed (for a moment at least) its builders into a full-grown pilots readying themselves to take their own true-life adventures to parts as yet unknown. In imaginatively reliving these preparations—and the subsequent transatlantic journeys—boys who built their own *Spirit of St. Louis* allowed the Lindbergh legend to spring to life.<sup>88</sup>

***“America has found her wings...”***

As Neil Loving recalled of his world after May 21, 1927—which he memorialized as “that spectacular event”—Lindbergh’s ascendancy as *the* hero for boys largely dismissed “any doubts I had about the seriousness of my interest” in aviation. Just eleven years old at the time, Loving remembered airplane magazines became more readily available “at all the newsstands and drugstores,” and “model airplane kits and supplies” could be purchased at “specialty shops and major department stores” throughout Detroit. Loving’s ability to participate in this burgeoning airminded consumer culture was complicated, he recalled, by his family’s precarious position on the cusp of Detroit’s aspiring black middle class. His father, a former Pullman porter, struggled with a small optometry practice; while his mother operated a restaurant behind the Loving family home, catering almost exclusively to black Pullman porters that were laying over in the city. Despite the

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<sup>88</sup> Idem., “How to Build a Lindy Plane,” *Detroit News*, 29 April 1928, clippings, 16-43 Aircraft Models Plans, George Catlin Memorial Library, Detroit News, Detroit, Michigan.

realities of his family's tenuous financial situation, Loving nevertheless managed to channel his boyish enthusiasm. He supplemented the 75 cents he received from his mother each week for cleaning her restaurant with the quarter he was given each week to pay for his school lunches and the money he occasionally received to take in a Saturday matinee: all of which he used "to pay for aviation magazines and model airplane material."<sup>89</sup> His consumption, as a boy, allowed him to further his dreams of becoming a future member of the aviation industry as an engineer and pilot.

While certainly skinnier for his efforts, the lengths at which young Neil Loving went to feed his passions speaks to the depth of Lindbergh's meaning for America's youth. Perhaps not surprisingly, countless children across the country shared these sentiments. Donald Clemens Burnham, the future president of Westinghouse Electric, later recalled, "Charles Lindbergh...was the person I" desired most "to emulate" as a boy, and it was this inspiration that led him to take up model building.<sup>90</sup> Another grownup, LeRoy Weber, remembered that like so many other American boys, his first model airplane was of the *Spirit of St. Louis*.<sup>91</sup> One twelve-year old girl had her essay, entitled "Why I Like Lindbergh," published in the *Washington Post*. And the mother of one "positively airplane crazy" nine-year old wondered if her son's obsession was healthy. Nine-year old Ray, she wrote to one parenting advice expert, "has made several small models, very crude of course, but to him they are great." Ray had assembled a scrapbook filled with "newspaper clippings and pictures about Lindy's flight," and "He

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<sup>89</sup> Loving, *Loving's Love*, 8, 12. As Loving recalled, his parents repeatedly plead with him that, as an African American, he would never have a future in aviation. Loving apparently was also able to look past Lindbergh's own disparaging characterizations of blacks in 'We.' Instead, his own copy of Lindbergh's biography remained one of his most prized possessions of his boyhood.

<sup>90</sup> Donald Clemens Burnham, "Model Airplanes," 1, Biographical Files, Academy of Model Aeronautics History Program (hereafter AMAHP), National Model Aviation Museum (hereafter NMAM), Muncie, IN.

<sup>91</sup> LeRoy Weber, "The Autobiography of LeRoy Weber, Jr.," typescript, 1, Biographical Files, AMAHP.

tells every one he will be an aviator some day.” The columnist dismissed this parent’s concerns as healthy and normal and, in a subsequent poll he conducted among young readers of his column to find out who they favorite hero was, he discovered, not surprisingly, “Lindy won, hands down.”<sup>92</sup>

Editors of the most popular youth periodicals did not bother with surveys of children’s favorite hero and graced Lindbergh’s image on their covers. *Youth’s Companion* in one issue featured a photograph of Lindbergh standing in front of an airplane with Richard E. Byrd and Clarence Chamberlain: the “Three Immortals of the Air.”<sup>93</sup> *Boys’ Life* for September 1927 pictured a drawing of a Boy Scout in his workshop working on his model airplane with a clipping of Lindbergh’s image looking on approvingly.<sup>94</sup> For the April 1928 issue of the *American Boy*, its editors commissioned a drawing by noted artist Harrison Cady that honored—and satirized—the depths of boys’ passions (fig. 33).<sup>95</sup> Cady’s densely packed cartoon, featured hoards of scurrying boys flying models and balloons and acting out their fantasies of flight in wheeled carts affixed with wings and propellers, largely without adult supervision. The few adults pictured are at the mercy of youthful enthusiasm and are easily chased off the page by scores of tiny model airplanes. Never was the image of modernity (quite literally) chasing older traditions expressed more succinctly. Boyish air-mindedness ruled the day. Cady imagines boys cued up for “parachute jumping” lessons consisting of gleeful leaps from treetops slowed only by umbrellas, boys and model airplanes run amok, and the raucous scene is marked by an all-boy parade behind a sign honoring “

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<sup>92</sup> Arthur Dean, “Your Boy and Your Girl,” *Washington Post*, 5 July 1928, and, “Your Boy and Your Girl; My Own Hero,” *Washington Post*, 15 March 1928.

<sup>93</sup> Cover, *Youth’s Companion*, 11 August 1927.

<sup>94</sup> Leslie Crump, cover illustration, *Boys’ Life*, September 1927.

<sup>95</sup> Harrison Cady, cover illustration, *American Boy*, April 1928.

# The April 1928 American Boy



In This Issue: Full Details of the Nation-wide Model Plane Contest!

Price 20 Cents

\$2.00 a Year

**Figure 33:** Harrison Cady's romantically chaotic image of boys' enthusiasm for Lindbergh for the cover of the *American Boy* for April 1928.

Cady's image captured the genuine qualities of excitement boys held for 'Lindy' Jones" who bravely "flew across Bascombs Pond." "'Lindy' Jones" provided just one of the explicit references to Lindbergh, the other, a full-scale trainer labeled the "Spirit of Boyville" is perched in a tree beneath a sign promising, "THE GREAT TRANSATLANTIC FLIGHT LEAVES HERE HOURLY."

Lindbergh, but the power of his status as a youth hero was both deeper and more heartfelt than his cartoon allows, a fact clearly evident in some of the numerous letters Lindbergh received. A Dallas boy wrote hoping that he would one day see "your smiling face" in person, adding "I have a picture of you standing in front of the 'Spirit of St. Louis' and enjoy looking at it often. You are," he concluded, "very much an inspiration."<sup>96</sup> One thirteen-year-old wrote in one pencil-scrawled note, "Dear Lindy,"

I am wrighting [sic] you a letter to tell you that I seen [sic] you when you flew over Rhode Island. I'd like to be a pilot like you when I grow up. I'm gonna by [sic] an airplane and fly.<sup>97</sup>

Another claimed, "Mother holds you up as a model for me and my two bros. She said if we grow up to be as clear and brave as you are how happy she will be." A mother from Massachusetts, requesting an autographed photograph for her son, stated simply: "Like lots of other boys, my son, 6 years of age, has set you up as his hero and model and everything must be 'like Lindy does.'" Boys forwarded drawings and sketches of the *Spirit of St. Louis*, as well as sketches of airplanes of their own design for his comment. One young boy wrote simply, "Dear Lindbergh, I hope you can come and stay with us for a day or two" (Fig. 34).<sup>98</sup>

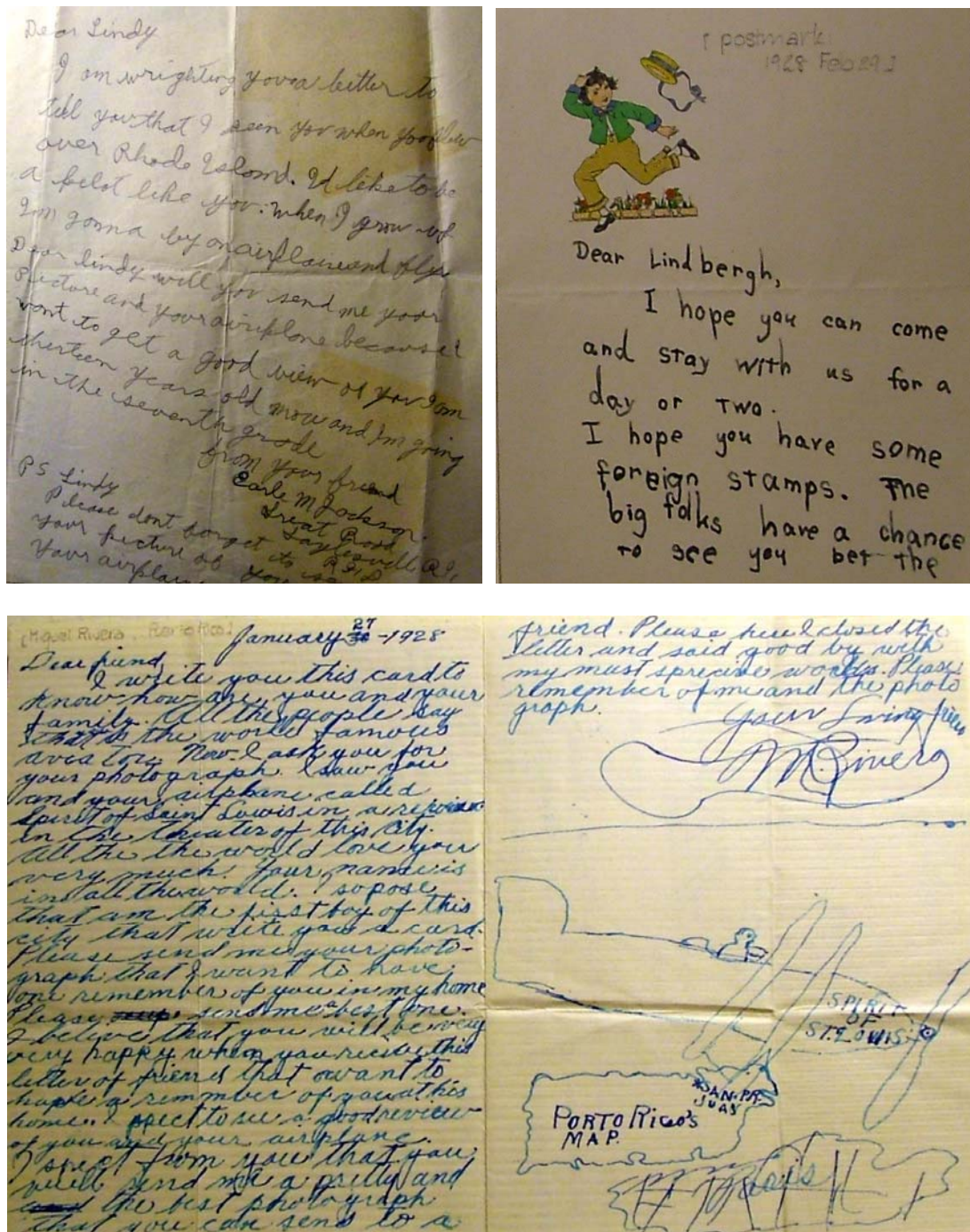
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<sup>96</sup> Howard Carswell to CAL, 13 August 1927, General Correspondence, Lindbergh Papers.

<sup>97</sup> Earle M. Jackson to CAL, 30 August 1927, General Correspondence, Lindbergh Papers.

<sup>98</sup> Robert Dearer to CAL, 10 October 1927; R. E. Mansfield to CAL, 10 October 1927; Boris Ulanoff and Wladimir Federoff to CAL, 30 August 1927, typewritten letter with enclosed pencil drawing; Miguel





**Figure 34:** “Dear Lindy” was the salutation written by scores of children to Lindbergh. Clockwise from upper left, letters from Earle M. Jackson, Saylesville, Rhode Island, 10 August 1927; Billy Darr, Northampton, Massachusetts, [postmarked 29 February 1928]; and Miguel Rivera, San Juan, Puerto Rico, 28 January 1928. Letters from General Correspondence, Lindbergh Papers, Yale University.

Rivera to CAL, 28 January 1928; Billy Darr to CAL, [29 February 1928], General Correspondence, Lindbergh Papers.

Like their younger brethren, adolescents were not immune from expressing their deep personal connections to Lindbergh. For some adolescent girls, Lindbergh was the object of pubescent affection. A sixteen-year old girl from Chattanooga, invited Lindbergh to drop by for a visit so that she could go for a ride in his airplane. To sweeten the deal, she promised to “cook just as good a pie as you ever tasted.”<sup>99</sup> One nineteen-year old, wrote with thanks “for restoring my somewhat lost confidence in the young men of today” and invited Lindbergh to her Cincinnati home, promising a discreet afternoon of baking, “with you, enveloped in a large apron, doing the making, and myself doing the supervising. We could have a great time, and I assure you I would not have a crowd of people at home.”<sup>100</sup> Another wrote disavowing any “romantic” intentions and hoped instead that Lindbergh would entertain her dreams of becoming a pilot by teaching her to fly. “My brain is clear, my nerves steady, & I grasp a subject easily,” she added.<sup>101</sup>

If some adolescent girls saw Lindbergh as an object of romantic devotion, boys who wrote Lindbergh treated him in somewhat similar terms, even if they limited the subjects of their queries to career advice and more technical subjects. One Chicago youth wrote asking Lindbergh’s opinion if he thought it “advisable for a young man to study for the air service?”<sup>102</sup> A sixteen-year old from Oakland, California, who saw Lindbergh on his U.S. tour, characterized himself as “one of many boys that gazed with wonder upon you and your plane at the Oakland airport when you made your visit there. What you have accomplished, and what other men have accomplished,” he continued,

have proved to me that aviation is minus a reverse gear. It is absolutely impossible for it to back up. Therefore, I would rather choose as my

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<sup>99</sup> Irene White to CAL, 12 June 1927, General Correspondence, Lindbergh Papers.

<sup>100</sup> Margie McCormick to CAL, 28 July 1927, General Correspondence, Lindbergh Papers.

<sup>101</sup> Mabel Fuller to CAL, 6 October 1927, General Correspondence, Lindbergh Papers.

<sup>102</sup> Luther Peoples [Chicago, IL] to CAL, 14 June 1927, General Correspondence, Lindbergh Papers.

profession, some position where I would be of service to aviation....I hope I am not troubling you too much if I ask you to briefly tell me the best way to start an aviation career. Whether in the flying end or the manufacturing end of aviation. Or whether to start at the bottom and work up, or take a course and then apply for a position.<sup>103</sup>

A self-described “boy of seventeen who is very much interested in flying” similarly sought Lindbergh’s council on entering the field of aviation. Specifically, he wanted to know if he should finish high school before attending the “govt. training school or leave school and with the money I earned last summer [to] take private lessons. Will you please tell me also what characteristics one must have to be a good flyer.”<sup>104</sup>

Boy’s expressed desires to become pilots proved so common that it occasionally caused anxiety among concerned parents. As least one exasperated mother wrote a parenting column, explaining, “My boy is crazy to study aviation. He is 14 and if he had his way he would drop out of school this very minute and learn to fly by studying through a correspondence school. I don’t want him to lose his life, as I am sure he will in this airplane business.”<sup>105</sup> Boys’ periodicals, by contrast, responded with these aspirations with solid career advice that stressed the importance of university education for creating future aviation professionals. “Naturally”—the *American Boy* article “Your Future in Aviation” observed—“thousands of boys throughout the country are beginning seriously to consider aviation as a career.” In order to “fit yourself for that job in the air,” the magazine suggested that boys would need “good grounding in mathematics” in high school, followed by a rigorous coursework in college that would include mechanical engineering—with particular emphasis on “thermodynamics, strength of materials, structures, engine design and aerodynamics”—coupled with “courses in economics and

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<sup>103</sup> H. H. Owbridge to CAL, 13 February 1928, General Correspondence, Lindbergh Papers.

<sup>104</sup> Charles M. Patterson to CAL, 25 October 1927, General Correspondence, Lindbergh Papers.

<sup>105</sup> Arthur Dean, “Your Boy and Your Girl; The Air-Age,” *Washington Post*, 10 May 1928.



the principles of transportation.” While readers might try their hand at learning to learning to fly at a private or military flight school, the magazine advised against it, suggesting that building model airplanes would provide the best place to start an “aeronautical education.” Quoting engineer William B. Stout, the article asserted that through model making “a boy...learns all the essential principles of aeronautics.”<sup>106</sup>

Charles Lindbergh, it turned out, echoed these sentiments in a series of articles penned for the *New York Times*. “America has found her wings,” he wrote proudly, and “awakened to the realization that she can fly.” Recognizing boys’ “natural desire...to take to the air,” he explained that they were immediately “attracted by the future of aviation,” because aviation “is one of the few remaining fields of constant adventure.” Lindbergh singled out “youth” as the most important trait for an aviation career, but he reminded aspiring engineers and pilots that reaching their goals would be no easy task. Aeronautical engineering, he observed, was “one of the most exacting branches of the profession, and no pilot is acceptable to a commercial transport company until *he* has several hundred hours of experience in the air.”<sup>107</sup> And as with his advice for the Boy Scouts, building and flying model airplanes proved, in his estimation, the best place to start.

The educational emphasis on aeromodeling received its greatest boost with Lindbergh’s role—in conjunction with the Playground and Recreation Association of America’ (PRAA)—in launching of the National Miniature Aircraft Tournament in 1927. The contest represented the aviation industry’s official response to the popularity of aeromodeling, but also allowed Lindbergh to place his official stamp on the educational

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<sup>106</sup> “Your Chance in Aviation; *Talk it over with Air Leaders*,” *American Boy*, September 1927, 24, 62-63

<sup>107</sup> Colonel Charles A. Lindbergh, “Lindbergh Writes of Aviation’s Advance,” *New York Times*, 26 August 1928; idem., “Lindbergh on Flying,” *New York Times*, 16 September 1928 (emphasis added).

benefits of aeromodeling. Event planners announced in the PRAA's official magazine, the *Playground*, that the "spirit of 'we'...animates young America on Playgrounds throughout the country this summer" and—"with wood and wire and rubber"—the "second half of many 'we's'...view their handiwork with the same pride and affection that Colonel Lindbergh has for his 'Spirit of St. Louis.'" In announcing the creation of the contest program, *Playground* editors imagined that for participants it would be "'my plane' rather than 'I'" winning the tournament. The creation of the tournament clearly attempted to capture youth enthusiasm for aviation, but also served the PRAA's efforts to remind the public that the nation's playgrounds—when staffed by professional playground organizers—were "not places merely for idle pastime, but educational centers where boys and girls learn to work under responsibility and complete a careful job."<sup>108</sup>

With Lindbergh serving as the committee's associate chairman, membership in the tournament's national committee served as a veritable who's who of aviation industry insiders. Other notables included Harry F. Guggenheim, whose father established the foundation sponsoring Lindbergh's U.S. tour, and Porter Adams, the president of the National Aeronautical Association (formerly the Aero Club of America). These figures were joined by Assistant Secretary F. Trubee Davison, of the Department of Commerce's Bureau of Aeronautics, Edward P. Warner, assistant secretary for the Navy Department's aeronautics division, and Colonel Theodore Roosevelt, son of the former President who remained a perennial favorite of the PRAA's since the group's founding in 1906. Orville Wright, who served as the committee chair, rounded out this impressive roster.<sup>109</sup>

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<sup>108</sup> "Young America Builds Airplanes," *Playground*, August 1927, 244-245.

<sup>109</sup> Ibid.; Bill Robie, *For The Greatest Achievement: A History of the Aero Club of American and the National Aeronautic Association* (Washington, D.C.: Smithsonian Institution Press, 1993).

The *Playground* became a forum for expressing organizers' hopes for the contest. For instance, the magazine held that the tournament would capitalize on the popularity of aviation and redirect participants' efforts in order to, as one observed, "greatly stimulate originality and invention in the construction of aircraft." Lindbergh, as associate chair, echoed these pronouncements, stating, "this tournament will help crystallize the interest of the younger generation in the development of aviation." Harry F. Guggenheim added that the national tournament "should be of tremendous value in creating airmindedness, which is most essential for the future progress of American aviation." Committee member F. Trubee Davidson reasoned that the tournament "ought to stir up tremendous interest among youngsters" and "keep them thinking about aviation."<sup>110</sup>

According to organizer's plans, local contests held in cities around the country would serve as qualifying events for the national event to be held that fall, and would be overseen by groups that mirrored the composition of the national committee. Local committees, officials dictacted, were to be composed of municipal playground directors or superintendents, representatives of area Chamber of Commerce and school board members, editorial staff from local newspapers, and the "president or vice president of the local aeronautical society or similar official or a local flying field or airport." These requirements reflected the professional interests of tournament's organizers, but also favored larger municipalities and—as local organizers were given just one month to complete their contests—those cities staffed by the most organized play professionals.<sup>111</sup>

Tournament officials made eligible "boys and girls up to twenty-one years of age," requirements which solidified the expansion of middle-class views of a prolonged

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<sup>110</sup> Ibid., 244.

<sup>111</sup> "Young America Builds Airplanes," 244

childhood. While at first glance, the decision to open the contest to girls and boys appeared remarkably inclusive, contest rules also stipulated that entrants could only enter those craft they themselves had constructed. This was “no “small feat of craftsmanship,” they added, but “playground *boys* have proved they can do it.” Aside from this revealing ‘slip’ in noun choice, girl’s exclusion merely echoed the conditions in municipalities across the country. Later that year, the *Playground* announced that the Recreation Department of Irvington, New Jersey, held a “Boy’s Hobby Show,” to display boys’ handiwork, including model airplanes. Recreation leaders in Elmira, New York, established a “Boy’s School of Aviation”—that aimed “to increase interest in aviation and to enable boys to gain practical knowledge of models”—the message, in spite of the permitting girls’ twelve and older to enroll, was singularly tailored to boys.<sup>112</sup>

These more exclusionary aspects of modeling—in terms of class, race, and gender—were also sadly evident at the first Miniature Aircraft Tournament in Memphis. Fifty boys qualified for the competition, but of these only thirty could afford to travel to the national event. The *Playground*, described participants as “typical American boys bearing names indicating all types of racial descent,” but as one photograph suggests, these boys might have been *ethnically* diverse, but they remained racially homogenous (fig. 35). Africans Americans were present only in the activities of the adjacent Recreation Congress as part of the “negro mail carrier’s band” or the “spirituals,

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<sup>112</sup> Ibid., 244 (emphasis added); “A Boys’ Hobby Show,” *Playground*, November 1927, 400; “Aircraft School for Boys,” *Playground*, November 1927, 401; “An Airplane Club in Elmira,” *Playground*, December 1927, 508. In 1929, the committee added Amelia Earhart to their ranks and enlisted the support of the Girl Scouts and the Campfire Girls to encourage more girls to take up aeromodeling. These efforts did little to change the dominance of boys at the contest, nor did it alter the gendering of model building as a boys’ activity. See, “Third Flying Tournament for Young Plane Builders,” *Playground*, June 1929, 155.



