THE NATIONAL AIR RACES AND THE MATURATION OF THE AVIATION INDUSTRY
(1929-1939)

by
IAN KENNETH HARTEN

Submitted in partial fulfillment of the requirements
For the degree of Master of Arts

Thesis Adviser: Dr. Peter Shulman

Department of History
CASE WESTERN RESERVE UNIVERSITY

May, 2011
CASE WESTERN RESERVE UNIVERSITY
SCHOOL OF GRADUATE STUDIES

We hereby approve the thesis/dissertation of

Ian Harten

candidate for the Master of Arts degree *.

(signed) Peter Shulman
(Chair of the committee)

Miriam Levin

John Grabowski

(date) April 1, 2011

*We also certify that written approval has been obtained for any proprietary material contained therein.
Table of Contents

Abstract 2

Introduction 3

Historiography of the NAR 6

An Overview of the National Air Races 8

The Aeronautical World 1920s – 1930s 12

Air Racers as Businessmen 21

Finding a Reason to Race 30

The NAR as Entertainment 46

Women and the National Air Races 54

Conclusion 61
The National Air Races and the Maturation of the Aviation Industry  
(1929-1939)

Abstract

by

IAN KENNETH HARTEN

The National Air Races were a series of events that bridged two very different periods of the history of aviation. The event attempted to preserve the glamour and drama that characterized the pioneering days of aviation’s history. At the same time, the it purported to be a proving ground for cutting edge aeronautical technology. Despite the claims of the event’s management, the National Air Races did not contribute to aviation technology and were unable to overcome their inherent nature as spectacles for entertainment. Aviation was presented as both a thrilling adventure and a burgeoning technology promising speed, reliability and safety. The National Air Races were unable to reconcile these two contradictory characterizations of aviation. During this period, aircraft manufacturing was increasingly dominated by large, well-connected firms. The pilots and aircraft builders who participated in the National Air Races were compelled to build and fly aircraft as entertainers due to a lack of opportunities in the industry. It is generally thought that the Great Depression makes a point of transition between aviation’s heroic past and its emergence as a mature industry. The National Air Races demonstrates the resiliency of the idea of aviation as a source of awe-inspiring feats of daring and the irreconcilability of this idea with notions of safety and reliability.
Introduction

“With the sweeping, daring and inventive genius of a knighthood that rides the broad expanse of the air, the 1930 National Air Races will unfurl the banner of aeronautical progress.”¹ So boasted the official program of the 1930 National Air Races (NAR), an event promising visions of progress to the throngs that packed the stands at the Curtiss-Reynolds airport on the outskirts of Chicago. The NAR, an annual aeronautical spectacular, billed itself as a thrilling experience for anyone interested in the promises of the aviation industry. It boasted of the coming of a new form of racing – blending the excitement of the horse race with the latest in transportation technology. However, the event maintained that it was more than simply a show. It pledged to be both a showcase and a proving ground for cutting-edge technology. It promised to put technological progress in aviation out in full view of the public. Unfortunately, the audacious promise of progress appears today as little more than hot air.

The NAR is a valuable historical event due to its (unsuccessful) attempted to bridge two ideas of progress. The NAR was held during a period in which the aviation industry was trying to put its daredevil past behind it. According to the industry, treating aviation as a spectacle did a disservice to aviation by emphasizing the danger, rather than the safety, of flight. The difficulty of trying to reconcile these two ideas of aeronautical progress was a problem that the management of the NAR never managed to solve. Ultimately, the NAR was unable to overcome its inherent nature as a spectacle for entertainment.

¹ 1930 Program of the National Air Races, 1930, Folder 34, The Clifford W. Henderson National Air Races Collection, 1928-1978, Western Reserve Historical Society, Cleveland, Ohio.
The 1930s would prove to be a decade of consolidation and maturation for the aviation industry. Over the course of the decade, aviation transitioned from the glamour of its early years to the staid and respectable business that by the end of the decade would supply the Allied arsenal. An editorial in one industry publication felt that by 1929 aviation was poised to become a more uniform industry. “The danger of premature standardization, a serious consideration some years ago, is growing steadily smaller as design and construction settle down.”2 Into the 1930s aircraft were less likely to be compared on how magnificent were the feats which they had performed, but by their practicality and efficiency. The Douglas DC-3 was considered as superior to earlier Ford Trimotor, both types of passenger aircraft, because it cut airlines’ passenger mile costs from 12 cents to a little over 5 cents.3 This new corporate landscape was a challenging environment for the NAR. The event struggled to reconcile its theatrics with a desire to play a relevant role in technological innovation in aviation.