THIRTY BOYS IN THE FINALS  
National Playground Miniature Aircraft Tournament, Memphis, Tenn., Oct. 8, 1927

**Figure 35:** Photograph of contestants at the first National Playground Miniature Aircraft Tournament, from *Playground*, November 1927, 402.

beautifully rendered by a Memphis negro chorus,” and *not* as participants in the Miniature Aircraft Tournament.<sup>113</sup>

All in all, the *Playground*’s editors were pleased with the group’s tournament, which, represented, in Assistant Secretary Edward Warner’s assessment, perhaps the single best way for the “city boy” to be able to “master tools and materials” by “learn[ing] to build.” Warner added that such initiatives ensured “an educational gap and

<sup>113</sup> “The First National Playground Miniature Aircraft Tournament,” *Playground*, November 1927, 404, 448, quote on page 404; “At Memphis with the Recreation Congress,” *Playground*, November 1927, 403. The realities of segregation extended beyond the South, as the influx of black children resulting from the Great Migration led to the establishment of separate recreational facilities for African American children where dancing, singing, and craftwork stood in stark contrast to the apparent embrace of “modernity” represented by activities such as the Miniature Aircraft Tournaments. See, “Recreation Facilities for the Negro,” *Playground*, June 1929, 168-9.

need unknown to an older rural generation of youngsters” would be met.<sup>114</sup> Officials could point to none other than young Jack Lefker, winner of the junior hand-launched flying model event with a record-breaking 5 minute 37 second flight, who hailed from the Illinois Model Aero Club in Chicago. In reporting on the first Miniature Aircraft Tournament, one observer noted that the “experience of the boys from the cities like Detroit and Chicago, who had long flown miniature plans, was noticeable.” Apparently abandoning Lindbergh’s carefully-honed modesty, the official added, “[t]hese boys knew and knew that they knew.” These urban youth knew the “mysteries of design—and scientific mysteries they are too,” the writer continued, for they understood the “differences in the design of propeller, wings, engine power, weight and construction that must be made for the various desirable characteristics—speed, lifting power, duration or distance of flight, etc.” The *Playground* recognized the “real educational possibilities...in this miniature aircraft project.” Echoing Assistant Secretary Warner’s feelings that for boys “to work with miniature airplanes is to practise [sic] research and to learn its guiding principles, whereby definite knowledge is acquired and guess work is scorned,” editors cast participants as “embryonic engineers, genuine scientific men with the power to imagine and to design and to create and to test.”<sup>115</sup>

*Playground* correctly identified the enthusiasm for model airplanes as part of a nationwide campaign to instill airmindedness in America’s youth, something consistently echoed in subsequent reports on aeromodeling activities published in the magazine. The Los Angeles Recreation Department, responding to the turnout for its tournaments in August, established a “junior airport” in 1927 as a “permanent field under expert

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<sup>114</sup> “At Memphis with the Recreation Congress,” *Playground*, November 1927, 403.

<sup>115</sup> “From the Winner of the Aircraft Tournament,” *Playground*, December 1927, 465; “The First National Playground Miniature Aircraft Tournament,” *Playground*, November 1927, 404, 448.

supervision and with research facilities...for at least 1,000 boys interested in aviation.”<sup>116</sup>

In Wisconsin, the Extension Department of the Milwaukee Board of School Directors sponsored model airplane clubs in its recreation centers in October 1927, and by the following February, enrollment expanded seven-fold to 384 children, leading the city to carry out in March contests hosted “by the air service committee of the Milwaukee Association of Commerce.”<sup>117</sup> St. Louis too did its part, for by the end of 1928, its Board of Education reportedly supplied materials to each of its sixty-three public school playgrounds to build and fly model airplanes. The *Playground* also noted that a recreation department in Beaumont, Texas, held contests where the winner received “a free ride in a licensed airplane with a licensed transport pilot.”<sup>118</sup> Beaumont’s tournament and its prize raised the stakes by allowing participants a means in which they themselves could claim the coveted reward of gaining entry into the cockpit.

The rhetoric of science and discovery, so central to Lindbergh’s public image saturated officials’ commentary on aeromodeling and allowed contest officials to recast boys in Lindbergh’s image. In his address to attendees of the Recreation Congress, Warner praised craft hobbies like aeromodeling as a way “for a boy to grow into manhood” in modern America and a means in which they could “exercise that natural

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<sup>116</sup> “A Proposal to Establish a Junior Airport,” *Playground*, November 1927, 454; “Model Airplane in Los Angeles,” *Playground*, October 1928, 372. C. A. Kunou’s “First Annual Model Airplane Tournament of the Los Angeles City Schools,” *Industrial Arts and Vocational Education* 17 (June 1928): 195-198, contains a diagram of the “miniature airport” and a description of the Los Angeles City Schools’ model airplane program.

<sup>117</sup> “Model Airplane Clubs in Milwaukee,” *Playground*, April 1928, 20.

<sup>118</sup> “St. Louis Boys Make Airplanes,” *Playground*, December 1928, 492; “In These Air Minded Times,” *Playground*, December 1928, 492. The Playground and Recreation Association’s annual report of community playground and recreational departments in the United States showed a remarkable growth in the number of cities offering model airplane activities. Of the 815 cities participating in the survey in 1927, 138 reported having model aircraft programs, compared with other “Special Recreation Activities” such as “Domestic Science” (105 cities in 1927), gardening (68 cities), or “Art Activities” (226 cities). By 1928, 153 of the 872 cities “under leadership” had model aircraft courses as part of their recreational programs. See, “Community Recreation Leadership in 815 Cities,” *Playground*, June 1928, 121, and “Community Recreation Leadership in 872 Cities,” *Playground*, May 1929, 58, 70.

inclination to invent or originate.” Model airplanes, he reasoned, not only reinforced the “romantic appeal” of transportation, but encouraged boys to gain the “habit of employing scientific methods” and appreciate “research” skills. Best of all, the “boy...need never know” he was developing “a scientific attitude” by “getting away from guess work.”

Speaking to his audience, and raising the stakes, Warner added,

we can hardly expect knowledge of science, of mechanisms, of the principles of invention to come as a happy inspiration....But we can expect that...much effective work can be done by those who...have been put in a position by their early experience [in]...formal education or play, to approach their problem by a proper method, by the method which is designed to take them in a consistent, straight line toward the results they expect.

By teaching boys a proper scientific method in their play, this “process of repeated experimenting” would aid boys’ “success in later life in whatever field they may enter,” and provide confidence in “laboratory research” as the path to solving their problems.<sup>119</sup>

Overall, the popular response to the National Miniature Aircraft Tournament proved positive enough for PRAA officials to declare their efforts a success. Even with short notice—and the hastily organized contest program, the PRAA estimated some 20,000 children took place in the preliminary contests leading up to the national event in Memphis.<sup>120</sup> Plans for the Second National Miniature Airplane Tournament to be held in Atlantic City, October 5-6, 1928, concurrently with the National Recreation Congress, were soon in April’s *Playground*. Officials associated with the tournament hoped the extra time, the “official endorsement” of the National Aeronautic Association, and the “medals and cups” donated by *Popular Aviation* would ensure even greater turnout. The organization maintained the rules governing the composition of the local committees overseeing the preliminary events and the only changes on the national level were the

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<sup>119</sup> “Messages to the Amateur Airplane Tournament,” *Playground*, February 1928, 573.

<sup>120</sup> “Second National Miniature Airplane Tournament,” *Playground*, April 1928, 19.



addition of Henry Ford to the national committee and the elevation of Lindbergh to the position of co-chair alongside Orville Wright. Lindbergh praised these efforts for “greatly assisting in the advancement of aeronautics by enlisting thousands of boys in American cities.” He assured *Playground* readers that “a basic education in elementary aviation is becoming a necessity” of which model building could become an important component.<sup>121</sup>

The second national tournament in 1928 proved a greater success than the first, with cities sending forty-five “boy champions” to compete in the finals. One *Playground* editor marveled at the “enthusiasm, ingenuity, and capacity for painstaking work” the contestants displayed. Indeed, several officials boasted that “aside from its value as creative play,” encouraging boys to continue their work with models “will have a tremendous influence on America’s air future.” The *Playground* praised the ingenuity displayed in boys’ models—especially those working with power plants other than rubber bands (including compressed air, springs, clockwork, and even small rockets)—which “greatly surpassed” the quality of the first tournament’s models. Despite this improvement in ability, the boys had apparently not let their talents go to their heads. As one photographer who attended the event observed, “When it comes to modesty, they’re a bunch of young Lindberghs.”<sup>122</sup> One writer reveled in the educational potential of the program, but paralleling lessons in “scientific principles” boys also gained a “fine spirit of sportsmanship” because they eagerly “cheer[ed] another’s success” or lent needed parts to fellow competitors. The *Playground* glowingly reported that communities across the country witnessed “a new type of boy” entering recreational programs to participate

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<sup>121</sup> Ibid., 19-20.

<sup>122</sup> “The Second National Playground Miniature Aircraft Tournament,” *Playground*, December 1928, 293-4.

in model building programs. Perhaps “no single project” *Playground* observed, had proven as effective in luring youth into municipal recreation centers.<sup>123</sup>

In spite of the PRAA’s glowing assessments, model airplanes, for the group as a whole, were merely the latest in a series of recreational apparatus their adult members had at their disposal. From seesaws to jungle gyms, and craft-orientated activities such as woodworking, these objects were the things of play and things were to serve a secondary role to playground leadership. The nature of “things,” which turned out to be the theme of the Fifteenth Recreation Congress in 1928, confirmed this status to all objects. Betraying their public pronouncements of airmindedness, those in attendance voted in their own interest, by concluding that “mere things” were “unimportant” in absence of the “vital significance” of play “leadership” and a general appreciation of the “out-of-doors.” In essence, “Things must be made the servant and not the master if they are to contribute to life values.”<sup>124</sup> Echoing this position, PRAA president Joseph Lee praised model airplane activities, because, in his words, “boys eat it up,” but play leaders, he reminded should view these programs as a way to encourage boys’ outdoor exercise. In short, Lee proved far more interested in exercising muscles than minds, and suggested that instructors channel boys’ handicraft away from making models and towards the construction of other projects, like kayaks and oars for use in the summer and skis and hockey sticks for use in the winter. This “natural” transition, from model airplanes to rigorous outdoorsmanship, fit well with the Playground and Recreation Association’s regularly stated aim to raise healthy men through vigorous sport, exercise, and clean

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<sup>123</sup> Ibid., 294.

<sup>124</sup> “The Fifteenth Recreation Congress,” *Playground*, December 1928, 494.

living, but stood starkly at odds with the displays of airmindedness taking place outside the doors of the group's annual meeting.<sup>125</sup>

Lee's comments illustrated just some of the difficulties of co-opting Lindbergh's airminded vision for one's own end, but also represented the failure of the group to grasp the full meaning of aeromodeling for boys. In this respect, it is not surprising that the Playground and Recreation Association's half-hearted conversion to the cause of airmindedness made their Miniature Aircraft Tournaments short-lived. Unlike Lindbergh, who emerged as a youthful scientific scion of modernity, the playground officials represented the ambitions of an earlier generation. Even with the PRAA's waning public interest in staging elaborate competitive events like the National Miniature Aircraft Tournament, the links between model building and nurturing boyish airmindedness proved very much in tact and ready for new groups to take up its potential.

Lindbergh's official response to aeromodeling through the Boy Scouts and the PRAA's contest programs, provided a way for him to get in front of the efforts to commercialize his image. If, after all, commercial suppliers were going to use his name to sell model airplanes, it was far better to use his endorsement as a way of advancing his own cause of airmindedness. Lindbergh's close supporters embraced his actions by remaking modern boys in his image, advancing the idea, as Assistant Secretary Edward Warner did so clearly, that aeromodeling was a serious scientific enterprise. Gone from this view were the celebrations of the trial-and-error young tinkerer, replaced instead by the rational ordering of corporate capitalism (an emphasis, not coincidentally, emphasized in the commercially available construction kits commonly available at the time). If commentary on boys' airmindedness announced the presence of a new youthful

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<sup>125</sup> Joseph Lee, "Handwork," *Playground*, May 1929, 131.

and modern generation, it would be up to dozens of commercial clubs sponsored by boys' magazine, national newspapers, and department stores to carry the links between boys, model airplanes, and air-mindedness to its ultimate conclusion: praise of boys' roles as consumers.

Lindbergh's celebrity provided children with an example of what aviators, engineers, and the entire aviation industry should look like, but the connections between consumption in the present and future success continued to resonate with Americans long after Lindbergh's public influence waned. Lindbergh's boys proved most willing converts to the cause of air-mindedness and became active participants of aviation culture. And just as the aviation industry, toy makers, and the PRAA saw in the openings Lindbergh's fame afforded a chance to advance their own agenda, boys too proved as equally as pragmatic. Air-minded boy consumers, rather than simply accepting the messages sent by adults, set the tone of the discourse in ways that allowed them, for a time, to shape the spirit of model aviation by transforming the ideology of air-mindedness into a powerful consumer movement.

## CHAPTER FIVE

### **“The Modern Boy is Air-Minded”: Boy Consumers and the Airplane Model League of America**

*[Y]oungsters are attracting the attention of the older generation and converting many persons to the advancement of aviation; they are making every backyard a miniature airport and every kitchen table an aircraft drafting board and bringing aviation to the fireside where a large measure of the world's destiny is moulded.*

William B. Stout, 1928.<sup>1</sup>

*The effect of pulling in these large crowds of boys would be primarily to stimulate the sales of model airplanes and all parts for the home construction of such planes, but it is understood that the sales of other merchandise would be stimulated. For the average boy, to see an attractive object is to want it.*

Harold S. Kahm, 1932<sup>2</sup>

By the end of the 1920s, American boys had become—to use the popular parlance—thoroughly and solidly “airminded.” To be airminded was to be expressly committed to the belief that the airplane was the measure of the promise of modernity and that aviation would provide for the nation’s continued technological and social progress. Both

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<sup>1</sup> William B. Stout quoted in “Model Maker, a Lindbergh,” *Detroit News*, 5 March 1928, Clippings (16-43), Aircraft Models Plans, George Catlin Memorial Library, Detroit News, Detroit, MI.

<sup>2</sup> Harold S. Kahm, “AVIATION Talks Get the Boy Trade,” *Toys and Novelties*, March 1932, 65.

engineer and inventor William B. Stout and retailing expert Harold S. Kahm marveled at the opportunities presented by boys' airmindedness as expressed through aeromodeling, but their mutual admiration appears—at first glance—irreconcilably distant. For Kahm airplane models were merely the latest fad that savvy retailers could exploit for profit, while Stout saw in this popular hobby among boys the means of “converting” all Americans to the cause of aviation. In truth, however, airmindedness and consumption were interdependent concepts and the popular ideology of airmindedness emboldened individual consumer acts by unifying them with bold predictions for the future.

To be sure, boy aeromodelers had been actively consuming the raw materials of model airplane culture for decades and regardless of whether plans and drawings, wood and tissue paper, cement, dope, and strands of rubber were bought, borrowed, scavenged, or merely coveted, the worlds of the airminded were opened through consumption. Aeromodeling's culture of aspiration was deeply indebted to Charles Lindbergh's celebrity for increasing its numbers, but the real significance of Lindbergh was not merely the explosion of interest in aviation among the young and rather the convergence of that interest with a maturing, more overtly commercialized—and commercially exploitable—form of boy culture.

Airmindedness framed the interactions of boys and adults in commercialized boy culture, and regardless of whether adults were motivated to exploit the latest craze, advance the cause of aviation, or foster good will while training young consumers and influencing parents' purchases, airmindedness proved a most pliable ideology marshaled for the benefit of a range of consumer goods. In the 1930s, for example, it became common practice for advertisers of brand-name household products to offer model

airplane construction kits in exchange for multiple purchases, but for those venturing into boys' airminded worlds in search of airminded dollars, it remained essential to demonstrate fidelity to boys' air age dreams. Whether this was expressed through casual acknowledgement of boys' common wishes of becoming pilots or through the deployment of often-elaborate consumer orientated spectacles, including contests or chances to meet famous aviation personalities, these efforts validated children's enthusiasm, affirmed their identities as technologists and consumers, and perpetuated the ideology of airmindedness.

Taking seriously both individual boy consumers as well as those imaginatively evoked by adults, this chapter highlights the brief history of the Airplane Model League of America and the relationship it fostered between boyish airmindedness and an emerging consumer culture for boys. Founded by *American Boy* magazine editor Griffith Ogden Ellis and famed airplane designer William B. Stout in 1927 to capture youth interest in aviation, the Airplane Model League of America, or AMLA, aimed to promote model building as a productive hobby for boys. To meet this goal, the group published plans and instructional advice in the *American Boy* and newspapers around the country, sold construction kits and building materials through the *American Boy*'s Detroit headquarters, and staged an elaborate annual model airplane contest. Individual membership peaked at over 400,000 before loss of key corporate support led to the group's demise in 1932, but during this short-five-year period, the AMLA articulated a productivist vision for boys' consumption and demonstrated the viability of commercial clubs for marketing directly to child consumers.

At a time when consumption still possessed feminized connotations in relation to masculine production, the main challenge facing the editors of the *American Boy* was not merely to construct boys as consumers, but to do so in a way that conformed to the dominant masculine vision of boys. In articles and advertisements promoting the AMLA, the *American Boy* reformulated boys' consumption in terms of air-mindedness, which allowed its editors to erect what historian Ruth Oldenziel labels a "male technical domain" around the model airplane hobby.<sup>3</sup> AMLA organizers circumvented the potential risks of feminizing boys as consumers by adding a masculine producer veneer over their program, while simultaneously appealing to boys' consumer desires with promises of all-expense-paid trips to Europe for contest winners. In order to demonstrate the construction of the air-minded boy consumer, this chapter first traces his development in the pages of the *American Boy* magazine, before turning to the AMLA's annual model airplane tournament. Choosing Joseph Corn's *Winged Gospel* (1983) as a point of departure, this chapter situates the Airplane Model League within the context of an evolving commercialized air-minded culture, wherein deferred visions of future producer-orientated lives as adults were predicated on boys' active consumption in the present.

### ***Visions of the Air-minded Generation***

Air-mindedness, as historian Joseph Corn observes, emerged as a powerful cultural force prevalent in the first half of the twentieth century that linked existing ideas of technological progress with evangelical traditions to create a techno-religious ideology surrounding the airplane. This "winged gospel" glowingly promoted an airplane-

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<sup>3</sup> Ruth Oldenziel, "Boys and Their Toys: The Fischer Body Craftsman's Guild, 1930-1968, and the Making of a Male Technical Domain," *Technology and Culture* 38 (January 1997): 60-96.



centered millenarianism, wherein the air age of the future would bring peace, prosperity, and material abundance—an emphasis largely complementary with turn of the century consumer culture and industrial capitalism generally. Of course, the symbolic weight of the airplane linked existing associations between flight and the divine in formulating dreams of transcendence, but even this was viewed through a lens of consumer culture because it foretold new experiences and products to be consumed. Preachers of the winged gospel created individually focused visions of a future citizenry flying their own aircraft. Retailers stocked airplane-inspired clothing accessories for all, from fashionable women's handbags shaped like airplanes to aviator caps popular among children. Around the country, Americans who attended air shows, utilized airmail services, flew on commercial airplanes, or read accounts of the latest developments in aviation—all became participants in a consumer culture centered on the airplane. Even those predicting new, exciting, and well-paying jobs in a growing industry, did so, in part, through appeals to the increased spending power of those fortunate enough to enter these careers. Airmindedness confirmed the belief that technology would continue to bestow the benefits of material abundance, and those who labeled themselves as airminded personally declared their modernity. For boys, the model airplane was nothing short of airmindedness materialized.<sup>4</sup>

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<sup>4</sup> Joseph J. Corn, *The Winged Gospel: America's Romance with Aviation, 1900-1950* (New York: Oxford University Press, 1983). Dominick Pisano, for his own part, extends airmindedness into the realm of educational policy as part of his study of President Franklin D. Roosevelt's "New Deal for aviation." See his, *To Fill The Skies with Pilots: The Civilian Pilot Training Program, 1939-1946* (Urbana: University of Illinois Press, 1993). On the history of advertising, see Pamela Walker Laird, *Advertising Progress: American Business and the Rise of Consumer Marketing* (Baltimore: Johns Hopkins University Press, 1998), 47; Jackson Lears, *Fables of Abundance: A Cultural History of Advertising in America* (New York: Basic Books, 1994); Warren Susman, *Culture as History: The Transformation of American Society in the Twentieth Century* (New York: Pantheon, 1984). On the political economy of consumption, see Elizabeth Cohen, *Consumer's Republic: The Politics of Mass Consumption in Postwar America* (New York: Knopf,

While unifying the air-minded, air-mindedness also segmented society, for implicit in its logic was the construction of its opposite. Given the close associations between youth and modernity, it is not at all surprising that these divisions often fell between generations. For young aeromodeling enthusiast Walter Musciano and his father, for example, the contrast between young and old, air-minded and not, was both clear and, for Walter at least, emotionally painful. As he later recalled, Walter's first act as an air-minded consumer was to purchase a model airplane construction kit from a New York City Woolworth's in 1930. Bought soon after his mother's death, the seven-year-old found solace and excitement in building and playing with the non-flying model and, as he later recalled, he became, in his words, "addicted" almost "overnight."<sup>5</sup>

Walter's enthusiasm for aviation fueled additional purchases for making model airplanes, but this meant little to his father, who when disciplining his son "smashed my models as punishment." At the time of his wife's death, the widower Musciano was fifty-nine and worked in an unnamed occupation, which took him from the Jersey shore in the summer, Florida in the winter, and the spring and fall seasons in New York City. Having little time for his son's interest in aviation (and for his son generally; Walter even spent time briefly in an orphanage), Mr. Musciano's tolerance proved unpredictable. During lengthy car trips characteristic of his snowbird existence, Walter held models outside the car window, and with the "propeller spin[ning] madly" and "imagining I was the pilot," he would watch the small plane "slip and dive in the slipstream." Model

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2003); and, Meg Jacobs, *Pocketbook Politics: Economic Citizenship and Twentieth-Century America* (Princeton: Princeton University Press, 2005).

<sup>5</sup> Walter A. Musciano, "Walter Musciano and His Model Aircraft," 2-3, typescript, Biography File, Academy of Model Aeronautics History Program (hereafter AMAHP), National Model Aviation Museum (NMAM). An expanded version of Musciano's typescript was published as "Walt Musciano and His Model Aircraft," *Kapa Kollector*, 18 (June 1997), 18.1-18.44, located in Musciano file, AMAHP.

airplanes provided an imaginative respite from the realities of his boyhood, but Walter was readily aware of his father's lurking disapproval. Often working in secret, Walter withheld his most joyful accomplishments (such as the flight of his first flying scale model—a Bellanca, which, he remembered, “flew beautifully”) for fear his latest project would be discovered and his father would “smash it, too!” Given the circumstances, Walter's tenacity to work, to build, and to consume was quite remarkable.<sup>6</sup>

Clearly, the conflict involved more than models, airmindedness, and one boy's consumption of both, but these all became easy targets for venting one man's frustration. This cruelty was present even with no model to smash, as was the case when his father learned Walter lost a model during its test flight on the Jersey Shore in 1935. Alternately describing models as valueless and valuable, Mr. Musciano rebuked his son for being “so stupid for losing the model,” which provided more evidence Walter's interest was “good for nothing,” making criticism of models also criticism of the son. Probing the memories of these painful experiences, Walter remembered a softening of his father's attitude only after he witnessed the praise heaped on his son by a South Florida school principal for winning a school-sponsored contest. This outsider unwittingly negotiated the truce Walter could not, leading to a cessation of hostilities and even a common source of pride. Mr. Musciano's change of heart, however, proved tragically short-lived for he “died suddenly” that summer, leaving thirteen-year old Walter homeless and orphaned on the streets of Little Italy until his adoption the following year.<sup>7</sup>

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<sup>6</sup> “Walter Musciano and His Model Aircraft,” 2-3. In his 1992 *Unto the Sons*, journalist Gay Talese recalled that when he was twelve his escalating conflict with his father similarly resulted in his father's complete destruction of his model airplane collection—twelve or more representing Allied aircraft during the Second World War—which were carefully hung from the ceiling above his bed. See Gay Talese, *Unto the Sons* (New York: Alfred D. Knopf, 1992), 624-628.

<sup>7</sup> “Walter Musciano and His Model Aircraft,” 5-6.

Reconstructed from the painful memories of his childhood, Walter Musciano's experience leaves many unanswered questions. What is clear, however, is that his father saw little value in his model building. Despite his consistent emphasis on the importance of education, Mr. Musciano saw no lessons in his boy's model work, which meant that Walter's progression from inexpensive solid, shelf-display models to flying models and eventually those he designed himself from photographs of airplanes clipped from magazines went largely unnoticed. For the father, the son's consumption added nothing and was entirely wasteful, and provided nothing more than an outlet to focus their struggles.

Conflict between adults and boys was also present in Harrison Cady's cover illustration for the June 1930 issue of the *American Boy* magazine, but the artists' satire of boys' participation in the model airplane craze demonstrated a very different version of childhood (fig. 36). Illustrated in Cady's signature exaggerated style, the artist's crowded landscape portrayed boys in long and short pants flying and dodging clusters of animated (at times menacingly so) model airplanes, fortifying a vision of the youthful embrace of aviation across the American cultural landscape. Expanding beyond the confines of the imagined model flying contest, technological competition quickly d/evolves into spectacle, one not altogether unlike that greeting Charles Lindbergh in 1927. Lindbergh's presence is suggested in the form of "'Lindy' Simpkins Airplane Shop," which serves as a location for advice, inspiration, and service. Pictured in his workshop stocked with tools, plans, and other supplies, Cady's "Lindy" reinforces Lindbergh's oft commented boyishness, but as "Lindy's" boyish face is placed on a man-sized body, his presence provides contrast with the gleefully scurrying boys dominating

*The* YOUTH'S COMPANION *D* *June 1930*  
*combined with*  
**American Boy**  
Founded 1827



Baseball - "The Rope and the Bulldog," by Thomson Burtis - Aviation  
PRICE 20 CENTS \$2.00 A YEAR

**Figure 36:** Harrison Cady, untitled illustration, *American Boy*, June 1930. Bordered beneath Cady's illustration, the editors summarized the magazine's contents. By equating "Baseball" with "Aviation," the magazine recognized that if June brought the boys of summer, some might also be air-minded.

the scene. Ambiguously positioned in, on, or near the threshold of manhood, 'Lindy's' producer role provides a workshop to shield him from the chaos just outside: a chaos for which he, as with the real Lindbergh, was partially responsible. As an air-minded adult, 'Lindy' is afforded certain protections not available the other adults pictured.

Unlike Mr. Musciano who resisted the physical representations of his son's modernity with crashing blows, Cady inverts the power, picturing impotent adults cowering before youthful modernity's confrontation with an aging traditionalism. The backwards flight of the A-frame pusher model whizzing past "Lindy's" workshop evidenced Cady's own ignorance of the actual flight of the popular model, but within the context of the image, this model merely reinforces the overall impression that the imaginary world Cady depicts was largely divorced from reality. Centered near the bottom of the scene, an elderly woman in a blue dress, notably startled by the sight of one man barely avoiding collision with one errant model, watches in horror as another narrowly escapes a certain trashing at the cost of his umbrella. The umbrella now useless, its holder is outfitted with the accoutrements of urban gentility (including top hat, monocle, and tails). Elsewhere, a farmer, seated in a horse drawn cart perhaps on his way to market, receives a head-bashing from a low-flying model dirigible, which leads to a comical chain reaction of chaos as his horse rears in panic leading to the loss of at least one passenger and a portion of his apple crop. If model airplanes symbolized modernity, then traditional horse and cart technologies were ill matched to meet the cresting wave of technological progress. The same could be said of vernacular farmhouses, for just as one curious onlooker peers out his window to take in the scene he receives a dousing of bird's eggs dropped from an overturned nest placed conveniently above his window. Neither

class nor race (all figures appear white) explains the conflict, for it is one of generations. Linking aviation with masculine youth, Cady's portrayal of boyish modernity emerges as a largely unsympathetic force overturning the old order like so many bird's nests and apple carts.<sup>8</sup>

Perhaps expecting just such a raucous scene as Cady would conjure, *Detroit News* reporter Rex G. White commented on the surprising absence of screeches, running, "horse-play," or other displays of the "exuberance of mere youth" at one model airplane competition in 1928. Instead, White found silence, punctured only by the steady "hum of the winding machine as it spun the little propellers and prepared them for their flight." Even here, the gears of mechanical technology—not the anticipated sounds of youthful roughhousing—broke the calm. As for the contestants, White reported:

Most of the boys were in long trousers, probably their first. They were clean, upstanding boys, with thoughtful eyes and wide foreheads. They talked in low tones and learnedly of things aeronautical, of struts and wings and trade terms. Every man jack of them has a hope and a belief in his heart that someday he would fly another sort of plane, a bigger plane and one that would lift his body as well as his spirit to those upper realms.

Confirming White's impression, police officials on the scene praised the group as the "most orderly group of youngsters" they had seen. While lacking the exaggerations of Cady's illustrated world, the conflict in White's observations was between his

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<sup>8</sup> Cady illustrated several *American Boy* covers utilizing a similar crowded style, but the similarities in style and composition (as with the October 1926 issue featuring a rambunctious group of footballers) rarely portray cast the confrontation with modernity in such pronounced terms. Cady's own ambiguity about modern technology were present in his earlier work, including *The Hare and the Tortoise* (published in *Life*, 19 August 1909, pp. 242-243), which featured the destruction of small country town in the wake of an automobile race. See, Frederick C. Moffatt, "Harrison Cady: The Southern Image," Art and Architecture Gallery, University of Tennessee, Knoxville, 1985, unpaginated exhibit catalog; "Harrison Cady, Artist, Dead," *New York Times*, 11 December 1970, obituary clipping, Harrison Cady Vertical File, Smithsonian American Art Museum and National Portrait Gallery Library. See also the biography written by Cady's nephew, Harrison Eldredge, "Harrison Cady: The Way of An Artist", unpublished typescript (1978), reel 2803, pp. 1161-1231, Archives of American Art, Smithsonian Institution, Washington, D.C.



expectations and the alleged seriousness of boy engineer-pilots. While far less menacing, the gap between generations was no less palpable.<sup>9</sup>

While Cady's landscape fails entirely to conform to White's observations, the illustration invokes not only chaos and confrontation, but also plenty and abundance. Boys and model airplanes spill off the page, making the *American Boy* cover not simply about youth's embrace of aeromodeling, but also a recognition and, in a way, a celebration of their roles as consumers. While adults are chased *by* errant models it is the boys pictured who do the chasing, suggesting boys' desires and longings for modern technology. For the boys not running, those intently gazing and admiring the display and sale of models, Cady imagines a boy-driven economy replacing the existing agricultural one. Not unlike the carnivalesque displays of abundance and plenty historian Jackson Lears identifies in American advertising traditions, the sky above emerges as a display space presenting varieties of models available (ranging from 'A-frame' pushers and simple tractor types, to the more realistic and increasingly popular built-up fuselage monoplanes and biplanes in the upper right-hand corner). These models were on display for the boys in the picture, but also for those outside gazing at the magazine on newsstands or, after purchase, at home. Reinforcing the construction of the child as consumer, the magazine's cover and its contents (including articles, features, and advertising), as Mark Allen Peterson suggests of children's periodicals generally, illuminated "a world of other things to imagine buying." The magazine enhanced

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<sup>9</sup> Rex G. White, "Ambition, Belief in Future Grip Heart of 'Flying' Boy," *Detroit News*, 16 June 1928; "Detroit Boys Come in First in Each Class," *Detroit New*, 17 June 1928, Clippings (16-42), Aircraft Models Plans, Detroit News George Catlin Memorial Library, Detroit, MI (hereafter DNL). To avoid confusion, I pair the publication date with the clipping's location in the DNL's source file. This is especially important for those citations where the stamped date is either illegible or the full article title was not provided. For the sake of consistency, the full location is given. Identification numbers are listed only for subsequent references to material in that subject file.



material desires, but also suggested paths to fulfillment; a fact not lost upon those editors who commissioned Cady's work.<sup>10</sup>

Regardless of the ambiguity of Cady's position on progress and modernity, his satirical cover provides one contemporary impression of the airminded in action at the end of the 1920s. While certainly the boys pictured scrambling for model airplanes suggested youthful airmindedness, for the magazine whose cover they graced, the imaginatively rendered boys were also potential consumers with insatiable appetites for aviation. For the *American Boy's* editors, Cady's aviation themed covers (for June 1930 and April 1928), were part of a business strategy to increase magazine circulation and lure new advertisers by courting the airminded boy consumer with the magazine-sponsored Airplane Model League of America (AMLA). When the group was formed in 1927 the boy consumer was only just coming into sharper focus in the minds of retailers and advertisers, with middle-class periodicals such as the *American Boy* leading the charge at promoting an idealized, masculine vision for boys' acquisitive desires.<sup>11</sup>

The AMLA spoke openly to boys' passions by uniting them in a common cause of aviation, yet in capturing the spirit of airmindedness the magazine nevertheless hoped to transform the airminded boy of 1927 into the airminded boy consumer capable of

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<sup>10</sup> Jackson Lears, *Fables of Abundance: A Cultural History of Advertising in America* (New York: Basic Books, 1994); Mark Allen Peterson, "The Jinn and the Computer: Consumption and Identity in Arabic Children's Magazines," *Childhood* 12 (May 1, 2005): 177-200 (quote on page 179).

<sup>11</sup> According to the historian Lisa Jacobsen, the club concept gained national attention with the J. Walter Thompson Company's campaign promoting Cream of Wheat's Hot Cereal Breakfast (H.C.B.) Club in 1928. This immediately successful campaign targeted mothers and transformed breakfast into a game through with promotional materials that included weekly wall charts and gold stars to track their children's steady "H.C.B." consumption. The *American Boy's* AMLA was formed a year before the H.C.B. Club (admittedly in itself not especially significant), but the AMLA also appears to have anticipated the use of clubs to market directly to children, which became much more widespread in the early to mid-1930s. On commercial children's clubs, as well as the *American Boy* and the boy consumer, see Jacobsen, *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004), 93-126, 185-190; and "Manly Boys and Enterprising Dreamers: Business Ideology and the Construction of the Boy Consumer, 1910-1930," *Enterprise and Society* 2 (June 2001): 225-238.

expanding the magazine's revenues. To accomplish this, editors attempted to avoid the perception of solely exploiting boys' interests by adopting a strategy stressing a genuine commitment to airmindedness. As a result, potential AMLA members learned they need not be regular *American Boy* subscribers and possess instead simply an interest in "aviation and model airplanes" and the necessary two-cent stamp for return postage of an AMLA membership card and official club button. While essentially free (save for the stamp, of course) editor-in-chief Ellis saw great potential for expanding readership and thus dramatically increasing advertising revenue, but throughout he and the other editors presented the *American Boy* as steadfastly dedicated to the cause of airmindedness and modern boyhood.<sup>12</sup>

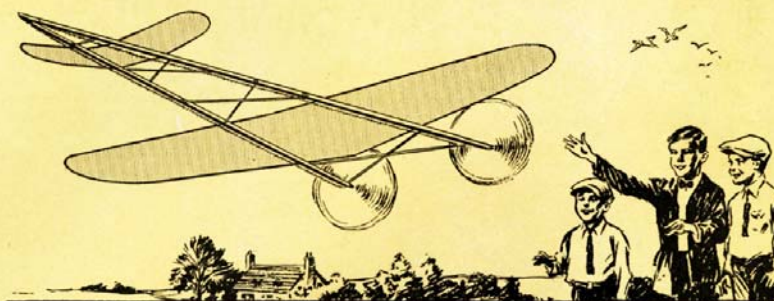
This apparent fidelity to airmindedness was clearly present in the groups' later announcement that in addition to providing model airplane plans and building instructions in the pages of the *American Boy*, editors had arranged to supply "at cost" kits and building materials for members exclusively through the magazine's mail order department. The newly expanded fulfillment center, used previously to handle premium orders to compensate boys who sold magazine subscriptions, retained its original purpose. For AMLA boys unable to purchase a kit directly—sixty-five cents, for example, for the price of the "Baby R.O.G." kit—they could receive one "free" by selling an annual magazine subscription to other neighborhood boys for two dollars (fig. 37).<sup>13</sup>

Couched in terms of airminded fidelity, the magazine returned to a time-tested marketing practice within the juvenile periodical industry relying upon readers, lured

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<sup>12</sup> "Build Model Airplanes—and Fly Them!" *American Boy*, September 1927, 58.

<sup>13</sup> Ibid.; "Model Maker, A Lindbergh," *Detroit News*, 5 March 1928, 16-43, Aircraft Models Plans, DNL; "Airplane Model Builders," *American Boy*, April 1928, 26. "Win an Airplane Model Kit," *American Boy*, June 1928, 71.



Here's the sport of the age—building and flying airplane models. One hundred and fifty thousand boys have already joined the Airplane Model League of America and are busy turning out sporty miniature airplanes from kits sold by the League. Many of them are entering contests—winning honors—valuable prizes. Here's your chance to join in this keenest of sports.

## Win an Airplane Model Kit

WHO will be the Lindbergh of ten years hence—the Chamberlin—the Byrd—the Stinson? None can say, of course, but these famous airmen themselves believe it will be one of the thousands of boys who, to-day, are building, flying and experimenting with airplane models.

"Boys have a wonderful opportunity to learn about aeronautics from airplane models," says Chamberlin, New York to Germany flyer. "I expect great things of the fellows who are building miniature planes from the kits offered by the Airplane Model League of America. It's amazing what can be done with these models."

And now you can win these airplane model kits—the very ones sold by the Airplane Model League of America—simply by getting

a friend to subscribe to THE AMERICAN BOY magazine. That's easy! Tell him about the corking good airplane model features the magazine carries—tell him about the thrilling stories it contains, the adventure, the fun, the helpful editorials and articles—obtain his

subscription order with proper remittance and send this with your own name and address and the name and number of the airplane model kit you want to THE AMERICAN BOY. Simple isn't it?

You can easily win one of these model kits—and think of the fun you will

have with it! But best of all, as the famous flyers have said, you will be acquiring a knowledge of the air that is going to prove mighty useful to you in years to come.

### RULES

1. Neither your own subscription nor that for any one in your own family can be used in getting these kits. Credit will be given you only on subscriptions for persons living outside your home.
2. No premiums sent outside the United States. No airplane kits sent C. O. D.
3. Collect and send to THE AMERICAN BOY \$2.00 for a one-year subscription, \$3.00 for a two-year subscription or \$3.50 for a three-year subscription.
4. Be sure to send the name and address of each subscriber you obtain (just write them on a piece of plain paper), your own name and address, the number and name of the airplane model kit you desire, and the proper remittance to cover the subscriptions.

### No. 1—Baby R. O. G.

#### 1 Subscription

The Baby R. O. G. is the tiny model that of its own power rises from the ground, circles 'round and 'round the room and then makes a perfect "three-point" landing. You can have loads of fun with this model right in your own room. The building kit containing complete materials and full instructions for making this model sent to you, postpaid, for just one AMERICAN BOY subscription of one year or more. Read rules and directions above.

### No. 2—Indoor Pusher

#### 1 Subscription

The indoor pusher is a larger model than the Baby R. O. G., its record being 221 seconds in the air. However, it does not have the landing gear such as is found on the jaunty little R. O. G. It's unique though—wing and elevator in front of the propeller. Great stuff. You would have a corking good time making and flying this model. Kit and complete instructions sent to you, postpaid, for just one AMERICAN BOY subscription of one year or more. Read rules and directions above.

### No. 3—Indoor Tractor

#### 1 Subscription

The indoor tractor is the model usually used in contests. Until recently it held the world's indoor duration record with a flight of 211 seconds. Your friends will be thrilled when they see this miniature airplane floating gracefully about the room. Kit and complete instructions sent to you, postpaid, for just one AMERICAN BOY subscription of one year or more. Read rules and directions above.

### No. 4—Outdoor Twin Pusher

#### 4 Subscriptions

This is the big 40-inch wing-spread, outdoor model. It has two propellers—holds a world's record of more than ten minutes. Here's a plane you'll be proud to own. Building kit and complete instructions sent to you, postpaid, for just four AMERICAN BOY subscriptions of one year or more. If you cannot obtain all four subscriptions send whatever subscriptions you do obtain and 50c extra in cash for each remaining subscription. At least one subscription must accompany your order. Read rules and directions above.

Send Orders to Premium Department

The  
**American Boy**

550 West Lafayette Blvd.

Detroit, Michigan

**Figure 37:** "Win an Airplane Model Kit," *American Boy*, June 1928, 71. Each of the four kits available, were listed with cost in terms of subscriptions sales. The description for the "Indoor Tractor" enticed boy readers through appeals to peer relationships: "Your friends will be thrilled when they see this miniature airplane floating about the room." While requiring four subscriptions for the "Outdoor Twin Pusher" pictured above, editors allowed boy sellers to pay fifty cents for each subscription short.

with the promises of inexpensive toys and other premiums, to promote the benefits of the *American Boy* and the AMLA. And in a social environment filled with admiration of aviation, construction kits for aeromodeling proved by far the most popular premium. Within a few years, the use of model airplane kits as premiums became a standard practice in marketing products either directly to children or to adults through child-size proxies.<sup>14</sup> By 1930, for example, Cracker Jack touted their support of the AMLA through the promotion of their own “Cracker Jack Air Corps.” With an incredible 50,000 members, advertisers offered a special limited edition model airplane made by the same supplier of AMLA kits with the remission of twenty cents and five “sailor boy” faces from boxes of Cracker Jack (fig. 38). By the mid-1930s, Quaker Oaks and Velveeta cheese joined the list of companies with model airplane promotions.<sup>15</sup>

### ***Making Ways for Boy Consumers***

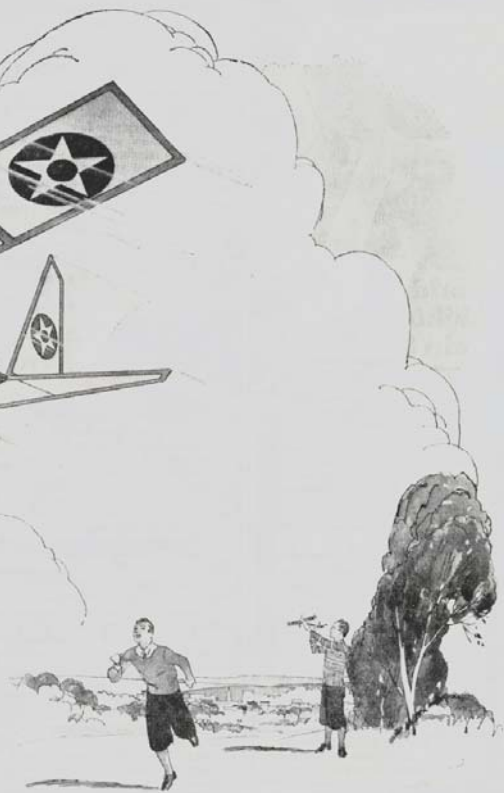
The *American Boy* became the medium through which the magazine’s editors cultivated boy consumers from its existing readership and connected potential consumers to advertisers, but such efforts to target the child consumer were a relatively recent phenomena in the history of marketing in the United States. Whereas department stores at the turn of the twentieth century routinely offered children’s services such as

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<sup>14</sup> Model airplane premiums appeared in the *American Boy* as early as 1912, when the magazine offered a 3-foot long A-frame pusher model at no cost in exchange for four magazine subscriptions. See, “The American Boy Fall and Winter 1912-13 Premium List,” *American Boy*, November 1912, 37. Rival magazine, *Youth’s Companion* also offered model airplane premiums in exchange for magazine sales, as did *Open Road for Boys*, which offered a special premium package that included an all-balsa wood glider and an aviator’s helmet for new magazine subscribers when the magazine started publication in 1928. See, “Three Premiums for You!” *Youth’s Companion*, May 1928, inside front cover; “Boys! Built a Toy Airship that Will Fly,” *Youth’s Companion*, 13 June 1912, 320; *Open Road for Boys* “Amazing~Speed~Plane FREE,” advertisement, *Youth’s Companion*, April 1928, 197.