This transformation in the industry was not merely one of organization, capital, or integration into the nation’s political and military order, but of the very shape of the ideal of progress itself. The aviation industry of the 1930s was transitioning between two different ideals of progress. The first model of progress in aviation was the independent, entrepreneurial pilot typified by men such as Glenn Curtiss, Glenn Martin and the Wright Brothers. Such characters were part inventor, part businessman and part adventurer. Work on their machines was an almost spiritual pursuit. Their devotion to their technology meant, as the religious scholar Lee Worth Bailey has put it, “following the star of pride and accomplishment, the fascination with discovery and mastery, the

enchantment with technology as a monument to human greatness.”

This early progressive mindset for aviation was part of a more general fascination with speed and mobility at the turn of the 20th century. Historian of technology Michel Hård has described this fascination as a “mobility mania” that “opened up realms of reality that had previously not existed.” Those who were caught up in the mobility mania adopted a new identity for themselves in which they became a part of the machines they used. This created a combination that, according to Hård, was “neither a machine or a human, but a combination of material and corporeal elements.” This model of progress made the aircraft just such a combination. To go higher, farther, and faster contributed to the glory of the aircraft and its promise for a better future for humanity. Aviation historian Joseph Corn has described the spiritual nature that defined early aeronautical progress as being supported by the “popular perception that airplanes augured a new day in human affairs, that they were something wondrous and miraculous.”

By the 1930s the optimistic and glamorous vision of aeronautical progress had been eclipsed by a second ideal. Progress in aviation was now something that could be measured in terms of tonnage carried, clients served and earnings made. As a number of highly successful aircraft manufacturers developed into industrial firms, profit, rather than passion, motivated technological innovation. Historian David T. Courtwright characterizes this redefinition of progress as being analogous to the settlement of a

---

formerly wild American frontier by mining and ranching industries.\textsuperscript{7} An aircraft’s success had rested on performing exceptional feats of speed and distance. Now success was measured by how it performed in practical duties. By the 1930s, the aviation industry had already, in the words of historian Donald M. Patillo, “made the transition from the pioneer days to boardroom decision making. Pioneer aviators remaining active in the industry now were more likely to be corporate chief executives.”\textsuperscript{8} Technological change would from then on be motivated by the desire to increase an aircraft’s utility to business and industry. Whether such changes also inspired any visions of sublime wonder was of less importance. Despite these changes, not all aviators were able to make the transition from the cockpit to the boardroom. By examining the National Air Races of the 1930s, we find that the glamour of early aviation was abandoned by aviators more slowly than historians have previously acknowledged. Rather than disappearing completely, this glamour found refuge in the NAR.

**Historiography of the NAR**

Most academic histories of the aviation industry have not given much attention to the NAR. *Winged Gospel*, Joseph Corn’s seminal history of aviation and the public imagination, discusses the NAR’s principle races only briefly as an example of the sort of pursuits denied to female pilots.\textsuperscript{9} Terry Gwynn-Jones’s *Farther and Faster: Aviation’s Adventuring Years* has devoted the most space to the NAR, much of which is simply a description of the event, while Dominick A. Pisano’s *The Airplane in American Culture*


\textsuperscript{9} Corn, *The Winged Gospel*, 77-79.
features one of the most rigorous analyses of the NAR. Pisano places the NAR in the history of aviation as a form of entertainment and highlights the strained relationship between the aviation industry and NAR management. Many other histories of aviation omit the NAR entirely. Given the substantial changes that took place in the industry during the 1930s, it is unsurprising that an event such as the NAR might have been neglected. However, by focusing on the fading light of aeronautical entrepreneurship that the NAR sought to protect, we can find a different perspective on the transformations that were taking place in the aeronautical world during the 1930s. Historians of aviation are typically in awe of the rapid technological changes that they are documenting and thus quickly lose sight of those who are not on aviation’s cutting edge. Their work would present a more well-rounded view of aviation by pausing to consider those people and organizations, such as the NAR and its participants, who were left by the wayside and yet persisted in trying to remain important contributors to the aviation industry.