<sup>15</sup> Cracker Jack Co. [Chicago, IL], “Up in the Clouds...,” advertisement, *American Boy*, June 1930, 45; Jim Alaback, “Old Timer Topics,” *Flying Models*, March 1997, 70-71.

# UP in the CLOUDS ... another "ship" for your Cracker Jack Air Fleet!



*Sailing up there in the clouds is your dandy little Wanner Special, No. 101. And here are the Wings of the Cracker Jack Air Corps—just see how easily you can get them.*

**H**IGH HO, gang—here's a new plane for your Cracker Jack Air Fleet that's a peach. It's a genuine Wanner Special R. O. G. Monoplane No. 101, made by the official manufacturers for the Airplane Model League of America, and what's more you can have all the fun of building it yourself, because it comes to you in knocked down form—in a kit.

Every part of this Cracker Jack Airplane fits perfectly. All you have to do is sit down and assemble it—wind-up the propeller and watch 'er fly.

## Easy to get, too

You can get this little flyer just about as easily as you got your first two

planes too. All you have to do is save the Sailor Boy faces from 5 packages of Cracker Jack and send them to us with twenty cents to partially cover mailing costs. We'll send your "Wanner Special" immediately.

And you'll have all kinds of fun. There are

50,000 members of the Cracker Jack Air Corps already and it's growing by leaps and bounds. Step on it, fellows, and get in on this great sport.

If you haven't joined the Cracker Jack Air Corps send in the coupon below with two Sailor Boy faces and we'll send your Wings of Membership right away. Then—start winning the whole Cracker Jack Fleet. Better do it today because we're going to have lots of fun this summer and this offer closes June 30, 1930.

**THE CRACKER JACK AIR CORPS**  
The Cracker Jack Co., Chicago, Illinois

**THE CRACKER JACK AIR CORPS,**  
The Cracker Jack Co., 530 South Peoria Street  
Chicago, Illinois

Dear Sir: I want to be a member of the Cracker Jack Air Corps and start winning those dandy planes. Attached are two Sailor Boy faces. Will you please send me my Wings?

Name.....  
Address.....  
City..... State.....

**"THE MORE YOU EAT—  
THE MORE YOU WANT"**



## Try it with a nickel

*The keen taste and pure wholesomeness of Cracker Jack have made it famous the world over. Every regular fellow knows that it helps develop husky muscles in arms and legs and puts a healthy glow in young cheeks. You'll find it's the greatest nickel's worth in the world—and a surprise in every package.*



*If you can't get Cracker Jack, you can send the narrow side panel from packages of Crackers for both W. Jags and planes—send the side that says "Prize Crackers."*

**Figure 38:** Advertisement announcing a model airplane promotion for the "Cracker Jack Air Corps" published in *American Boy*, June 1930, 45. Such advertisements used boy consumers' interest in model airplanes to build brand loyalty.

playrooms and nurseries to ease the burdens of women shoppers, the number of goods available for children in the department stores around the country expanded exponentially over the next two decades. The widespread adoption of ready-made clothing for children coupled with the massive growth of domestic American toy industry—a fully 1,300 percent increase between 1905 and 1920—meant that Americans shopping in the nation’s department stores witnessed a marked increase in the number of products for children.<sup>16</sup>

Even with the creation of commercial holidays such as Children’s Day, first ‘celebrated’ at Chicago’s Marshall Field in 1902, the targets for the marketer’s messages before the 1920s remained those adults who purchased goods on children’s behalf. Children’s Day, held in mid-June, represented not just retailers’ recognition of the changes to more child-centered parenting styles, but also the attempt to reform the seasonal orientation of the children’s toy business and attract shoppers to newly created year-round toy departments appearing inside department stores in the 1920s.<sup>17</sup> These motivations were clearly present in one 1927 Marshall Field advertisement that exclaimed, “toys are as important in June as in December!” Marshall Field’s advertisement, designed to prey on parents’ sense of guilt, continued to tailor its ultimate message to adult purchasers. The retailer cast “playthings”—“among the most important things in the life of a child”—as pathways to future success and warned that “[m]any a

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<sup>16</sup> Susan Porter Benson, *Counter Cultures: Saleswomen, Managers, and Customers in American Department Stores, 1890-1940* (Urbana: University of Illinois Press, 1986), 84-85, 100-101; William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Pantheon, 1993), 85-90; Miriam Formanek-Brunell, *Made to Play House: Dolls and the Commercialization of American Girlhood* (New Haven: Yale University Press, 1993), 161-166. On the toy industry generally, see Gary Cross, *Kids’ Stuff: Toys and the Changing World’s American Childhood* (Cambridge, MA: Harvard University Press, 1997).

<sup>17</sup> Leach, *Land of Desire*, 86-87; Formanek-Brunell, *Made to Play House*, 161-184. The close association between children’s toys and Christmas was forged early in the nineteenth-century, see Stephen Nissenbaum’s *The Battle for Christmas* (New York: Alfred A. Knopf, 1996), and Karal Ann Marling, *Merry Christmas!: Celebrating America’s Greatest Holiday* (Cambridge, MA: Harvard University Press, 2001).



person has been limited through life because his early playthings cramped his expression.” Parents who provided their children with store-bought toys, by contrast, “awakened his best possibilities.” While such messages remained prevalent in advertisers’ messages to parents, new marketing strategies were also underway to recast the children as consumer and the ultimate target of advertisers’ campaigns.<sup>18</sup>

Increasingly, in the 1920s, retailers recognized the lucrative potential of marketing directly to children. Aided by the creation of the “teenager”—as a term and an emerging marketing category—retailers physically reorganized departments to take advantage of trends in age-graded merchandising, and thus allowed, as sociologist Daniel Thomas Cook asserts, the child shopper to enact and perform their biographies as consumers within adult-sanctioned retail spaces. While the parent purchaser remained essential to this social arrangement, the more individually-focused, consumer-centered world of children’s retailing allowed department stores to redouble efforts to appeal directly to children’s interests in order to capture children’s—and their parents’—potential business.<sup>19</sup> By 1927, this meant an interest in aviation and the June 18<sup>th</sup> national observance of Children’s Day was marked at Chicago’s Marshall Field, according to one toy trade publication report, with child customers receiving “an attractive paper aeroplane with a six-inch wing spread.” In New York, a photograph of similar celebrations featured

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<sup>18</sup> Marshall Field & Company [Chicago, IL], “Tomorrow is Children’s Day,” advertisement, reprinted in Cal Lewis, “Children’s Day Goes Over With a Bang,” *Toys and Novelties*, June 1927, 64.

<sup>19</sup> Kelly Schrum, *Some Wore Bobby Sox: The Emergence of Teenage Girls’ Culture, 1920-1945* (New York: Palgrave Macmillan, 2004); Daniel Thomas Cook, “Spatial Biographies of Children’s Consumption: Market Places and Spaces of Childhood in the 1930s and Beyond,” *Journal of Consumer Culture* 3 (July 2003): 147-169; and idem., *Commodification of Childhood*. On postwar period, see Stephen Kline, “Toys, Socialization, and the Commodification of Play,” in *Getting and Spending: European and American Consumer Societies in the Twentieth Century*, ed. Susan Strasser, Charles McGovern, and Matthias Judd (New York: Cambridge University Press, 1998), 339-358.

well over a dozen children huddled around a child-size monoplane that was complete with a boy “pilot” outfitted with an aviator’s cap and goggles.<sup>20</sup>

What made the *American Boy*’s Airplane Model League differ from these efforts were the attempts by the magazine’s editors to commodify airmindedness, while remaining to its ultimate tenets. For the *American Boy*’s editors, nurturing airmindedness and encouraging boys’ consumption were complementary aims, but in promoting model building the magazine updated a major theme within inventive boy discourse with promises that boy model builders were potentially creating opportunities for their own future greatness. The article heralding the AMLA’s creation announced: “MANY of the great leaders in aviation got their start by building airplane models....Now THE AMERICAN BOY is going to give you your start!” The advertisement promoting a chance to “Win an Airplane Model Kit” similarly emphasized social and economic opportunity. In outlining the scheme, editors pondered: “WHO will be the Lindbergh of ten years hence—the Chamberlain—the Byrd—the Stinson? None can say, of course, but these famous airmen themselves believe it will be one of the thousands of boys who, to-day, are building, flying, and experimenting with airplane models.”<sup>21</sup>

By binding today’s consumer act with tomorrow’s greatness, the AMLA promoted a form of consumption that denied its own status solely as such. Instead, by buying, building, and flying model airplanes boys were fashioning a sense of self for the future. The product sold was not just a kit of wood and tissue paper and rubber bands;

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<sup>20</sup> On Children’s Day celebrations in 1927, see Lewis, “Children’s Day Goes Over With a Bang,” 63-65; “Some Special Features for Children’s Day by Retail Stores,” *Toys and Novelties*, June 1927, 65. According to *Toys and Novelties*, some three million children participated in “Children’s Day” celebrations hosted on playground around the country that year. These estimates, however, deserve some scrutiny because editors never defined ‘participation’ nor did they take into account the normal number of children who might have spend a Sunday afternoon in June at a playground.

<sup>21</sup> “Build Model Airplanes—and Fly Them!”; “Win an Airplane Model Kit,” *American Boy*, June 1928, 71.



rather it was the very idea of prospective greatness in a technologically modern society. To purchase, or “win,” a model served not as a boy’s consumer act, but the first step in becoming a more professionally orientated technological man. Unlike Mr. Musciano’s perception of his son’s model building as wasteful and valueless, the *American Boy* by contrast framed boys’ consumption far more positively, casting it as the very basis of character formation.

Threads for this position on boys’ consumption were present in the magazine’s earliest editorial positions. According to one description in 1903, the *American Boy* aimed to “cultivate manliness in muscle, mind and morals” among its boy readership along “social, intellectual and moral lines.”<sup>22</sup> In order to meet this broadly inclusive goal, the magazine featured fictional and non-fictional works celebrating manly virtues of assertiveness, honesty, and independence, and also a keen interest in modern technology. By stressing inventiveness as a welcome characteristic, editors highlighted certain things (such as models, wireless outfits, and erector sets) as contributing positively to boys’ development by socializing them for their future roles as adult technologists capable of joining an increasingly professionalized technological elite.<sup>23</sup>

Beyond the perceived utility of career-related toys, the magazine’s editors promoted masculine visions for boy consumers, because premiums stressed not just consumer desires, but the means through which those desires were fulfilled. By enticing readers to join the magazine’s sales force with promises of desirable prizes (such as the

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<sup>22</sup> “The Great American Boy Army,” *American Boy*, April 1903, 194-195.

<sup>23</sup> On toys and socialization, see Carroll W. Pursell, Jr., “Toys, Technology, and Sex Roles in America, 1920-1940,” In Martha Moore Trescott, ed., *Dynamos and Virgins Revisited: Women and Technological Change in History* (Metuchen, NY: Scarecrow Press, 1979), 252-67; Ruth Oldenziel, “Boys and Their Toys: The Fischer Body Craftman’s Guild, 1930-1968, and the Making of a Male Technical Domain,” *Technology and Culture* 38 (January 1997): 60-96; Kline, “Toys, Socialization, and the Commodification of Play”; and Formanek-Brunell, *Made to Play House*.

model airplane kits pictured above), editors honored the world of work and yet at the same time promoted a form of consumer desire tempered by manly restraint. Based on their frequency on published prize lists, books and games proved ever popular, but so too did technologically-inspired items, for editors filled premium lists with boy-sized technologies from jack knives to models of various sizes. Premium lists for 1905, for example, featured the “little Joker Dynamo” for two subscriptions or a “greatly improved” electric motor called the “Little Hustler,” for three. Two subscriptions could earn boys the “Weeden Upright Engine,” described as a model steam engine both “simple and sensible” in its construction and, not unlike the imagined boy reader, possessing “all parts strong and durable.” Premiums encouraged masculine virtues of assertiveness and self-control: for while prizes were available for sales of single subscriptions, more valuable, and presumably desirable, items were reserved for those boys achieving multiple sales. Lessons in manly salesmanship stressed financial independence from parents, but even the prizes themselves represented technologies typically coded male, which aided further editors’ attempts to socialize boys as productive technologists and consumers.<sup>24</sup>

Beneath the obvious motivations for increasing the magazine’s circulation, the *American Boy*’s invitations to join its sales network revealed tensions in stoking boys’

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<sup>24</sup> Premium List, *American Boy*, April 1905, 179. Although the *American Boy* led efforts to lure boy magazine solicitors with premiums, the magazine did not originate the practice. As early as 1872, the middle class magazine *Arthur’s Home Magazine* offered a fifteen-piece tool set and chest to boys who sold ten annual subscriptions for the magazine. See, Steven M. Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999), 184-185. For the *Saturday Evening Post*’s use of middle-class boys as sales force, see Jan Cohn “The Business Ethic for Boys: ‘The Saturday Evening Post and the Post Boys,’” *Business History Review* 61 (Summer 1987): 185-217. Unlike the *American Boy*’s emphasis on subscription sales, middle class boys selling the *Saturday Evening Post* acted as direct agents for the magazine selling issues directly to customers each week. Although the *Post* did stage elaborate sales contests for its boys agents to spur sales, the awards were typically cash prizes, or in those cases where sales managers offered elaborate trips (such as to the 1903 World’s Fair in St. Louis), boy winners could—and apparently did—opt for the cash equivalent. As such, the *Post* was more intent on cultivating a boy sales staff, rather than cultivating a readership of young consumers.

acquisitiveness while staying true to middle class values of masculinity. Through the idealized boy consumer, *American Boy*'s editors promoted a masculine vision of boys' consumption. This viewpoint rested exclusively on viewing, as Victoria de Grazia and others observe, consumer behavior as a potentially wasteful (if not harmful) activity which was the feminine opposite of masculine production, with manly producers viewed as rational enough to avoid the sensual enticements of an emerging consumer culture. While it is true that typically women handled the bulk of provisioning (and thus garnered the lion's share of advertisers' attention), male control of the family purse did allow men's participation in consumer culture in ways often obscured in pairings of men/producer, women/consumer.<sup>25</sup>

While admittedly the gendered meaning of consumption did not always conform perfectly to the realities of lived experience, cultural norms nonetheless framed its meaning. By constructing manly images of the boy consumer, historian Lisa Jacobsen contends that magazines such as the *American Boy* bridged worlds of feminine consumption and masculine production, casting boys' consumer roles as a "means to

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<sup>25</sup> Victoria de Grazia, ed. *The Sex of Things: Gender and Consumption in Historical Perspective* (Berkeley: University of California Press, 1996); Elaine S. Abelson, *When Ladies Go A-Thieving: Middle-Class Shoplifters in the Victorian Department Store* (New York: Oxford University Press, 1989); Steven Lubar, "Men/Women/Production/Consumption," in *His and Hers: Gender, Consumption, and Technology*, ed. Roger Horowitz and Arwen Mohun (Charlottesville: University Press of Virginia, 1998), 7-37. Mark A. Swiencicki, "Consuming Brotherhood: Men's Culture, Style, and Recreation as Consumer Culture, 1880-1930," *Journal of Social History* 31 (Summer 1998): 773-808, offers a useful corrective to the man/producer, woman/consumer dynamic. For boys and children as consumers, see Oldenziel, "Boys and Their Toys," and Todd Alexander Postal, "Masculine Guidance: Boys, Men, and Newspapers, 1930-1939," *Enterprise and Society* 1 (June 2000): 355-90. See also, Lisa Jacobsen, *Raising Consumers: Children and the American Mass Market in the Early Twentieth Century* (New York: Columbia University Press, 2004); Daniel Thomas Cook, *The Commodification of Childhood: The Children's Clothing Industry and the Rise of the Child Consumer* (Durham, NC: Duke University Press, 2004); and Kriste Lindenmeyer, *The Greatest Generation Grows Up: American Childhood in the 1930s* (Chicago: Ivan R Dee, 2005). On masculine technology, see Carroll Pursell's "Seeing the Invisible: New Perceptions in the History of Technology," *Icon* 1 (1995): 9-15; "The Construction of Masculinity and Technology," *Polhem* 11 (1993): 206-219; and "Feminism and the Rethinking of the History of Technology," in *Feminism in Twentieth Century Science, Technology, and Medicine*, ed. Angela Creager, Elizabeth Lunbeck, and Londa Schiebinger (Chicago: University of Chicago Press, 2001), 113-127. See also Ruth Oldenziel, "Man the Maker, Women the Consumer: The Consumption Junction Revisited," in the same, 128-148.

display mechanical flair, inventiveness, and mastery of technical change.” Consumption, concludes Jacobsen, emerged as “a manly virtue—not a sign of effeminacy or childlike dependency, but a legitimate, even productive, activity within the masculine domain.”<sup>26</sup>

### ***The Airplane Model League of America and the Model Building Boy***

Premium offers carefully grafted masculine values of making and earning onto boys’ consumption, but the Airplane Model League also unified boy aeromodelers to the cause of aviation within a similar masculine producer ethos. New or prospective members learned they were key elements in an ever-expanding fraternity of kindred technologists. The AMLA routinely reminded boy members they were carrying on in a great tradition of aeronautics; a tradition echoed in the group’s leadership. The *American Boy* suggested that current model building boys joined previous ones like AMLA president, inventor and engineer William Bushnell Stout, along with its vice-president, World War I pilot and airplane maker Eddie Stinson, and, in time, renowned pilots Richard Byrd and Clarence Chamberlain, as well as *Aero Digest* publisher Frank A. Tichenor. The AMLA remained steadfast that members learned “fundamental principals of aeronautics” while gaining “many hours of fun.” For these lessons, boy members received assistance from AMLA secretary and *American Boy* model airplane editor Merrill Hamburg, an industrial arts instructor for the Detroit public schools with several years’ experience teaching aviation subjects. *American Boy*’s editors promised Hamburg would provide a steady stream of features, articles, and advice to regular readers, but for those with additional questions, organizers invited members to address their queries to the “Question-and-Answer service” which brought “personal, expert advice” club members for free. Within a year,

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<sup>26</sup> Lisa Jacobsen, “Manly Boys and Enterprising Dreamers,” 245, 256.

*American Boy* staffers responded to some 400,000 letters seeking technical advice on model building from AMLA members.<sup>27</sup>

Through plans and instructions published in the *American Boy*, Hamburg developed a progressive construction program for the benefit of the magazine's regular readers. Starting in October 1927, Hamburg welcomed readers to the world of model aviation with instructions for the "Baby R.O.G."—a small, stick-fuselage monoplane with a twelve-inch wing-span and front-mounted rubber strand motor, which was designed to 'rise off the ground' under its own power (hence the name "R.O.G.") from landing gear constructed of bent wire and small solid wheels. October's lesson gave way to November's "Indoor Pusher" a slightly larger hand-launched model with a rear-mounted power plant. December's issue brought the "Indoor Endurance Tractor," and Hamburg capped the program in January with the "Outdoor Twin Pusher," a twin-propeller A-frame pusher design measuring over three feet long (see illustration at top of fig. 5.2). Hamburg assured readers that with the "Outdoor Twin Pusher," which was designed for outdoor endurance contests, "Lindbergh, Wright, and Byrd will have nothing on you." Not coincidentally, this progressive educational program was also a lesson in consumption, as every article reminded readers to send away for the lesson's corresponding kit. Costing sixty-five cents for the "Baby R.O.G." and "Indoor Pusher" kits, seventy-five cents for the "Indoor Endurance Tractor," and a not-insignificant three dollars for the "Outdoor Twin Pusher," the construction kits included all the necessary supplies (including wood, tissue paper, cement, dope, and long strands of rubber bands

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<sup>27</sup> "Build Model Airplanes—and Fly Them!" *American Boy*, September 1927, 58; "Model Aviation has its Biggest Day!," *American Boy*, September 1928, reprinted in Frank Zaic, ed., *Model Airplanes and the American Boy, 1927-1934* (Northridge, CA: California Model Aeronautic Publication, 1982), 36 (hereafter MAAB).