Works which are devoted to the NAR have been the output of passionate enthusiasts. These include Robert Hull’s *September Champions* and Reed Kinert’s *Racing Planes and Historic Air Races*. Their work is present in a style that makes them as accessible as possible. While Hull and Kinert have collected a wealth of minute detail and first-hand accounts of NAR participants, their work does not place the NAR within a broader historical context. These books give no thought to the historiography of aviation, although they do adequately document their sources, typically local newspaper articles.

---

and interviews conducted by the author. For this reason Kinert and Hull can provide a valuable link to the participants of the NAR, none of whom are still alive.

In order to understand how the NAR acted as a refuge for independent aircraft builders, it is first necessary to fully explain what sort of event were made up the NAR and define the most important of the races. Secondly, this paper will delve into the state of the aviation industry as it entered the 1930s. During this period the industry faced a number of challenges as it sought to build confidence in its products while trying to weather the Great Depression. This will provide the context needed to understand the issues faced by the NAR as the event took shape. Thirdly, this paper will examine the difficulty encountered by the NAR in trying to articulate why it deserved a place in the aeronautical world. Its management maintained that it provided a useful testing ground for new aeronautical technologies, although there is little evidence to support such a claim. In fact, the aircraft manufacturers did not demonstrate any approval of the NAR. The event was seen by many industry commentators as an unnecessary and dangerous anachronism that did nothing to convince the public of the safety of aircraft.

Nevertheless, the NAR maintained a fixation on an ideal of aeronautical progress that typified the aviation industry of the 1920s and earlier. Finally, this paper will emphasize that the NAR was a venue for entertainment rather than a forum of engineering. By taking into account all of the other attractions hosted by the NAR, it becomes clear that the primary objective of the NAR was to entertain.

**An Overview of the National Air Races**

In order to study the NAR, it will first be necessary to define the management of the event as well as its most prominent events. Beginning in 1921 in Omaha, the NAR started
life as a relatively modest aerial exhibition. However, a dramatic shift took place at the races held in Los Angeles in 1928 when the event was expanded beyond the three or four day schedule that had been the norm and the number of events and attractions was increased. A wave of optimism swept through the aviation industry in the late 1920s. Hoping to ride this speculative wave was Clifford W. Henderson, a California businessman and a canny promoter who was hired as general manager for the event. Previous to his involvement, the title of the NAR had been passed from one organizing committee to the next as the event moved around the country. Henderson gave the event stability in management and would continue to run the event for another decade. He operated as an employee of National Air Races of Cleveland Inc., which was headed a board of prominent Cleveland businessmen with Louis W. Greve, owner of the Cleveland Pneumatic Tool Company, as its president. This paper employs the correspondence of Henderson and, to a lesser extent, board members such as Greve as the voice of the NAR’s management.

The 1928 event also marked the increase of civilian participation in the event. According to a press bulletin for the 1931 races, the races held prior to 1928 “have usually been limited to a three or four day program. The Air Races mainly consisted of maneuvers by the Army, Navy and Marine Air Corps with very little civilian participation.” This was consistent with the military’s waning interest in racing aircraft in the face of budget restrictions. Army and Navy officers believed that they had learned

11 The event moved across the United States each year beginning with Mt. Clemens, Michigan (1922) then on to St. Louis (1923), Dayton (1924), Mitchell Field, Long Island (1925), Philadelphia (1926) and Spokane (1927).
all they needed from racing and payload, armor and reliability replaced speed as design priorities. From then on, it would be civilian aeronautics that took center stage.

The NAR were events that stretched over several days. While the air races were always the most prominent of the contests that were held, they were by no means the only ones. Acrobatic displays, including performances by foreign fliers, were a common sight. Demonstrations by parachutists, balloon-bursting competitions and deadstick landings were also standard fare. Down on the ground, attendees could stroll through the exhibition space and see displays from a large number of aeronautical businesses, as well as those of local enterprises, advertising their goods and services. Children had the chance to compete in model-building competitions and the whole crowd could stay until 11:00 for the “Wings of Love” theatrical performance. There was no specific group of people for whom the NAR were tailored. The event was meant to have as broad of an appeal as possible to attract as large of a crowd as possible.

Celebrities of the aviation world—or people who would later become celebrities—were also on hand for the races. Charles Lindbergh, who could easily be considered the preeminent American aviator of the day, attended the 1929 event as part of his efforts to support the industry as much as he could. Jimmy Doolittle flew the 1931 and 1932 Thompson and the 1932 Bendix races as a representative of Shell Oil. Amelia Earhart had attended the 1932 races. However, she did not race until the following year’s Bendix race when she was forced down near Wichita. Earhart never won

---

14 Ballon-bursting competitions saw pilots try to burst a tethered balloon with their propellers. Deadstick landing competitions involved shutting down a plane’s and then gliding the aircraft in to land.
15 Gwynn-Jones, *Farther and Faster*, 156.
17 No Author, “Oil Concerns Now Reaping From the Sky”, *Cleveland Plain Dealer*, September 1, 1934.
a title at the NAR, though in 1935 she inaugurated the Earhart Trophy Race, which was to be an equivalent of the Thompson Trophy Race for women.\textsuperscript{18} And while the U.S. military refrained from participating alongside civilian competitors following the 1930 racing death of Navy Captain Arthur Page, Army and Navy squadrons continued to put on demonstrations of their aircraft.\textsuperscript{19}

Among the various events which took place at the NAR, the Thompson Trophy and Vincent Bendix Trophy races had particular prominence. The Thompson Trophy Race was the closed course race for aircraft of any type, with any type of engine, where competitors raced around a course of three storey tall pylons. First held in 1930, it became the crown jewel of the event. The race was sponsored by Thompson Products, an industrial manufacturer based in Cleveland, Ohio that specialized in making engine valves.\textsuperscript{20} Thompson Products would remain one of the largest backers of the NAR, its president Frederick Crawford having hand-picked Henderson as general manager.\textsuperscript{21} The Vincent Bendix Trophy Race was a timed cross-country race flown from coast to coast. First held in 1931, it placed no restriction in terms aircraft weight or engine displacement, just like the Thompson race. The race was sponsored by the Bendix Corporation, a manufacturing and engineering firm based in New Jersey that made a large number of

\textsuperscript{18} Earhart’s participation in the National Air Races is illustrated by the following articles from the \textit{Cleveland Plain Dealer}: Marion Hopwood, “Earhart’s Arrival is Social Signal” (August 31, 1932), “Parachute Lands in Air Race Crowd” (September 7, 1933), James D. Hartshorne “10 Women on Earhart Race Roster” (August 21, 1935).


\textsuperscript{20} The Thompson Trophy (promotional pamphlet), 1930, Folder 34, The Clifford W. Henderson National Air Races Collection.

\textsuperscript{21} “Meeting of the Board of Directors of The National Air Races of Cleveland, Inc.”, July 19, 1929, Folder 1, Air Foundation Records, 1925-1970, Western Reserve Historical Society, Cleveland, Ohio.
products, aviation hydraulics and avionics among them.\(^{22}\) The other event worthy of note was the Greve Trophy Race, named after Louis Greve, president of the NAR. This was the equivalent of the Thompson Race for light planes, which was defined by engine displacement, and was first held in 1934.\(^{23}\) In each of these events the details such as the length or shape of the course were altered from year to year to adjust to increasingly more powerful aircraft and the greater concern for safety they induced. These races gave builders and pilots the most freedom in terms of what type of aircraft they could enter and thus saw the fiercest competition.\(^{24}\)