**Figure 39:** Sample AMLA “honor certificate” from “Model Plane Builder!,” *American Boy*, April 1928, 40.

for motors) along with detailed drawings and instructions that boys would have required to complete the model.<sup>28</sup>

In keeping with the *American Boy*’s ideas about character development, the AMLA’s progressive building plan privileged not just model purchases, but the finished model’s performance. In January 1928 the *American Boy* announced the “honor certificate” program, whereby members exceeding minimum flight standards set by the League received outside validation from AMLA officials. Moreover, in meeting these requirements, AMLA members were also preparing for the upcoming national tournament (fig. 39). Certificates, packaged with all kits distributed through AMLA

<sup>28</sup> Merrill Hamburg, “Build Model Airplanes: Start with the famous ‘Baby R.O.G.,’” *American Boy*, October 1927, MAAB, 4-6; Hamburg, “Build the Indoor Pusher,” *American Boy*, November 1927, MAAB, 7-8; Hamburg, “Build the Indoor Endurance Tractor,” *American Boy*, December 1927, MAAB, 9-11; Hamburg, “Build the Outdoor Twin Pusher,” *American Boy*, January 1928, MAAB, 12-14.

headquarters, featured the group's embossed gold seal and logo, and reproduced the signatures of Richard Byrd, William Stout, Merrill Hamburg, and *American Boy* editor Griffith Ogden Ellis. Certificates required the signature of an adult witness to be valid and recognized members who surpassed prescribed benchmarks for timed flights ranging from thirty-seconds for the "Baby R.O.G." model to two minutes for the "Outdoor Twin Pusher." As only the rarest of novice builders would have exceeded these requirements on their first attempt, these certificates recognized persistence in construction and consumption. Within months, readers learned that after obtaining certificates in each of the four classes members were entitled to an autographed picture of pilot and AMLA vice president Clarence Chamberlain.<sup>29</sup>

While honor certificates recognized the performance of individual boy's models, the AMLA did so within air-minded consumption's message of industrial preparedness. Hamburg, who received his instruction in model construction from Stout directly, was ever ready to pass on his mentor's advice. In one article, Hamburg assured readers that "Mr. Stout says that model building teaches you the basic principles of aeronautics." As if recalling conversations past, Hamburg added, Stout reminded all AMLA members "that airplane manufacturers, before they build a ship of new design, construct a model of it and test it out in the wind tunnel to see how it will work." Reassuring readers that "you're not merely whittling toys," and rather were "entering upon an important and interesting study of aviation," Hamburg stressed the possibilities of spurring technological development, which allowed him to recast boys' model building work as

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<sup>29</sup> "Win an Honor Certificate with Your Airplane Model," *American Boy*, January 1928, 57; "Model Planes Earn Honors," *Detroit News*, [10] March 1928 and "A Rare Honor," *Detroit News*, 26 March 1928, 16-41, DNL; "Model Plane Builders!," *American Boy*, April 1928, 40.

analogous to the engineer's scientific inquiry. Of course, this analogy cut the other way as well, for the work of the imagined adult engineer also became that of the boy at play.<sup>30</sup>

If there ever was a figure who best represented the image of the engineer-inventor at play, it was William Bushnell Stout. Stout's involvement in the AMLA proved fortunate not just for the promotion of his own involvement designing the Tri-Motor airplane for Ford's aviation division, but also for his long-standing advocacy of boys' technological pursuits. Involved with model airplane clubs in his hometown of Minneapolis-St. Paul as well as the Illinois Model Aero Club in Chicago decades before, Stout supplemented his income in the first two decades of the twentieth century by writing columns for boys published in the *Chicago Tribune*, the *American Boy*, *Youth's Companion*, and others. Stout articulated his faith in the inventive potential of boys in the forward to his *Boy's Book of Mechanical Models* (1916), but also his philosophy of invention and technological creation generally. In his 1916 manual, Stout reminded young readers, "ideas are what the world pays for. Learn to get up ideas" and "you...are building the basis of business success."<sup>31</sup> When Stout moved to Detroit to join Ford, he carried with him this philosophy and continued to instruct boys in model building. As Illinois Model Aero Club member Walter Brock observed to another club member in advance of one competition in 1926, "I believe Bill Stout has got quite a crowd interested in Detroit and I hear that they are doing very well and have high hopes of beating us."

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<sup>30</sup> Hamburg, "Build Model Airplanes."

<sup>31</sup> See Stout, *So Away I Went!*, 73-75;190-191. Stout proudly recalled that among the members of the Illinois Model Aero Club, was future airplane designer and manufacturer E. M. "Matty" Laird. See also, Edward H. Phillips, *Laird Airplanes: A Legacy of Speed* (North Branch, MN: Specialty Press, 2002), 3-4. Stout's "Making Model Airplanes" series first published in *American Boy* between February and August 1916, are reprinted in MAAB, 146-157. Stout, *Boy's Book of Mechanical Models*, (Boston: Little, Brown, and Company, 1916), vii.



Still, he added, “as long as the old crowd stick [with it] and work I think they will have to go some” before this happens.<sup>32</sup>

The repeated emphasis on industrial preparedness allowed AMLA officials to create a producer-orientated view of boys’ consumption, which only aided in the League’s endorsement from newspapers and educators around the country. The *American Boy*’s hometown of Detroit, however, led these efforts. School superintendent Frank Cody assured Detroit’s citizens that aviation would “play an important part in the lives of the rising generation,” making it essential that students gain at least “some practical knowledge” of the field. Cody hoped the AMLA program would encourage “a new understanding of aeronautics” for students in Detroit’s schools and established Cass Technical High School and Jefferson Intermediate School—two schools with strong industrial and vocational programs—as host locations for weekly demonstrations and contests. Cody’s support effectively meant that, as the district’s vocational education supervisor estimated, some 50,000 public school students would be encouraged to “join” the Airplane Model League of America, and, in effect, the campaign for airminded consumerism.<sup>33</sup>

In throwing his support behind airmindedness, Cody likely recognized Stout’s public position as the head of a division of the city’s largest single employer, Ford Motor, but the *Detroit News* was more explicit in what the AMLA meant for the city when announcing its own endorsement of the Airplane Model League. Encouraged that Detroit would host the upcoming AMLA national model aviation tournament in the summer the

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<sup>32</sup> Walter Brock to Warren [DeLansey], 4 July 1926, Bertram P. Pond Collection [1999.49.01], Lee Renaud Memorial Library, National Model Aviation Museum (hereafter NMAM), Muncie, Indiana.

<sup>33</sup> “Cody Endorses Plane Building,” *Detroit News*, 9 February 1928, 16-43, DNL; “Model Planes Draw Schools,” *Detroit News*, [22] February 1928, 16-41, Aircraft Models Plans, DNL.

*Detroit News* saw an opportunity for local economic boosterism and aggressively promoted the group in the months before the June contest. As it turned out, the *News* became the first in a series of newspapers joining the AMLA (forty papers by April 1928), but the coordinated campaign between schools, the *Detroit News*, and Detroit-based *American Boy* meant the city outpaced all others in attracting new members. In one early estimate, Detroit youth joined the League at an average of 325 per day, bringing the city's total membership to 6,800 by the end of the *News*' first month of promotion. By comparison, the next largest cities in terms of representative membership were Philadelphia with 5,800 and Cleveland with 5,000, followed closely by Chicago, New York, and Washington. By involving newspapers to promote their organization, the *American Boy* increased the exposure for the group far beyond its existing readership and by early April, some 13,500 Detroit youth had signaled their dedication to airmindedness by enrolling in the Airplane Model League of America.<sup>34</sup>

The *Detroit News*' editorial page praised the AMLA as part of the paper's pro-industry vision of the city. Framed as civic airmindedness, the *News* asserted "this whole airplane business...is alive and growing" and the city's youth who involved themselves in aviation through model building could become the "inventors who will bring out the new and better airplanes that are sure to come as the age of aviation advances." The *News*' editors recognized that "membership signifies connection with a movement which is international" and could provide opportunities with which children could take part in "ushering in of the airplane age." Learning of the combined efforts of Detroit's public

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<sup>34</sup> "Detroit Leads Model League," *Detroit News*, 1 March 1928, and "City has Most Model Makers," *Detroit News*, 7 April 1928, 16-43, Aircraft Models Plans, DNL. The *Detroit News* also lent its support to the Fischer Body Craftsmen's Guild sponsoring, according to Ruth Oldenziel, weekly workshops teaching Detroit youth about model design and construction of the Napoleonic coaches. See "Boys and Their Toys," 82.

schools, the city's leading newspaper, and the country's most popular magazine for boys, Admiral Richard E. Byrd, the acclaimed aviator, sent word to the *News* the following week wishing them luck and praising the paper's decision as a "fine thing," which will benefit both "youngsters" and "aviation" alike. But while adults may have been explicitly motivated by the potential for education, Detroit's children were likely just as enticed by desires to compete in the *American Boy*-sponsored national tournament. Promotion of the tournament, which promised a total of \$3,000 in cash prizes, trophies, and two all-expense paid trips to Europe for winners, appealed specifically to children's consumer desires. As with Detroit, boys across the nation joined the Airplane Model League in droves, increasing total membership from 60,000 in March 1928 to over 200,000 at the end of June. As the AMLA completed its third year, annual membership peaked at over 400,000.<sup>35</sup> While the AMLA program proved overwhelmingly successful, promotion of the annual event rested upon far more than technical lessons.

Adult supporters who praised the Airplane Model League touted the educational potential for children to prepare themselves for the future economic and social changes of the air age, but it is also quite possible that the members themselves were drawn to the AMLA by more immediate and tangible desires. While an initial sketch of the contest program was revealed with the *American Boy*'s announcement of the formation of the AMLA in September 1927, it was not described in detail until the following April. An article written by Franklin Mering Reck, the *American Boy*'s assistant managing editor,

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<sup>35</sup> "Huge Model Plane Contest to Be Held," *Detroit News*, 5 February 1928; "Ushering in the Airplane Age," *Detroit News*, 9 February 1928, 16-42 Aircraft Models Plans, DNL; R. E. Byrd, Letter to the Editor, *Detroit News*, 14 February 1928, 16-43, DNL; "Model That Flies Two Minutes," *Detroit News*, 26 February [1928], 16-43, DNL; "Join the Airplane Model League of America," *American Boy*, March 28, 1928, 56; "Montreal—Then Europe," *American Boy*, July 1928, 23; "Get into the Game; Join the Airplane Model League of America," *American Boy*, November 1930, 65; "AMLA Chat," *American Boy*, July 1930, 30.

promised all entrants an elaborate spectacle at the national tournament in June. Reck and other AMLA officials affiliated with the magazine counted upon appeals to air-minded boys' consumer fantasies, reminding readers that the tournament would be open to "[a]nyone who has constructed a model plane" and could get to Detroit. For those fortunate enough to attend, Reck's detailed narrative and deft deployment of the second person pronoun you and its possessive form, placed him in direct conversation with young readers as he described the tournament's carefully planned two-day program.<sup>36</sup>

Starting at the Statler Hotel, which Reck described as "your headquarters," entrants received a "pass book" with their registration containing coupons redeemable for free movies, bus transportation between events, and entrance to banquets and other activities. AMLA officials made special arrangements, readers learned, with the hotel to provide a workroom, stocked with "free" tools, ambroid cement, and building materials and the promise that boys could "stay there as long as you like." Buses provided by the city of Detroit were to shuttle entrants between the Olympia sports arena—home of the indoor competition—and Selfridge Field, the location of the outdoor contest. Selfridge Field, not coincidentally, was also home to the Army Air Corps First Pursuit Group, and readers learned that Air Corps officers had already agreed to meet with them.<sup>37</sup>

Every aspect of the program appealed to the air-minded. After the conclusions of preliminary events on Friday, participants were invited to meet Stout, Hamburg, and other notable figures in aviation (including Eddie Stinson, National Aeronautic Association president Porter Adams, *Aero Digest* publisher Frank Tichenor, and even "Eddie Rickenbacker...America's greatest ace") at a banquet sponsored by the Ford

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<sup>36</sup> Franklin Mering Reck, "Come to the Big National Contest," *American Boy*, April 1928, 25-26, 58.

<sup>37</sup> Ibid.

Motor Company. Subsequent promotion promised an elaborate experience verging on the sublime. The banquet sponsored by Ford Motor Company was held inside an airplane hangar, with tables positioned strategically beneath a full-scale Ford Tri-Motor airplane suspended from the ceiling. With a reminder of corporate sponsorship quite literally hanging overhead, company president and banquet host Edsel Ford arranged for real pilots to be seated at each of the ten banquet tables, where they would dine with entrants and answer questions about aviation and flying. To assure boy readers this event was located at a real airport, editors added,

Outside the hangar, as you eat, mail and commercial planes will be landing and taking off at the immense airport. Pilots in their leather helmets will be strolling by. You'll be squarely in the middle of a center of air activity, fraternizing with the men who are responsible for the development of aviation in this country.<sup>38</sup>

According to published itineraries, the homosocial bonding around airplane technology would continue on Saturday (which Reck promised to “be a red-letter day in your life”) as boys gained tours of the Ford Airplane Factory and witnessed the start of the “National Reliability Tour” and James Gordon Bennet Balloon race, as well as the finals of the national outdoor competition. Buses would whisk entrants away for a quick dinner, before they returned to the Olympia arena for the conclusion of the indoor competition before an audience of at least 12,000 cheering in anticipation of the winner of the William B. Stout trophy. After the tournament, boys once again returned to their rooms to change for the late night awards banquet scheduled at midnight. By Sunday, all but two would decamp, exhausted, but for these boys—the winners of the European trips—their adventure had just begun.<sup>39</sup>

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<sup>38</sup> Ibid.; “Get Set for the Hop-off, Model Pilots,” *American Boy*, June 1928, 1, 3.

<sup>39</sup> Reck, “Come to the Big National Contest,” 25-26, 58.

While program organizers promised the two winners of the indoor and outdoor flying model contests valuable prizes, they did so within an ethos of competitive individualism. After proving themselves as the AMLA boy champions, the two winners received an “outfitting prize” donated by Detroit’s J. L. Hudson Co. department stores valued at nearly \$150. According to reports published in anticipation of the event, the newly outfitted winners would join Merrill Hamburg on a promotional tour of the eastern United States and Canada, before boarding a steamship bound for Europe. On Monday afternoon after the tournament, the AMLA party was scheduled to board a train (the “Red Arrow, the crack Pennsylvania flyer”) bound for Washington, D.C., where they would receive their passports and gain an audience with President Calvin Coolidge. After treating Coolidge to a private aeromodeling demonstration, the party would depart Washington headed north. “You’ll stow your luggage under a comfortable seat in a Canadian Pacific sleeper,” the writer told potential winners, and “[w]ith you will be Merrill Hamburg, secretary of the Airplane Model League of America, and the other winner.” Arriving in Toronto, plans called for a relaxing boat ride across Lake Ontario to Niagara Falls, for a day filled with rides on the *Maid of the Mist*, exploration of the hidden caves behind the falls, and an exciting “cross high above the rapids on the suspension bridge.” Returning to Toronto the following day, the AMLA group would meet that city’s mayor, the Lt. Governor, and the Province’s Prime Minister before traveling onto the Canadian capital to meet with still more government officials and to give yet more model airplane demonstrations. Leaving Ottawa for Montreal, the party would board the Canadian Pacific steamship liner, the *Montcalm*, after a brief tour of the city. On the weeklong voyage, editors added, “you will occupy cabin number 300, a

spacious outside cabin halfway between stem and stern.” In describing the trip, the *American Boy* cast the winners as delegates, questioning readers: “Perhaps you will be one of the two lucky builders who will represent 200,000 members of the Airplane Model League of America in Europe.”<sup>40</sup>

Intensive attention to detail allowed readers to accept the *American Boy*’s invitation to imagine themselves stowing luggage on speeding trains, meeting with national, provincial, and city leaders, and being tourists across North America and Europe. Unlike the exclusively producer-craftsman ethos Ruth Oldenziel detects in the Fisher Body Craftsman’s Guild’s college scholarship program in the early 1930s, the *American Boy* spoke instead exclusively to consumer desires while promoting the AMLA.<sup>41</sup> More than simply appealing to members as hardworking boy craftsmen, the magazine positioned the Airplane Model League of America as a spectacular consumer fantasy and a sublime airminded experience, trumping the appeals to education by opening new world for boy consumers.

Whereas in 1911 advice writer Francis Collins foretold of model airplanes serving as credentials for boys’ entrance into producer-driven spectacles, the *American Boy* envisioned even greater potential for entering consumer ones. Dreams of European-bound steamships and dining within the action of real airports, allowed the magazine to promote an abundant world of things to consume—potentially available to all those building model aircraft. Suggestive of just some of the future payoffs of an abundant air age world, the *American Boy* revealed endlessly stimulating consumer experiences

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<sup>40</sup> Reck, “Come to the Big National Contest,” 58; “Montreal—Then Europe!,” *American Boy*, July 1928, 23, 46

<sup>41</sup> Oldenziel, “Boys and Their Toys”; “An Even Greater Opportunity for Boys Throughout the United States and Canada,” Fisher Body Craftsman’s Guild advertisement, *American Boy*, November 1931, and F.R. Mering, “They Carved Out a College Career!,” *American Boy*, January 1934, MAAB, 132-133.

largely free of parental oversight, prescribed bedtimes, and only the most likeminded of adults as chaperones. Constrained within a tightly orchestrated consumer experience, characterized by tight tournament schedules and overlapping commercial interests, this freedom allowed boys to exercise their airmindedness as consumers in the present and in the future. As Richard Byrd wrote in his foreword to Merrill Hamburg's model airplane manual, *Beginning to Fly* (1928), "Few activities will so certainly guarantee the progress of aviation in the United States....The model aviators of to-day will be the regular patrons of the airways to-morrow. From their ranks will come the designers of the new ships of the sky that will supersede present aircraft." Despite the attention to the model-building boys who might command the sky in the future, in speaking for the aviation industry, Byrd was just as content with boys' loyalty as future passengers and patrons.<sup>42</sup>

### ***Children's Experiences and Tournament Preparations—The Case of Detroit***

While technically open to all, the AMLA's vision for airminded America was limited and exclusive, as participation in the contest required both parental permission and a not inconsequential pledge of financial support. As one boy growing up in Johnstown, Pennsylvania recalled in adulthood, the local paper, like the *Detroit News*, threw itself behind promoting the Airplane Model League to Johnstown's boys. Following anxiously Hamburg's instructions in the *American Boy*, young Earl Stahl benefited from membership in his local school's model airplane club, headed by a local pilot who often "arrived at meetings in a splendid white aviator's flying suit and white helmet with goggles." Decades later he fondly recalled this being "heady stuff!" for a boy, but the

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<sup>42</sup> Francis Collins, *The Second Boy's Book of Model Aeroplanes* (New York: Century Company, 1911), 25; Richard Byrd, foreword to Merrill Hamburg, *Beginning to Fly: The Book of Model Airplanes* (Boston: Houghton Mifflin, 1928), xv.



realities of traveling to Detroit meant that Earl, and others like him, were barred from participating directly in the tournament.<sup>43</sup> For Earl and countless others the tournament experience remained a second-hand one, consumed through the magazine's breathless descriptions of elaborate tournament plans and contest reports.

Tournament planning provided entrants access to restricted male technical worlds, but this experience nevertheless remained exclusive as only a few hundred of the hundreds of thousands of AMLA members eligible to compete in the annual tournament could afford travel to Detroit. Worlds opening for some boys, however, implied worlds opening for all, but for those living in Detroit, the hurdles to attendance proved less formidable, making the possibility of experiencing the Airplane Model League's tournament first hand more attainable. Children of the city benefited from Detroit's position in the aviation industry and the aggressive promotion of model building which kept Detroit's youth overwhelmingly airminded. Detroit's recreation department, for example, which offered its first model-building course in 1928 to just 651 participants, had some 18,000 in 1934, and by its tenth year, some 120,144 enrolled in the model airplane course.<sup>44</sup> In 1928, the *Detroit News*' robust promotion of the AMLA and the upcoming tournament presented a staggering amount of coverage detailing reports of local events and profiles of area model builders. While detailing aspects of where children could purchase materials, and regularly reminding young readers of AMLA rules and program, this coverage provides a partial, if admittedly imperfect, glimpse into the meaning of model building for at least some of Detroit's youth.<sup>45</sup>

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<sup>43</sup> Earl Stahl, "The Autobiography of Earl Stahl," 2, AMAHP.

<sup>44</sup> Clarence E. Brown, "How One City Took to Models," *Air Youth Horizons*, January 1940, 8.

<sup>45</sup> "First Boy Wins Airplane Prize," *Detroit News*, 2 March 1928, 16-43 Aircraft Models Plans, DNL. See also, "Honors Await Plane Makers," *Detroit News*, 20 February 1928; "Model Planes will be Timed,"

Parental involvement remained crucial for those preparing to compete in the AMLA tournament, and as the date of the first contest grew near the *Detroit News* reported that living rooms and parlor in homes across the city had become “airports,” attics and basements, “factories.” Parents acquiesced to the apparent reinvention of domestic spaces, but parents—and particularly fathers—could provide more direct assistance. In helping his eight-year-old son, W. J. Wallace also, if the *Detroit News*’ story is to be believed, improved their relationship by bonding with his son. Upon returning from work each night, Wallace was met with the question, “Say, Dad, when do *we* start on *our* plane tonight?” Another Detroit father saw his aid as a way of accomplishing goals eluding him in his own boyhood. “When I was a kid,” Edward Millard recalled, “I used to try to build airplanes,” but never succeeded in building one that got off the ground. “I have always wanted to build a small plane,” he continued, “that really would fly, and it’s never too late to try.”<sup>46</sup>

While Millard fulfilled unmet childhood desires, other Detroit adults apparently abandoned all pretenses of assisting children by building models *for* them, but even for those working together, such as that reported in the article entitled “Dad and Son are Partners in Model Building Venture,” not all partnerships were equal. Herman F. Conzett apparently goaded his son “to get mixed up with aviation,” and credited his orders to “get in that model airplane league, build some planes, and win one of their contests” as the reason for his son Vernon’s involvement. While it is not known how much encouraging

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*Detroit News*, 8 March 1928; “Model Planes Earn Honors,” *Detroit News*, [10] March 1928; “A Rare Honor,” *Detroit News*, 26 March 1928, 16-41, DNL; Merrill Hamburg, “It Can Be Constructed to Perform Maneuvers,” *Detroit News*, 18 March 1928; “Patience Best Tool on Planes,” *Detroit News*, 28 February 1928; “Model Maker Gives Advice,” *Detroit News*, 21 February 1928, 16-43, DNL.

<sup>46</sup> “Charles I. Scofield in his Workshop,” *Detroit News*, 5 April 1928; “Plane Building Fun for Adults,” *Detroit News*, 16 April 1928, 16-43, DNL; “Plane Contest on Tomorrow,” *Detroit News*, 27 June 1928, 16-42, DNL; “Parents Join Plane Contest,” *Detroit News*, 23 February 1928, 16-41, DNL, (emphasis added).

Vernon required to begin building models, Mr. Conzett proved an unwavering taskmaster who encouraged, ridiculed, and flattered his son to ensure Vernon's "steady model airplane progress." While acknowledging children's interest was often peaked by their peers, another reporter reasoned, "adults are the greatest recruiting officers the model airplane movement has," because the "gift of a model airplane kit" enlisted another member for the "movement." By tying gifts into a grander scheme of airmindedness, the *Detroit News* favorably promoted airminded consumption for Detroit's sons.<sup>47</sup>

Families provided AMLA boys in Detroit important material and social support, but area schools proved essential. Local high schools formed small model airplane clubs; a practice which had—according to one reporter—"become the vogue" in schools across the city. The *American Boy*, for its part, encouraged these efforts by sponsoring a weeklong "course in model airplane theory and construction" for shop and manual training instructors. Led by Merrill Hamburg and aided by local boy model builder Aram Abgarian, the course familiarized local teachers with the pedagogy of model airplane construction and operation and aimed to enlist teachers' support for the Airplane Model League. Organizers paired practical lessons and demonstrations with opportunities to meet William B. Stout and Eddie Rickenbacker, and teachers attending the course received tours of local aircraft factories, airports, and the wind tunnel facilities at the University of Michigan.<sup>48</sup>

Schools became key areas for promoting the AMLA (and subsequently the *American Boy* magazine), but schools also proved sites of exclusion as well. As Neil

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<sup>47</sup> "Dad and Son are Partners in Model Building Venture," *Detroit News*, [27] May 1928, 16-42, DNL; "Model League Outgrows U.S.," *Detroit News*, 19? March 1928, 16-44 Aircraft Models Plans, DNL.

<sup>48</sup> Ibid. "Model Plane Class Planned," *Detroit News*, 19 April 1928; "Model Airplane Course is Opened for Teachers," *Detroit News*, 27 August 1928, 16-43, DNL.

Loving discovered racial barriers were as difficult to surmount as technological ones. Becoming interested in aviation just before Lindbergh's historic flight, Neil initially found at his middle school the encouragement lacking at home. Loving's parents viewed his airmindedness suspiciously, believing their son's strongly professed desires to become a pilot and engineer physically hazardous and unrealistic, especially as African Americans were barred from most flying schools and other training programs. While both parents saw aviation a fruitless aspiration for a young black boy, Loving recalled that his father was insistent he be more practical and "stop playing with model airplanes and learn something at which I could earn a living." Neil's neighbors too looked upon his desires for an aviation career as an unwelcome attempt to rise above his station; one which apparently was instead meant to be filled with toil and with both feet planted firmly on the ground. Still, as Loving remembered it, his models and aviation magazines nurtured his interest and his "enthusiasm increased every day."<sup>49</sup>

Neil's enrollment at the Jefferson Intermediate School provided necessary encouragement, thanks in part to the efforts of Mr. Merkobrad, an apparently enlightened shop teacher and club advisor who helped Neil become not solely the only black member of the Jefferson Aeronautics Club, but also its president. Loving's interest and skill allowed him to become an informal instructor to his peers, but his plans to continue his study of aeronautics at Cass Technical High School ran up against the realities of his

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<sup>49</sup> Neil Loving, *Loving's Love: A Black American's Experience in Aviation* (Washington, Smithsonian Institution Press, 1994), 7. The suspicion Loving recalled of his parents was in no way unique among African Americans, as Jill D. Snider illustrates, the airplane was seen as being either a means of economic uplift or a diabolical technology for further racial oppression. See her "'Great Shadow in the Sky': The Airplane in the Tulsa Race Riot of 1921 and the Development of African American Visions of Aviation, 1921-1926," in *The Airplane and American Culture*, ed. Dominic Pisano (Ann Arbor: University of Michigan Press, 2003), 105-146. A more positive view is found in William J. Powell's *Black Wings*, originally published in 1934, and reprinted as, *Black Aviator: The Story of William J. Powell* (Washington: Smithsonian Institution Press, 1994).

race. Despite his apparent skill, the Cass Aero Club rejected his application immediately, for, as the club's faculty advisor curtly explained, "blacks were not eligible for membership."<sup>50</sup>

From Neil Loving's experience, the future air age seemed tragically similar to his segregated present, but what held true African American experiences was also the case for girls. Despite the AMLA's rules and promotion to the contrary, restrictive club policies at schools routinely kept girls from building models alongside boys. Of course, there were some exceptions, but even these reveal the conservatism of schools and clubs. Sixteen-year-old Bernice Mercure, a student at the business-orientated Commerce High School, became proof to the *Detroit News* that boys "just can't exclude girls from model building!" While acknowledging that most "fellows...think girls haven't any place in aviation," Bernice proved, in the reporters' mind, girls "think differently." Despite the fact that girls outnumbered boys by a ratio of four to one at the school, they were explicitly barred from joining the Commerce Model Airplane Club. Predictably, Bernice found her petition for membership "unanimous[ly]" and "promptly denied," but she used her position as editor of the school's newspaper the *Audit* to attend weekly meetings under the guise of writing stories on the club, "but really to learn more about model airplane building." Admiring her pluck, the *News*' reporter exposed Bernice's 'reporting' as a clever circumvention restrictive club policies; few girls at Commerce High, however, were in a position to do the same, making the Commerce Model Airplane Club's policing of gender boundaries remained intact. At the time the story was published, Bernice had

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<sup>50</sup> Loving, *Loving's Love*, 24. On Cass Technical High School's aeronautics program, see Roland Harvey Spaulding, *Some Present Practices in Secondary Aeronautical Education; The Results of a Survey of Public Elementary and Secondary Schools in the United States, Prepared by Roland H. Spaulding Under the Auspices of the Daniel Guggenheim Fund Committee on Elementary and Secondary Aeronautical Education* (New York: Daniel Guggenheim Fund for the Promotion of Aeronautics, 1930), 33-37.

already joined the Airplane Model League and ordered her first model airplane kit, but if she ran into any problems building a successful flier—as was so often the case with novice builders—she likely might have faced difficulties gaining assistance; particularly after the *Detroit News* unmasked her subterfuge. While it is impossible to know if Bernice ever got her model to fly, if—as the *News*’ reporter posited—model airplanes were the “doorstep to aeronautics,” opposition at even the level of a school-sponsored club meant few girls would ever get through the door.<sup>51</sup>

Bernice’s experiences in overcoming club rules reveal some of the obstacles for girls interested in building models, but these difficulties were not limited to school settings. As the *Detroit News* reported of the Steffens’ household, sibling rivalries reflected gender norms when Cornelia, ten, and Alger, seven, entered the same model airplane contest. This proved the first salvo in a “model airplane civil war,” which disrupted the previously existing peace between the two. As one reporter noted, the “ambition of both to win” drove a wedge between the brother and sister. With Cornelia purportedly “hop[ing] to win,” by promising “to do my best,” the reporter noted that young Alger responded with apparently firm “determination,” “Not a chance....no girl’s going to beat me.”<sup>52</sup>

While surely inflating the conflict in order to write a story (any story) on model airplanes, Alger’s reply outlined additional stakes to losing to Cornelia. The prospect of losing to his sister provided a challenge to his young grasp on his status as a boy, which

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<sup>51</sup> “Betty Jane Cutting,” *Detroit News*, 4 April 1928, 16-43, DNL; “Bernice Mercure,” *Detroit News*, [18] March 1928, 16-41, DNL. See also, “Model Plane Monopoly of Boys Is All Gone Now,” *Detroit News*, 5 May 1928, 16-41, DNL. Corn, *Winged Gospel*, 118-119. See also Nina E. Lerman, “‘Preparing for the Duties and Practical Business of Life’: Technological Knowledge and Social Structure in Mid-19<sup>th</sup>0Century Philadelphia,” *Technology and Culture* 38 (January 1997): 31-59, reprinted as “Industrial Genders: Constructing Boundaries” in *Gender and Technology: A Reader*, ed. Nina E. Lerman, Ruth Oldenziel, and Arwen P. Mohun (Baltimore: Johns Hopkins University Press, 2003), 123-152.

<sup>52</sup> “Model Airplane Civil War,” *Detroit News*, 11 May 1928, 16-42, DNL.

would have opened him to ridicule; something that occurred when seventeen-year-old Ora Hall beat her twin brother in a Providence, Rhode Island-sponsored contest to determine the winner of a trip to the AMLA national tournament in 1929. Ora Hall's victory—and her brother's humiliation (at least as implied in the *American Boy*)—aside, girl aeromodelers ran up against significant resistance from boy-entrants at model contests. When not one of the twelve girls registered at one *Detroit News*-sponsored contest arrived, one reporter alleged that a boy contestant told one official “not to be wastin’ time” waiting for them to appear. For whatever reason, be it change of heart, intimidation, or lack of transport to the event, none of the twelve showed up; confirming a pattern of exclusion common in the overwhelmingly male world of aviation—model or otherwise.<sup>53</sup>

As the examples of Neil Loving, Bernice Mercure, and others suggest school sanctioned sites of airminded consumer culture merely replicated institutionalized racial and gender prejudices, but for those fortunate enough to be included, there were possibilities as well. Cass Tech's weekly exhibitions and frequent contests allowed boy participants to enjoy the camaraderie of other airminded boys and exchange technical ideas, but for Aram Abgarian, who eventually became Merrill Hamburg's assistant in the model-building course for Detroit teachers, Cass Tech's contests provided chances to expand his participation in consumer culture generally.

A diminutive immigrant from Armenia, Aram gained entry to the same club that barred Neil Loving, and enrolled in the mechanics program with the hopes of becoming

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<sup>53</sup> “New Champions—Old Records, *American Boy*, August 1929, 19, 32, 37; “Detroit Boys Come in First in Each Class,” *Detroit News*, 17 June 1928, 16-42, DNL. Ora Hall was the only girl among the four hundred boys attending the banquet in 1929. On girls' involvement in model building, see Corn, *Winged Gospel*, chapter 6.

an aeronautical engineer. Building models furthered his long-term goals, but also satisfied more immediate desires. Soon after joining the Cass Aero Club, Aram distinguished himself by breaking the world record for a timed indoor flight, but the prize money that often accompanied contests (up to ten dollars for first prize) provided another motivation. William Stout, who frequented the Friday afternoon events and donated prize money, remembered favorably meeting the fifteen-year-old Aram. In his memoir published in 1951, Stout recalled,

I passed a young chap sitting on the stage floor, with his assistant helping him to wind up the rubber bands of his model for the next contest, I gathered that he, one of the smallest of the group, was in line for second place. In the last heat his plane had tied its nearest competitor. Next day, he said, was his mother's birthday and he was doing his best to win the contest so that he could buy her some flowers.

If he made good on his promise, the five dollars Aram received for second place would have been enough to purchase his mother's present, while still leaving enough left over to continue building models. Remembering the boy he met, Stout concluded "[t]his promising young man" must have received "good backing at home, for he appeared in all contests after that."<sup>54</sup>

Others apparently shared Stout's favorable impression of Aram. Merrill Hamburg employed Aram as his young assistant in the model-building course for Detroit teachers and later included his photograph in the frontispiece to his 1928 model airplane manual, *Beginning to Fly* (fig. 40). The picture, which included Aram dressed in a smartly fitted

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<sup>54</sup> Abgarian's record flight of 207 seconds was broken within weeks, see "Model Plane Sets Record," *Detroit News*, [25] February 1928; "Model Record Nearly Broken," *Detroit News*, 3 March 1928; "211-Second Record Set in Unofficial Flight," *Detroit News*, 10 March 1928; "Makes a Record then Breaks it," *Detroit News*, 28 March 1928, 16-44, Aircraft Models Plans, DNL. On Cass Tech's weekly exhibits and contests, see "Model Makers Aided by Clubs," *Detroit News*, 27 February 1928; "Detroit Leads Model League," *Detroit News*, 1 March 1928; "Model Makers Aided by Clubs," *Detroit News*, 27 February 1928, 16-43, DNL; "Model Crowns a Bit Wobbly," *Detroit News*, 31 March 1928; "Model Plane Tests to be Held at Cass," *Detroit News*, 28 February 1928, 16-41, DNL. Stout, *So I Went Away!*, 192.





**Figure 40:** “Aram Abragian Showing the Proper Method of Launching an Indoor Endurance Model,” frontispiece for Hamburg, *Beginning to Fly* (1928).

suit confidently demonstrating the proper holding of a hand-released model, became the very model of the middle-class airminded boy consumer. Aram’s expertise and wholesome image also led to his selection to be one of the four Detroit boys chosen to accompany Hamburg on a nine day, seven-city AMLA promotional tour in April 1928, where the group testified, according to reports, before “mass meetings” of thousands of enthusiastic youth gathered to listen to “their experiences in model airplane building.” In addition to the “numerous luncheons and banquets” given in their honor, the Detroit delegation ended their tour with private aeromodeling demonstrations before President Calvin Coolidge, fellow engineer and Secretary of Commerce Hebert Hoover, and Curtis

D. Wilbur and Dwight F. Davis, the Secretaries of the Navy and War. Incredibly, the talented fifteen-year-old returned to the White House in July, this time as the AMLA's 1928 indoor flying model champion and William B. Stout trophy winner, after a distinguishing performance that bested his record set earlier in the year.<sup>55</sup>

According to a press release announcing his victory, Aram purportedly “stayed up all night before the finals” completing construction of his latest model incorporating a new cambered wing design, but his victory also validated the *American Boy*'s producer-oriented vision of the air-minded consumer. Along side Aram, the other European trip winner was sixteen year-old modeling enthusiast Thomas C. Hill from Winston-Salem, North Carolina who received money for the train ticket, hotel, and expenses (which the magazine estimated at over twenty dollars) from his local Lions Club, which purportedly “exhausted its treasury” to send young Tom to Detroit. Together, Aram and Tom proved deserving recipients because neither wealth nor privilege explained their success, but the potent combination of technical skill, assertiveness, and pluck. Confirming a message that meritorious performance brought rich rewards long advocated by the magazine, the two took advantage of the grand tour provided by the *American Boy* to travel to Europe with Merrill Hamburg.<sup>56</sup>

In heralding their return, the *American Boy* proclaimed “No trans-Atlantic flier, no Lindbergh, or Byrd or Chamberlain ever got more fun from his trip to Europe” than “did America's airplane model champions.” Visiting all of Europe's great cities—

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<sup>55</sup> “Tractors vie with Pushers,” *Detroit News*, 30 March 1928; “Models to Fly for President,” *Detroit News*, 29 March 1928; “Model Airplane Champs will Fly to Washington,” *Detroit News*, 1 April 1928, 16-44, DNL.

<sup>56</sup> “Model Plane Winners Sail,” *Detroit News*, 6 July 1928, 16-42, DNL; AMLA, “Airplane Model Winners Leave for Europe,” press release, 16-41, DNL; “Get Set for the Hop-off, Model Pilots!,” 1. Aram Abgarian, Thomas Hill, and Merrill Hamburg were joined by Detroit model builders Jack Loughner and Ford Grant, who obtained permission from their parents (as well as the funds to cover their passage and expenses) to accompany the *American Boy*-sponsored AMLA party.

London, Paris, Geneva, Florence, and Rome—as the group parted ways, the *American Boy* reported that Thomas Hill, with eyes welling with the “kind of tears that no fellow is ashamed of,” exclaimed, “It was the best time I—or any fellow—ever had.” Asked about his plans for AMLA competition in 1929, Aram told one *American Boy* reporter that though he would compete again, there was no guarantee he would enjoy a second victory: “lightning can’t strike twice in one place!”<sup>57</sup>

The singular experience of the contest winners was echoed by the fact that only a few hundred of the 200,000 AMLA members entitled to attend the tournament, actually did. Nevertheless, tournament coverage allowed readers to participate vicariously and provided additional motivations to fuel their desires of attending the following year. In the report entitled “Model Aviation has its Biggest Day!,” *American Boy* readers learned that once the “smoke of model air battles” cleared, the “model aces of a continent have departed from Detroit, leaving the fruits of their victories and the memories of stiff scrapes, joyous banquets and intimate contact with the nation’s leading airmen.” Those entrants who arrived early, the report added, “trooped up to the A. M. L. A. supply room...to carry away propeller blocks, spars, and strips of bamboo” to build models in their rooms.<sup>58</sup>

The spectacle of a never-ending supply of free materials and limitless consumption likely stoked readers’ imaginations, as did reports that a party of seven entrants from Philadelphia arrived at the Statler Hotel wearing white aviator’s helmets. Even rain delays at Selfridge Field, proved fortunate, for boys wandered freely about the hangars of the First Pursuit Squadron chatting with “Officers and mechanics.” Some

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<sup>57</sup> “They’re Back From Europe!,” *American Boy*, October 1928, 30.

<sup>58</sup> “Model Aviation had its Biggest Day!,” *American Boy*, September 1928, 17, 47.

were even invited to help “tear down a ship” scheduled for repair and carried “away squares of fabric” covering as souvenirs. At the banquets, “three-hundred future airplane experts” dined with “present-day leaders” surrounded by a “fleet of the most up-to-date planes in the world!” Confirming the racial makeup of the group, banqueters watched an air-minded minstrelsy, featuring black-faced actors displaying the “hilarious attempt” of a pair of “dusky aviators” trying to journey from Cairo, Illinois, to Cairo, Egypt in their craft named in honor of the patron saint of dancers, entertainers, and epileptics, the “*Spirit of St. Vitus*.” At the banquet’s conclusion—according to reports—boys rushed in two groups to receive autographs and inspect airplanes, with some receiving scrap samples of the metal covering “duralim” from an understanding representative from Ford’s aviation division. Recounting their accomplishments, the *American Boy* praised their efforts and those of the fifty-five newspapers and other corporate sponsors that made the event possible.<sup>59</sup>

The self-congratulatory tone of the first event carried into the planning, as the *American Boy* promised, of “a new and greater program” the following year, which would provide new and renewing members the “most fascinating twelve months of your career.” More European trips were offered as prizes, as was two hundred dollars in cash for the winners of each division, and to existing membership benefits organizers added a new model airplane manual for five cents, club pins, and a “two-reel motion picture on model plane construction” available to schools and clubs for a “low rental.” Constructions kits—just like the one used by Thomas Hill to win his trip to Europe, editors reminded—were still available and made “hard-to-get” materials like balsa wood

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<sup>59</sup>Ibid.

more easily available to members.<sup>60</sup> Trips to meet the President and his cabinet in Washington, D.C. remained, but new for 1929 was the replacement of ride in a passenger train with a flight aboard a shiny, new Ford Trimotor. Donald C. Burnham, who at fourteen earned his spot as one of the 1929 AMLA tournament champions, recalled, decades later, his flight to Washington as a red-letter day in the memories of his boyhood. During the trip, he and the others members of the AMLA delegation helped the pilot find their bearings, took turns sitting in the co-pilot seat, and even steered the airplane in mid-flight: an experience so rare that even the most air-minded of boys could only dream would come true.<sup>61</sup>

It was just these sorts of experiences that served as Editor-in-chief Ellis's 1928 reminder that as "We are living in an air-minded world." Moreover, as the staff at the *American Boy* fervently believed that "air-mindedness is the duty and the privilege of every American," the magazine's editor promised that the magazine would work "to help you in any way possible to achieve it." In this way, Ellis continued: "The boy who reads THE AMERICAN BOY regularly each month is going a long way toward an up-to-the

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<sup>60</sup> "Model Aces, Get Ready for a Big Year!," *American Boy*, October 1928, 62; advertisement, *American Boy*, September 1928, MAAB, 36; George D. Wanner & Co. [Dayton, OH], "Model Airplanes Kits and Supplies," product catalog, Gustave Anderson Collection, NMAM. The half-hour film was available for rental for \$7.50 a day, plus shipping. Alternatively, organizations could purchase the film outright for \$160. For pricing and description, see *American Boy*, "Model Planes in Movies," brochure, Anderson Collection.

<sup>61</sup> Donald C. Burnham, "The Life of Donald Clemens Burnham," typescript, 7 October 2002, Biographical Material, AMAHP. Burnham won the junior division (and two hundred-dollars) again in 1930, but his flight was not long enough to qualify him to become the tournament champion. Interestingly, Burnham later won a college scholarship from the Fischer Body Craftsman's Guild, which allowed him to attend Purdue University, where he graduated in 1936 with a degree in mechanical engineering. Burnham joined Westinghouse Electric in 1954 and, in 1963, became the company's president. See, "Donald C. Burnham, President, Westinghouse Electric Corporation," undated biography, Burnham Biographical files, AMAHP and "Donald C. Burnham; a Biography," 18 April 2005, press release, Westinghouse Electric Company News Archive, [http://www.prnewswire.com/cgi-bin/micro\\_stories.pl?ACCT=127481&TICK=WE&STORY=/www/story/04-18-2005/0003432906&EDATE=Apr+18,+2005](http://www.prnewswire.com/cgi-bin/micro_stories.pl?ACCT=127481&TICK=WE&STORY=/www/story/04-18-2005/0003432906&EDATE=Apr+18,+2005), accessed 10 January 2008.

minute, one hundred per cent understanding of the fast-moving progress of aviation.”<sup>62</sup>

Raised to the status of civic responsibility, air-minded consumption echoed American consumer values generally. Presenting a world of entitlement with aviation’s future progress, Ellis’ announcement served as a call to action for boys everywhere to continue building model aircraft, dreaming of future greatness, and reading the *American Boy*.

### ***The AMLA’s Declining Fortunes and the Resilient Air-minded Boy Consumer***

Part of the allure of the AMLA’s program rested on appeals of creating the emotional, awe-inspiring experience in the presence of modern technology that David Nye terms the “technological sublime.” Clearly, the AMLA’s airplane hangar banquet attempted to do just that, but Nye reminds us that the technological sublime’s initial power is also fleeting as the very nature of these experiences “implied its own rapid obsolescence.” To maintain these feelings, however, audiences required ever-increasing displays of technological power that “exceed its precursors.”<sup>63</sup> In order to continue to generate human-made sublimity at their tournaments the Airplane Model League of America required greater financial investments to better the previous years’ performance, but as the country slipped deeper into economic depression, the costs associated with these displays proved ever difficult to justify.