**The Aeronautical World 1920s – 1930s**

The drama of these races was not new to aviation, the sensations having been a part of aviation since its earliest days. Historian Roger Bilstein attributes the glamorous image of the aviator to barnstormers – nomadic pilots who wandered the American countryside to entertain crowds in surplus World War I aircraft which they had bought for a few hundred dollars. “Working their way across the country,” writes Bilstein, “[barnstormers] gave thousands of people their first rides in an airplane, making a convincing demonstration of the flying vehicle so many had read about but never seen.”\(^{25}\) The enthusiasm for this new technology fueled what Joseph Corn dubbed “the winged gospel” that considered aircraft to be a positive force for humanity’s future. Such optimism went as far as speaking of aircraft in mystical terms. “Indeed,” notes Corn, “Americans from the first days of the airplane era commonly borrowed words from their religious lexicons


\(^{23}\) Ibid.

\(^{24}\) There were a number of other races that were held at the NAR. However, many of these smaller races appeared for only a single year or had a small number of competitors, or both. It is the Thompson, Bendix and Greve races that concern this paper since these were the most visible of the races.

words like “god,” “miracle,” “saint,” “heaven,” “evangelist” – to describe aeronautical activities.”26 Similarly, Bayla Singer demonstrates the cultural profundity of the idea of flight. Using examples from a diverse survey of world cultures, she demonstrates that the ability to fly has throughout history been considered a mark of divinity. Though flight has not always been considered the exclusive prevue of benevolent spirits, it nevertheless carries a powerful cultural meaning. According to Singer, “[c]ultures worldwide and throughout time have agreed on this: the ability to fly has important spiritual qualities, and at the very least, for humans, signifies more-than-human status.”27 The 1920s were a period when these fantasies could finally be realized as more and more aircraft began to take flight.

According to David T. Courtwright, aviation was not simply a new means of covering ground. Instead, aviation represented a new dimension of opportunities for Americans. The adventurous spirit that had driven settlers westward could now be redirected towards the possibilities of a new frontier. “The American frontier did not close. It became multidimensional, with continuous, technologically premised, socially constructed, and mutually reinforcing movement on the land, in the nighttime, and through the sky.”28 By embracing this new multidimensional frontier, Americans were able to reconnect with what they perceived as their heroic past. Pilots were futuristic cowboys riding technological steeds. Courtwright characterizes the discussion surrounding aviation as “an offbeat sort of macho, hero-speak tempered by poetic receptivity, an awareness of the aesthetic possibilities of a new setting of human

perception and action: the sky as frontier of the soul.”29 Whether aviation was spoken of in religious or legendary terms, it had managed to tap into a wellspring of energy and optimism. It was these sentiments that underpinned the NAR’s claim to purpose. The NAR appeared much too late to have played a part in constructing the glamorous image of aviation, but it was able to make use of it.

Part of the glamour of the early days of aviation was its sense of limitless opportunity. The creation of a whole new form of transportation allowed people to indulge in fantasies regarding how aerial transportation would change people’s lives, usually for the better. However, such optimism could not last forever. By the late 1920s, the airplane had lost some of its revolutionary radiance and was fast becoming simply another tool of the modern world. To be a supporter of aviation, a sentiment that was described at the time as “airmindedness,” had become quite ordinary. Upon entering the 1930s, Americans no longer needed to be told that the coming age of aeronautics would change their lives. Thus, as one industry commentator opined, the idea had become redundant. “Air-mindedness of a sort is nation-wide. To say that any particular town is not air-minded would be to precipitate a storm of protest from its “forward-thinking” leaders.”30 Once a wide frontier, open to anyone daring enough to seize it, aviation had become disciplined, tamed and regimented.

The aviation industry was also experiencing profound financial transformations. The 1920s saw a dramatic increase in the amount of investment in the industry and speculation regarding the future of the airplane. According Howard Mingos, a booster of aviation during the 1920s and 1930s, the American aviation industry could be separated

29 Ibid, 60.
into two camps. First there was North American Aviation Group, a holding company that included Sperry Corporation, Bendix Aviation, Berliner-Joyce Aircraft Company and a dozen airlines. This company would absorb the Curtiss-Wright Corporation, a holder of a great number of aviation patents, in 1933. The second was United Aircraft and Transportation Corporation which owned Sikorsky, Chance Vought, Hamilton, Northrop, Boeing, Stearman and engine manufacturer Pratt & Whitney. The formation of these large holding companies in the years leading up to the stock market crash of 1929 saw the industry divided into two conglomerates before the Depression pushed the remaining manufacturers into bankruptcy. As Elsbeth E. Freudenthal, a commentator on the aviation industry at the time put it,

“The flood of mergers engulfed all the old pioneers and aviation engineers who had managed to carry their own companies through the previous years of erratic development. They could not compete, they realized, with the large combinations backed by powerful interests that were dominating the industry. So they either sold out to financiers…or…admitted some financial interests.”