By 1930 the AMLA had a growing list of sponsors, including the Ford Motor Company, the city of Detroit, the Detroit Board of Commerce, *Aero Digest*, the Stinson Aircraft Corp., and others, but when the Detroit Board of Commerce withdrew its support in 1931, the AMLA’s festival of air-minded abundance was placed in very real jeopardy.

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<sup>62</sup> Ellis, foreword, “The A. M. L. A. Manual for Model Plan Builders,” (1928), reprinted in MAAB, 116-119.

<sup>63</sup> David E. Nye, *American Technological Sublime* (Cambridge, MA: MIT Press, 1994), 283-284.

For 1931, the AMLA's boys had to content themselves with a more modest program in Dayton, Ohio, thanks to the last minute sponsorship by the company manufacturing AMLA model airplane kits. Reduced budgets forced limits, so elaborate trips to Europe were replaced with still impressive trips to Washington, D.C. aboard Ford Tri-motors. Local tours of the testing and wind tunnel facilities located at Wright Field replaced previous years' factory tours, but elaborately staged banquets inside airplane hangars at busy commercial airports also fell victim to a smaller budget. In 1932, the fourth annual AMLA contest was smaller still, sponsored by Newark's Bamberger department store on a shoestring budget of a few hundred dollars. The department-store sponsored event proved to be the final contests before the AMLA disappeared altogether, but it also served as a final unmasking of the producer-orientated spectacle of earlier years: without the hosting of airplane hangar banquets or factory tours, the air-minded boy consumer was cultivated more overtly in terms of his power to consumer.<sup>64</sup>

The demise of the AMLA did not mean the disappearance of the air-minded boy consumer, for others deployed similar techniques to encourage model airplane building and, predictably, the purchase of whatever else sponsors were selling. With a firmly whetted appetite for model airplanes strengthening each year in the 1930s, department stores around the country established their own commercial clubs with the hopes of steering traffic into stores. The trade publication *Toys and Novelties* reported in the article "Today's Boy is Air-Minded—Sell Him Airplanes" that retailers increasingly used clubs to spur sales in newly created model airplane sections housed inside toy

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<sup>64</sup> "An Announcement to Airplane Model Fans," *American Boy*, April 1931, MAAB, 97; "Dayton Is Your Goal," *American Boy*, June 1931, MAAB, 99; Willis C. Brown and Dick Black, "The History of the Academy of Model Aeronautics; Including Part One and Part Two: From the Beginning to the Year 1966," (1966), 17, Lee Renaud Memorial Library, NMAM; "New Champions—New Records!," *American Boy*, November 1932, MAAB, 107.

departments, but these same stores discovered model airplane proved “a big drawing card for the entire store.” Perhaps recognizing the successes of marketing to a growing teenage girl market, stocking model airplanes, editors reasoned, could attract “Older Boys” and ensure their repeat business. Department store clubs, some of which were complete with “a membership card,” hosted model airplane competitions with cash prizes retailers hoped would be spent at their stores. As with the AMLA, *Toys and Novelties* editors added, store managers might also enlist the aid of local school superintendents or even area Boy Scouts Councils to sponsor model airplane courses in conjunction with club programs. Retailers were also reminded that they might also get local newspapers to lend valuable support.<sup>65</sup>

Department stores around the country aggressively promoted model building through store-sponsored clubs to attract new customers and build good will and loyalty. In Brooklyn, Abraham & Strauss established the “A&S Model Airport” inside the toy department, sponsored model airplane contests, offered a free five-course class and use of an aeronautics library for club members. The store even hired a local high school student skilled model building, who—from management’s prospective—proved the “ideal salesman.” Abraham & Strauss secured Clarence Chamberlain to award prizes at the first model airplane contest, and even enlisted Babe Ruth to “autograph the winning planes.”<sup>66</sup> In Manhattan, Stern Brothers formed the “Stern’s Sky Cadets” in 1931, complete with lectures by aviation experts and use of the in-store model airplane workshop; a move which attracted some 350 boys by year’s end.<sup>67</sup> At Gimbel Brothers in Philadelphia, the

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<sup>65</sup> “Today’s Boy Is Air-Minded—Sell Him AIRPLANES,” *Toys and Novelties*, June 1929, 66-68.

<sup>66</sup> “Airplanes are Big Leader at Brooklyn Store,” *Toys and Novelties*, March 1929, 143-144.

<sup>67</sup> Estelle Hamburger to August Post, 9 February 1931, 7 April 1931, 3 December 1931, Correspondence 1931, August Post Papers, 1913-1947, Manuscripts and Archives Division, New York Public Library.



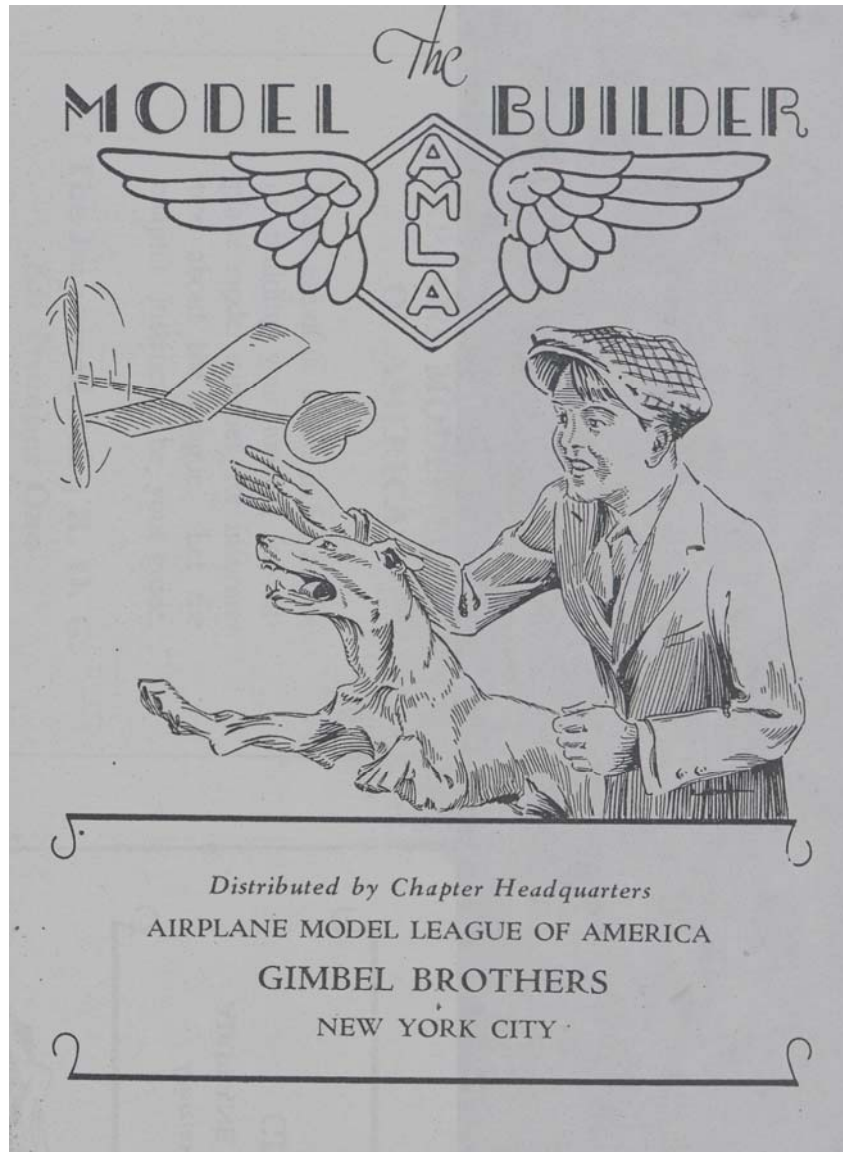
toy department manager turned an unused thirteenth floor in the store's building to area model builders to use "as their own aviation field." As a result, each Saturday became a "holiday" as boys cued up "waiting for the door to their floor to be opened." According to reports, an astonishing "2,000 or 3,000 airplane enthusiasts" made their way to the store each week, resulting in upwards of an additional 450 sales at the model airplane department on the days the event was hosted.<sup>68</sup>

The importance of the AMLA's business model proved essential to these efforts, and not just for reminding retail store managers of the potential of catering to the air-minded boys' interests. Gustave Anderson, who headed the toy department at Gimbel Brothers department store in New York, actively threw the store's support behind the AMLA. As a result of these efforts, Anderson gained access to the "official" AMLA model airplane kits and supplies produced by Dayton's George D. Wanner & Co.—which promoted itself as the "A.M.L.A. Promotion and Supply Division." Gimbel's involvement also allowed them to become a distribution center for *The A.M.L.A. Model Builder*, a free promotional publication to be given to young customers (fig. 41). The first issue, which featured a boy releasing a small stick model while his dog gives chase, naturalized model building as a part of boys' healthy interests, but also listed Gimbel Brothers as an official "Chapter Headquarters." As part of the "Gimbel Junior Aviation League," the group even established a model building school, complete with its own certificate of participation (Fig. 42).<sup>69</sup>

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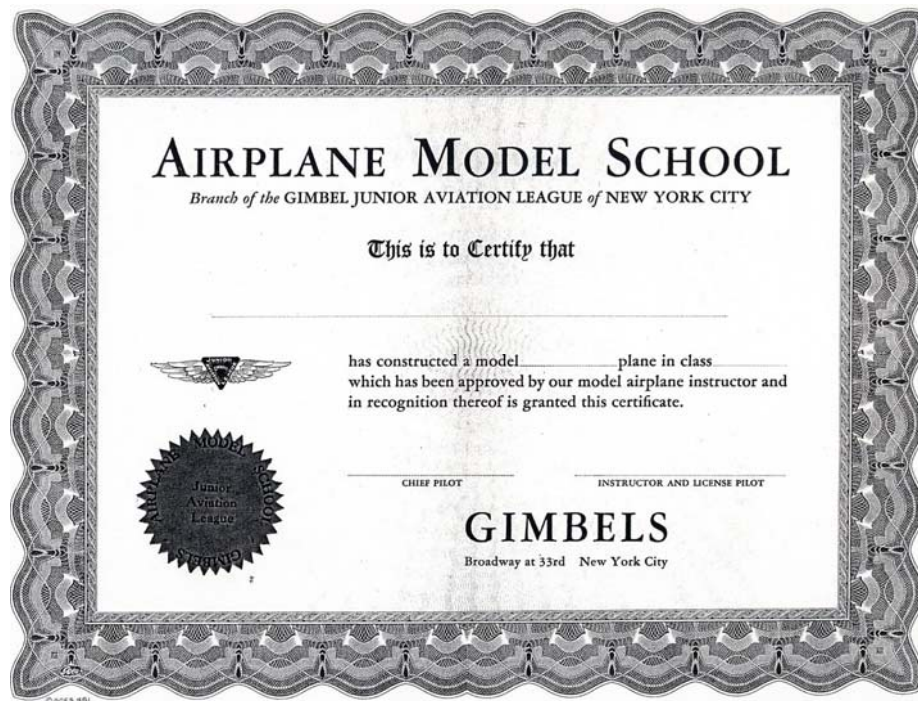
<sup>68</sup> "Levay's CONSTANT HAMMERING Keeps Toys Moving for Gimbel's," *Toys and Novelties*, November 1929, 69-70.

<sup>69</sup> "The AMLA Model Builder," (ca. 1930), printed for Gimbel Brothers department store; "Airplane Model School Certificate," (n.d.) for the Gimbel Junior Aviation League of New York City, Gustave Anderson Collection, NMAM.



**Figure 41:** Front cover of *The A.M.L.A. Model Builder* (ca. 1930), a promotional magazine printed for distribution at Gimbel Brothers department store in New York. Image from Gustave Anderson Collection, National Model Aviation Museum.

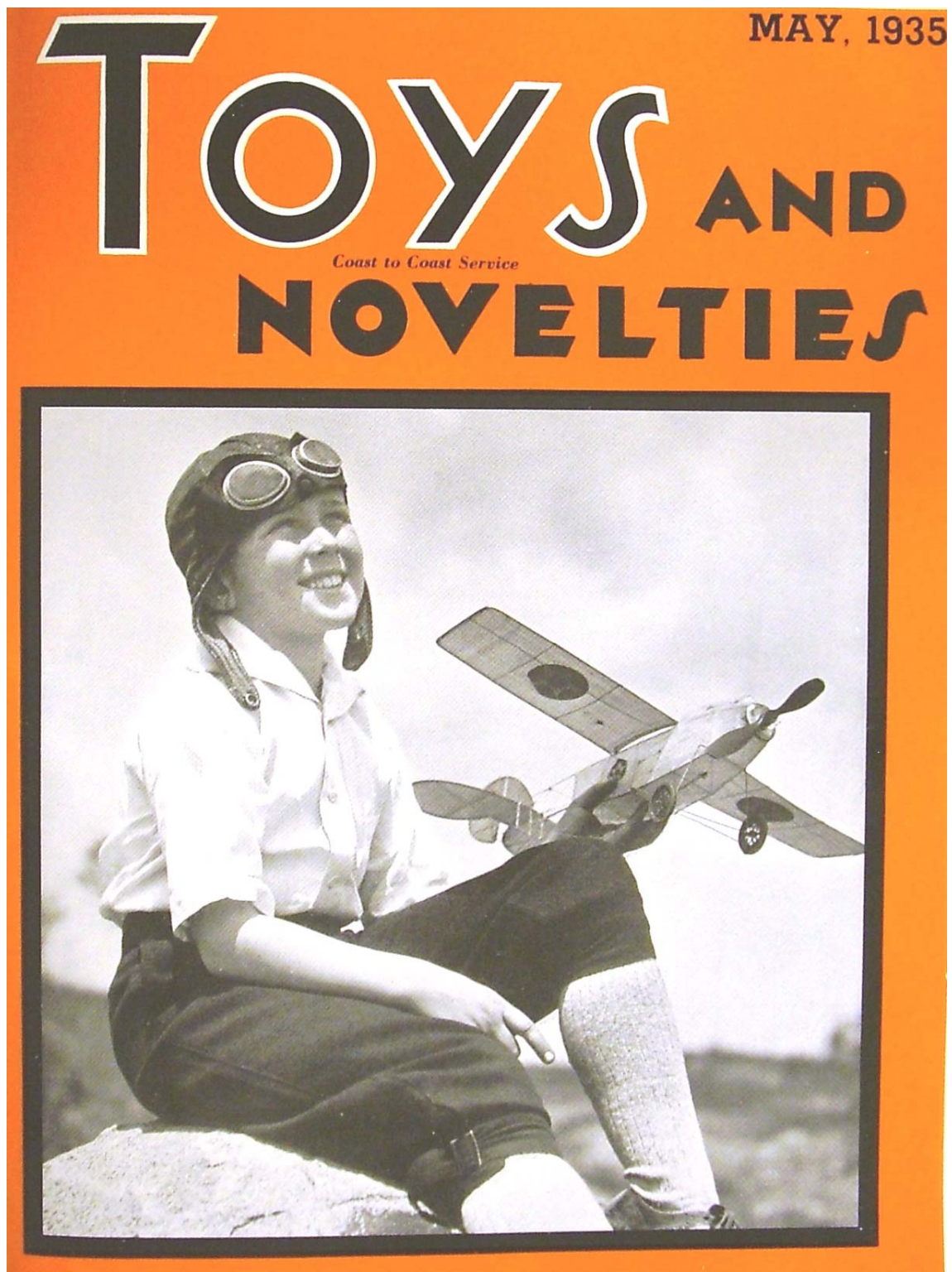
Countless other department stores across the country deployed clubs to their advantage. In Boston, a partnership between the Jordan Marsh and the *Boston Traveler* boasted 4,317 members in 1936. Elsewhere, Stix, Bauer & Fuller in St. Louis (1,200 members), Kresge's (1,500 members), Bamberger's in Newark, and less ambitious efforts, such as Cincinnati's Bolles Brendamour Co.—which hosted model airplane



**Figure 42:** Certificate of completion for the Airplane Model School sponsored by the Gimbel Junior Aviation League of New York City. Image from Gustave Anderson Collection, National Model Aviation Museum.

courses at a local flying field—proved the club concept a viable commercial strategy. To increase traffic, retailing-expert Harold Kahm suggested store managers might temporarily employ out-of-work pilots, for the chance of “*meeting and talking to a real pilot*” was a strong draw for boys. Such a pilot would likely be grateful for such a “pleasant job,” because the “average man” delights in being “a hero to boys.”<sup>70</sup> In 1935, confident of his continued commercial potential, *Toys and Novelties* honored the air-minded boy consumer by gracing his image on their cover (fig. 43). The magazine’s vision of the air-minded boy, seated atop a rock holding a model airplane, carried none of

<sup>70</sup> Philip Zecchitella, ed. *Model Aircraft Yearbook* (Newark, New Jersey: Twentieth Century Publications, 1937), 14-22, 27-30, 59; Corn, *Winged Gospel*, 115; “History of the Jordan-Traveler Junior Aviation League,” AMAHP; “The Airplane Is the Thing,” *Toys and Novelties*, March 1929, 141; For an example from San Antonio, Texas, see “Wolff & Marx of San Antonio, Hold a Junior Auto and Airplane Show,” *Toys and Novelties*, February 1931, 186-187; Harold S. Kahm, “AVIATION Talks Get the Boy Trade,” *Toys and Novelties*, March 1932, 65.(emphasis in original).



**Figure 43:** The celebrate air-minded boy consumer, gracing the front cover of industry publication, *Toys and Novelties*, May 1935.



the attempts to make his consumption seem more masculine. Instead, he served to remind toy retailers that there were millions just like him.

Despite the popularity of department store-sponsored model airplane clubs as a marketing scheme, these efforts proved decidedly more modest than the AMLA. Subsequent efforts by the Hearst newspaper chain's "Junior Birdmen of America," Scripps Howard's "Junior Aviators," and the enormous successful "Jimmie Allen Flying Club," continued to prove the validity of courting the young air-minded consumer. The Jimmie Allen Club, for one, emerged as the immediately successful tie-in to the hugely popular radio program. The radio show detailed the adventures of Jimmie Allen, an apprentice pilot at the fictional "National Airways," his mentor and friend Speed Robertson, and mechanic Flash Lewis, as the trio solved mysteries, discovered hidden treasure, and competed in air races around the United States and across the globe. Millions tuned into the fifteen-minute broadcasts each evening on regional networks sponsored by a number of oil companies—including Skelly Oil in the Midwest, Richfield Oil in California and New York, Hi-Speed Gasoline and Colonial Bread in the East, and the British-American Oil Company in Canada.<sup>71</sup>

The popularity of the Jimmie Allen Flying Club programs ensured steady traffic to filling stations with offers of "Flying Cadet" Flight Wing lapel pins, membership cards, construction kits for model airplanes, and other official Jimmie Allen Club premiums. Children who joined the club received flight charts to track Jimmie's radio

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<sup>71</sup> The success of Jimmie Allen led to the creation of other aviator adventure serials—such as "Captain Midnight" created in 1938 by the same creators and sponsors of Jimmie Allen, and "Tailspin Tommy" which emerged first as a popular comic strip and gained new life as a radio program and movie series. Jim Harmon, *Radio Mystery and Adventure and Its Appearances in Film, Television and Other Media* (Jefferson, North Carolina: McFarland & Company, 1992), 1-17; John Dunning, *On the Air: The Encyclopedia of Old-Time Radio* (New York: Oxford University Press, 1998), 17-18.

adventures, welcoming-letters attributed to the club's namesake, and, in California at least, subscription to the four page monthly *Jimmie Allen Club News*, packed with news items, model building tips, contest announcements and, of course, regular advertisements for club sponsors. In the first issue of the *Jimmie Allen Club News*, Jimmie, who served as the club's president and chief spokesperson, instructed readers: "Drive to your Richfield service station today with your parents or a friend. Tell the man that you want to belong to my club." In another issue a comic advertisement entitled "Mr. Brown Becomes 'Air-Minded'," had Jimmie and Speed sweeping in to inform Mr. Brown of the benefits of Richfield's hi-octane gasoline, wherein "each gallon of Richfield Mixes with 7600 gallons of free air that gives you maximum gasoline mileage!" In 1935, *Sales Management* praised the Jimmie Allen Club and its regional sponsors for netting over two million members, but also for collecting the names and addresses of both members and their parents. This "valuable mailing list" had editors salivating at the potential for future dealer promotions.<sup>72</sup>

The crassness with which Mr. Brown became "air-minded" differed sharply from visions of the airminded boy consumer articulated through the Airplane Model League of America in the *American Boy*. Nevertheless, the Jimmie Allen Flying Club did speak to children's dreams. The use of clubs, as before, addressed children's desires to take part

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<sup>72</sup> Walter House, "The Jimmie Allen Story, Part 1," *R/C Model Builder*, November 1980, 58-60, 70-71; and idem, "Jimmie Allen Story, Part 2," *R/C Model Builder*, December 1980, 48-49, 85-86; "Air Adventures of Jimmy [sic] Allen," *Model Airplane News*, December 1998, 34; Willfred G. Moore and Robert M Burt, *Jimmie Allen and the Great Air Mail Robbery* (Racine, Washington: Whitman Publishing, 1936); *Jimmie Allen Club News*, 1, no. 1 [ca. 1935]; and "Mr. Brown Becomes 'Air-minded'," *Jimmie Allen Club News*, 1, no. 2, Models, Jimmie Allen Club, Elizabeth Hiatt Gregory Collection of Material About American Aviation (Collection 313). Department of Special Collections, Charles E. Young Research Library, University of California, Los Angeles; "Radio Gets 2,000,000 Boys into 'Flying Clubs' for Oil Companies," *Sales Management*, 1 June 1935, 688; Corn, *Winged Gospel*, 116-118. On pilot heroes in series fiction, see Fred Erisman, *Boys' Books, Boys' Dreams, and the Mystique of Flight* (Fort Worth, TX: Texas Christian University Press, 2006).

in the world of aviation, but the commercial potential of exploiting the boy consumer market left little room for the generational conflict Harrison Cady depicted. In short, the potential problems were not an issue for Jimmie Allen's sponsors because the air-minded boy consumer had already taken shape. By replicating the club concept, the oil companies sponsoring the program saw great potential in addressing children's aviation-inspired dreams, while also recasting them as conduits for parents' purchase sponsors' filling station gasoline. The meaning of air-mindedness, ever pliable, remained ever so. The visions of a future air age, filled with prosperity and wonder and social betterment often proved a dream deferred in favor of the more immediate and lucrative potential of air-minded consumption in the present.

Harrison Cady's cover illustration for the June 1930 issue of the *American Boy* presented one artist's commentary on boys' gleeful embrace of air-minded visions and the meaning of boys' consumption, but the image also presented a view of air-minded consumption's disjunction with the past. While the vision of the inventive boy first honored decades earlier celebrated the mystique of the independent inventor in all his fictional forms, Cady's illustration also signaled his decline. The image of the independent boy inventor of the past—as much as he ever really existed—still had cultural resonance, but the inventive boy was already giving way to hoards of boy consumers. Commercial clubs addressed individual boy's hopes and desires, but their real power lay in numbers, and if clubs failed to meet sponsor's commercial expectations, support was withdrawn almost as quickly as it first appeared. The common thread between inventive boy discourse and air-minded boy consumption, was the singular belief that by building and flying of model aircraft boys learned to engage the modern

technological world and possibly shape themselves for future careers as adults. But even if the air-minded boy never attained his dream of becoming a famous engineer or pilot, the adults who pedaled this vision were just as content to ensure that he remained a viable consumer in the present.



## CONCLUSION

In January 1964, Charles H. Grant, the aeronautical engineer and lifelong aeromodeling advocate, wrote the Academy of Model Aeronautics (AMA) president John Worth with a dire assessment of the state of model aviation. It seemed, to Grant at least, that “Most modelers today like to operate models rather than use their heads to design and build them,” a condition completely at odds with the philosophy he put into practice while editor of the popular *Model Airplane News* between 1932 and 1943. Unlike the vision of the “constructive inquisitive model scientist” he hoped boys would aspire—and to which he always imagined himself to be—the “hobbyist type of model fan,” Grant noted derisively, “are fanciful and without purpose” for “their interest is born of whim for pleasure and not for knowledge and self improvement.” Had model aviation lost its way, he wondered, and could the AMA (since 1936 the chief regulatory body charged with sanctioning tournaments in the United States) not do more to encourage the seriousness of model aviation? For his part, Grant intended to write a new manual to update his *Model Airplane Design and Theory of Flight* (1941), as a way to remind current and future model builders of the great potential aeromodeling offered for learning the science behind flight.<sup>1</sup>

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<sup>1</sup> Charles H. Grant to John [Worth], 28 January 1964, (original emphasis), Charles Hampson Grant Collection (hereafter Grant Collection), National Model Aviation Museum (NMAM), Muncie, Indiana. Grant’s *Model Airplane Design and Theory of Flight; A Complete Exposition of the Aerodynamic and Design of Flying Model Aircraft, with Fundamental Rules, Formulas and Graphs* (New York: Jay

If the prototypical inventive boy ever truly existed, then Charles Hampson Grant was it. Born in 1894 in Elizabeth, New Jersey, as a boy Grant attended an aviation show in New York City in 1908 and soon channeled, like so many other boys at the time, his enthusiasm for what he saw into building model airplanes. His first, he later recalled, “never left the ground,” but his second proved far more successful and flew a distance of nearly sixty-five feet. “From that time on,” he reflected as an adult, “most of my spare moments were devoted to aviation.”<sup>2</sup> Grant’s father, who worked as a banker, seemed indifferent to his son’s interests, but his artistic mother proved far more approving, lending both material support and a healthy dose of encouragement. As a boy, Grant competed in model airplane contests in and around New York and New Jersey, and even took advantage of his boyhood summers in rural Vermont to construct machines that would carry him aloft. Before he settled on full-scale gliders, young Charles tried his hand at powered flight with a bicycle outfitted with a large wing. His modified bicycle proved unsuccessful in carrying him into the air and, instead, merely transported him into a nearby ditch where his “hide” soon bore the impressions of the “designs of Vermont gravel.” In the summer of 1910, Charles, then fifteen, successfully flew his first glider, sailing from the roof of the family’s farmhouse to an adjacent meadow. These efforts inspired the construction of a larger glider in the 1911. The glider, which he built with his brother Duncan, allowed Grant to fill the summers of his youth with air-minded

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Publishing, 1941). Grant’s book went through several revised editions, appearing, finally, as *Design For Flight: Fundamentals of Aviation Demonstrated by Building and Flying Models* (New York: Greenburg, 1947). For an institutional history of the AMA, see Willis C. Brown and Dick Black, *The History of the Academy of Model Aeronautics* (privately printed [1966]).

<sup>2</sup> Charles H. Grant, “An Outline Summary of the Aviation Activities of Charles Hampson Grant and Developments in Aviation History,” p. 3, typescript and clipping file, 4 October 1983, Grant Collection. Grant to Willis C. Brown, 27 May 1965, Charles H. Grant Biographical Materials, Academy of Model Aeronautics History Program (hereafter AMAHP), NMAM.

tinkering before, in 1913, he enrolled as a student at Princeton University where he studied mechanical engineering.<sup>3</sup>

Grant remained at Princeton for just over three years, before he left the university to take a position as a mechanic with the Strudivant Aeroplane Company, where he worked under pioneering airplane designer, Grover Loening. Grant joined the Army in 1917 and was eventually assigned to the engineering department of the U.S. Signal Corps aviation section aviation stationed in Dayton, Ohio. After his discharge, Grant served as a consulting engineer with the Dayton-Wright Company where he helped design an experimental airplane that utilized an early form of retractable landing gear. Even with this position in full-scale aviation, Grant continued to work with models in his leisure. In Dayton, Grant became the chief engineer at the Ritchie-Wertz Co., an area toy manufacturer, where he developed the “Right Flyer,” a simple ready-to-fly model airplane that utilized thin, solid balsa wood wings (perhaps one of the earliest uses of balsa wood by a commercial model airplane manufacturer). While at Ritchie-Wertz, Grant patented a special lathe for producing model airplane propellers that enabled a single worker to produce upwards of 1,000 propellers a day. Production capacity, apparently, outpaced demand and after the company folded in 1921, Grant returned to New York.<sup>4</sup>

Between 1921 and 1932, Grant worked as an engineering consultant, but he also, along with his wife Lillian, operated a summer camp for boys interested in aeronautics (fig. 44). The venture, named “Camp Duncan Grant” after for his military aviator brother

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<sup>3</sup> Nancy H. Otis, “Flight in His Life,” *Vermont Life*, Autumn 1969, 6-9; Willis L. Nye, “Charles Hampson Grant,” *American Aviation Historical Society Journal*, Fall 1971: 204-211; Grant to Brown, 27 May 1965, Grant Biographical Materials, AMAHP.

<sup>4</sup> Ibid.



Figure 44: Charles H. Grant overseeing construction at Camp Duncan Grant in Peru, Vermont. photograph (1923) from the E. T. Packard Collection, Cleveland Model & Supply Company Archives, Indianapolis, IN, as published in Schreiner, *Aviation's Great Recruiter*, 151.

who was killed during the First World War, aimed to instruct campers in the fundamentals of aerodynamics and airplane design through model building. The summer camp operated for the next eleven seasons and served as a way for Grant to recreate his own boyhood summers tinkering in rural Vermont. The camp also provided him the luxury to devote time furthering his own aeronautical research with models.<sup>5</sup> In 1928, Grant joined the Kingsbury Manufacturing Co., a maker of mechanical toys based in Keene, New Hampshire, as a consulting engineer and used several of his patents to

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<sup>5</sup> Grant, "Outline Summary," 2-3; Camp Duncan Grant photograph (1923), E. T. Packard Collection, Archives, Cleveland Model and Supply Company, Indianapolis, Indiana, reproduced in Schreiner, *Aviation's Great Recruiter*, 151; Otis, "Manchester Inventor a Pioneer in Aviation," *Bennington [Vermont] Banner*, 18 January 1964-65, photocopy of article in Charles H. Grant Biographical file, Vertical Files, National Air and Space Museum (hereafter NASM Vertical Files), Smithsonian Institution, Washington, DC.; Nye, "Charles Hampson Grant." On summer camps, generally, see Abigail A. Van Slyck, *A Manufactured Wilderness: Summer Camps and the Shaping of American Youth, 1890-1960* (Minneapolis: University of Minnesota Press, 2006).

produce the “Kingsbury ‘Silver Arrow’ model airplane to take advantage of the Lindbergh-inspired model airplane craze. The “Silver Arrow” was a nominally realistic-looking ready-to-fly model constructed using thin aluminum for the fuselage, propeller, and bracing, and solid balsa wood for wings and tail section. A Kingsbury advertisement published in 1929 in the trade publication, *Playthings*, proclaimed its inventor—a “Pioneer Designer”—and promised that Grant’s “Silver Arrow” would prove a “sensational seller” for toy retailers. Within fifteen months, total sales reached \$300,000, before the company folded in 1931.<sup>6</sup>

In 1932, Grant joined the staff of the fledgling *Model Airplane News* and under his tenure as editor oversaw the magazine’s monthly circulation growth from 22,000 to nearly 300,000. For Grant the engineer, models were not mere amusements, but serious tools for advancing engineering science; a philosophy he put into practice at *Model Airplane News*. As editor, Grant directed the magazine’s editorial outlook towards advancing the hobby as a popular form of engineering knowledge and, in 1932, began a monthly article series entitled “The Aerodynamic Design of the Model Plane” that would eventually form the basis of his subsequent book on the subject. As Grant observed in a 1934 letter to William R. Enyart of the National Aeronautic Association, “model aeronautics is the most powerful force in existence today for the education in aviation of the young men of this country. By the proper use of this great factor,” he continued, “air-mindedness can be developed not only in the youngster, but in the adult through the youngster, and a basic training can be provided to the young man which will act as a ground work for an aviation career.” Of his efforts, and those of the staff of *Model*

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<sup>6</sup> Kingsbury Manufacturing Co. [Keene, NH], “Pioneer Designer Joins Kingsbury,” advertisement, *Playthings*, June 1929, 16.

*Airplane News*, he wrote, “we are giving practical means of demonstrating the ideas” of aerodynamics “with model planes” in order to empower the “boy...to enlighten himself by further experiments with his model.”<sup>7</sup> To this end, *Model Airplane News* stressed the potential seriousness of aeromodeling and the magazine lent assistance to the establishment, in 1936, of the Academy of Model Aeronautics, initially as a group formed under the auspices of the National Aeronautical Association, and in time, as an entity in its own right. When Grant left *Model Airplane News* in 1943, he likely assumed—mistakenly—things would remain unchanged.

By 1964, when he wrote to John Worth, Grant was forced with the reality that Americans—and the AMA—had turned their backs on the model-building boy. As Grant regularly credited the models of his youth with transforming him into an engineer, he was forced to wonder where the engineers of the future come from if they were not building models? Grant spent his retirement toying intermittently with his revised textbook for model aeronautics before, in 1977, he again wrote John Worth with the enclosed manuscript, hoping the AMA would help underwrite its publication. Worth’s reply, the following February, confirmed Grant’s greatest fear: boys were simply no longer interested in model airplanes. As a result, Worth wrote, “we can’t do anything with your book.”<sup>8</sup>

The average “AMA ‘beginner’ of today,” Worth explained, “is typically 35 years old and wants radio control or nothing.” The typical AMA member, he added, “is not particularly interested in [design] theory or how to make his model fly better. It’s a different world from the one we grew up in.” The “sad fact is,” Worth admitted, “that

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<sup>7</sup> “The Biography of Charles Hampson Grant,” Academy of Model Aeronautics History Program (hereafter AMAHP), NMAM; Grant to William Enyart, 12 March 1934, Grant Collection.

<sup>8</sup> John Worth to Grant, 14 February 1978, Grant Biographical Files, AMAHP.

we're doing nothing for youngsters. There's no Lindbergh, no Junior Birdmen. We're competing with Little Leagues and many other programs. The glamour has largely gone out of aviation. But worst of all is the fact that our adult members don't want to be bothered by kids—not even their own. They just want to do their own thing, to fly for fun on a Sunday afternoon.” In returning the manuscript to Grant, Worth closed, “I end up being the bad guy who has to return your book—with regrets. Not many things I have had to do since taking this job in 1964 have made me sadder.”<sup>9</sup>

As Worth suggested, a combination of factors explained boys' declining interest in model aviation. Aviation, once new and exciting, had become commonplace and, as a result, lost the “glamour” it once held. Sapped of its previously-held romance, aeromodeling seemed unable to keep up with other activities competing for boys' attention. Moreover, what appeal remained in aeromodeling was fueled by the model airplanes that were powered by internal combustion engines and steered by radio control equipment. These technical advances greatly enhanced users' experience of flying, but proved so expensive as to price the young out of the market. Compared with an expensive radio-controlled flier requiring hundreds of dollars and countless person hours to build, the simple stick-and-tissue, rubber band-powered free flight model that had once seemed the very essence of modernity generations before, seemed instead merely old-fashioned. As a result, as Worth indicated, aeromodeling by the 1970s had become the domain of an increasingly aging group of adult men who could afford it. Even if a boy proved fortunate enough to build his own gasoline powered model airplane, moreover, his neighbors would have viewed his interest in aeromodeling as a noisy and potentially dangerous nuisance, not as a symbol of the future. To make matters worse, Worth

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<sup>9</sup> John Worth to Grant, 14 February 1978, Grant Biographical Files, AMAHP.

suggested, adult hobbyists appeared far more interested in using their models as a means to escape the pressures of work and family than in teaching the young the potential joys of aviation. The hobby had become, in postwar America, a means for adults to relive the imagined joys of their own boyhoods long past.

If boys were nudged out of aeromodeling, they also left willingly to pursue other activities. Aeromodeling, as it had been practiced for nearly four decades, proved a casualty of the Second World War, largely because balsa wood, which had become a staple of the construction of model airplanes, was reclassified as an essential strategic material for the war effort and, thus, was little available. Although kit manufacturers tried several substitutes for balsa—including soft pine and even cardboard—young users found these materials a poor substitute for constructing the more realistic flying models they had come to expect. As the models no longer meant their desires, they simply refocused energies towards other pursuits and pastimes. The health and vibrancy of aeromodeling in the first half of the twentieth century required a steady cadre of new participants to replace the ones who left as they became older, and without an accurate substitute for the kinds of models boys desired, their numbers simply shrank. Industries require customers to thrive, but with a dwindling popular of boys interested in their products, the financial health of model airplane suppliers contracted precipitously and many of the old firms either closed or struggled to stay in business. The Cleveland Model & Supply Company, for one, was the leading supplier of accurate balsa wood flying models before the war, but was never able to recapture their predominance in a changing postwar climate. As a result, the company shed its manufacturing operations and limped along with a skeleton staff that supplied drawings for scale models, but not



the kits to build them, to an increasingly aging population of craft hobbyists who were still interested in what the products the company had to offer.

By the end of the 1940s, boys who remained interested in airplane models seemed perfectly content to assemble plastic non-flying models build from the inexpensive construction kits that flooded the hobby market in postwar America. Indeed, it seemed that inexpensive model kits were the only area of growth in the youth market for the hobby industry. Unlike the wooden kits they replaced, these simplified plastic kits—of airplanes and automobiles, Apollo rockets and Navy battleships—proved far easier to assemble and gave greater weight, than ever before, to a sense, as one historian observes, of “Working on the Line at Home.”<sup>10</sup> These plastic models, regardless of what they meant to those boys who built them, betrayed the vision of the producer-orientated vision of boys’ model building activities that existed previously. The models built from inexpensive plastic construction kits were not designed to take flight, but, on the contrary, to rest on mantles collecting dust, and represented not just an entirely different kind of hobby, but a different type of hobbyist. Gone were the days of the “constructive inquisitive model scientist” Grant held so dear, replaced instead with the acquisitive plastic model builder who amassed growing collections of inexpensive copies on bookshelves or hung in static formation from the bedroom ceilings of suburban homes.

While John Worth’s letter acknowledged these changes, implicit in his explanation was the recognition that the beloved inventive boy, in respect to model aviation at least, too was sapped of much of his strength and power to sway adults and

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<sup>10</sup> Steven A. Gelber, *Hobbies: Leisure and the Culture of Work in America* (New York: Columbia University Press, 1999), 261-267. On the development of the plastic model hobby, see Richard Butsch, “The Commodification of Leisure: The Case of the Model Airplane Hobby and Industry,” *Qualitative Sociology* 7 (September 1984): 217-235.

children. Decades earlier, a vibrant inventive boy discourse found its way into the mainstream of American popular culture and helped provide comfort to Americans as the country increasingly became a consumer-oriented society. The inventive boy, as we have seen, shaded the way Americans responded to mythic figures like the enterprising heroic inventor, the rational engineer, and the steady-handed aviator, and provided adults—and children—with welcome boyhood role-models worthy of emulation. Ideas about boys' inventively playful behavior resolved the potential complications accompanying the rise of a consumer-oriented society by casting boys' activities as consumers in a producer-orientated ethos, which in effect, ameliorated the potential pitfalls of consumption by redefining it: consumption, in short, became a way for boys to remake themselves for the future. And while dreams of encouraging the development of future inventors, engineers, scientists, or aviators drove adults' motivations for encouraging technical hobbies like aeromodeling, these dreams also swayed the boys who participated in modernity by devoting their free-time to these pursuits.

In retrospect, inventive boy discourse was not solely about thwarting boys from assuming their roles as consumers, for the physical manifestations that allowed inventive boy discourse to take shape—be it model airplane construction outfits, magazines, or series books—were in themselves objects to be consumed. In hindsight, the conditions that gave rise to inventive boy discourse—the expanding freedoms of middle-class childhoods, the fascination with recent technological developments, and the shift to a consumer-oriented society—also led to its ultimate undoing. Even if a boy never realized his dream of shaping the modern world, and instead proved more successful in merely

consuming it, the idea of the formative nature of his play laid the foundation for the celebration of his eventual role as a consumer.

In light of recent media attention about the dangers of the over-consumerized child, who is increasingly targeted by a bevy of advertising appeals in television, magazines, and retail stores, it is worth noting that the fears associated with children and consumer culture are not a recent phenomenon. Indeed, if the past in any accurate gauge, the subject of children's consumer culture will likely bedevil commentators well into the future. Interestingly, the inventive boy's imprint remains with us, even if in a more subdued form than before. Building sets, like Erector or Lego, remain popular and still carry appeals that these products will inspire the future development of those children whose parents purchase these sets for them. Educational video games and toy laptop computers, similarly, carry promises that they will prepare the young for our computing age, even if these products invoke the spirit of persons like software designer Bill Gates or Apple computer founders Steve Jobs and Steve Wozniak, rather than backyard experimenters such as Thomas Edison or the Wright Brothers. Similarly, the recent success of the "Baby Einstein" home video series is fueled by the hopes of parents seeking to provide their children a leg-up in an ensuing information economy. The popularity of Nickelodeon's cartoon, "Jimmy Neutron: Boy Genius"—which features the comical science fiction exploits of a melon-headed boy inventor—proves, perhaps most explicitly, that the century-old inventive boy still maintains at least some cultural resonance, even if it is just for the sale of movie tickets, DVDs, and other product tie-ins.

As ever before, expressions of the more recent pursuits of technologically inclined adolescents are not without limits. In 1994, a teenage boy named David Hahn found this

out first hand when his boyhood goal of collecting samples of all the elements on the periodic table led to his attempt to construct a model breeding reactor from spare parts and junk obtained from thrift stores in order to manufacture the radioactive elements to complete his collection. Regardless of the enthusiasm young David Hahn exhibited, the neighbors in his Detroit suburb viewed his time spent in his backyard workshop with suspicion—for unlike the creation of model airplanes generations before, they could see no products emerging from this space. As a result, they reported him to the authorities. Federal agents soon swarmed David Hahn’s home, branded him a potential domestic terrorist, arrested him, quarantined the area around his house, and packed up his materials and instruments, sending the tools and products of his experiments to a radioactive dumpsite overseen by the Environmental Protection Agency.<sup>11</sup> In our post 9/11 world, officials at the Department of Homeland Security have also weighed the potential risks of a terrorist using a radio-controlled model airplane as a vehicle for delivering crude radiological devices into crowded urban centers. The inventive boy, once viewed as a potential savior of boyhood, could also be a potential threat.<sup>12</sup>

In the end, Charles H. Grant’s concerns in 1964 were rooted in his failure to see anything that resembled anything like his boyhood ideal. While this hinted at the changes in the meaning of boyhood since the early twentieth century, it also serves as a reminder of the continued changes facing the idea of boyhood. Because he could not see any trace of the “constructive inquisitive model scientist” he admired, this provides a clear indication that the cultural ideals of boyhood were still evolving. In place of the

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<sup>11</sup> Ken Silverstein, *The Radioactive Boy Scout: The True Story of a Boy and His Backyard Nuclear Reactor* (New York: Random House, 2004).

<sup>12</sup> Lou Young, “Model Airplane Terror? A Hobby for Many Can Turn Into a Terrorist’s Ally,” 17 May 2007, <http://wcbstv.com/local/model.airplanes.radio.2.244416.html> (accessed 3 July 2008).

inventive boys he always admired—and thought himself to be—he saw instead in the mid 1960s only frivolous play, not evidence of the activities of budding young engineers. If Grant’s letter evidenced these changes, it also suggests that his very idea of boyhood seemed to exist in spite of history: boyhood was, for him, a timeless object, and *not* a historically contingent phase of life that was consistently subject to evolution and change. As much as Grant’s own life seemed to confirm the trajectory of inventive play in youth leading to the professional work of invention and engineering, his later impressions also exposed its underlying fictions. In this respect, Grant would have been wise to consider the words in the chorus of Henry Wadsworth Longfellow’s “My Lost Youth,” (1868): “A boy’s will is the wind’s will/ And the thoughts of youth are long, long thoughts.”<sup>13</sup>

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<sup>13</sup> Henry Wadsworth Longfellow, *Poems and Other Writings* (New York: Literary Classics, 2000), 337-340.

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