These conglomerates were headed not by the daring pilots who had been the first aircraft manufacturers. Instead these businesses were controlled, to a degree, by Wall Street financiers. However, the airmindedness of a company’s executives remained important. Donald M. Pattillo’s history of the aircraft industry claims that these executives needed to be immersed in the aeronautical community. This would keep them from ignoring the constant need to innovate and focusing too much on financial figures and thereby withholding investment capital. Thus aviation companies needed leaders with both a passion for the industry and good business sense because “no one began a career in

aviation as an owner of an aircraft company.”33 Though the industry was guided by competent leaders, investors who spent the years leading up to the crash speculating with the hope that aviation would be the next great industry. Grover Loening, whose Loening Aeronautical Engineering Corporation merged with Keystone Aviation in 1928, described the aeronautical hysteria. “To try and tell your friends not to invest in air stocks because they couldn’t possibly in ten years justify any such values was considered a positively unfriendly thing to do. And so few seemed to be thinking of that little detail – of how those enterprises were going to make a profit.”34

Unfortunately for most in the industry, the events of October 1929 were particularly disastrous. Between March 1928 and December 1929, $1 billion in aviation securities were traded on the New York Stock Exchange. In 1932 that figure was down to $50 million, a loss that returned just 5 cents on the dollar. Aviation stocks were among the stocks most speculated upon in the run-up to the 1929 crash.35 From 1927 to 1929, industry sales had jumped from $21,162,000 to $71,153,000. By 1933, they had fallen to $26,460,000.36 The result of this bubble was that the rampant speculation on the part of Wall Street and the subsequent crash is what pulled aviation out of the hands of the pilot-entrepreneurs and dropped it into the hands of investors. One could ask whether the early pilots could have led their companies into the ranks of big business. Aviation historian John B. Rae reminds us that these early industry players were pilots first and businessmen second. “They deviate from the conventional entrepreneurial model in that

33 Pattillo, Pushing the Envelope, 62.
34 Grover Cleveland Loening, Our Wings Grow Faster: In These Personal Episodes of a Lifetime in Aviation May Be Found an Historical and Pictorial Record Showing How We so Quickly Stepped into This Air Age - and Through What Kinds of Difficulties and Developments We Had to Pass to Get There (Garden City, N. Y: Doubleday, Doran & Co., Inc, 1935), 193.
35 Bilstein, Flight Patterns, 130.
they did not base their actions on the maximizing of profit; they seldom had profits to maximize. Their dominating motive was a passionate desire to design and build airplanes, or sometimes aircraft engines.”37 By the beginning of the Great Depression, there had already been a generation of pilot-entrepreneurs who had been pushed to the sidelines by professional businessmen. The now investor-controlled companies had access to plenty of capital and had the political connections that would be needed to survive the coming lean years and to transform their companies into industrial powers.

The aircraft manufacturers that were still in operation in the late 1930s were those who managed to weather the Great Depression through the most reliable customer of all: The United States government. With the formation of this elite cadre of manufacturers, no new aircraft manufacturers were able to win a significant share of the market. Small-scale manufacturers, such as those who built air racers, had been left out in the cold.

American aviation of the 1920s was largely shaped by the Morrow Board, a panel led by Wall Street investor and friend of President Coolidge, Dwight Morrow. Charged with formulating policy recommendations for America’s aviation industry, it resulted in the passage of the Air Commerce Act in May 1926. This established the Bureau of Air Commerce within the Department of Commerce and recommended the establishment of safety measures, navigational aids and infrastructure investment. The act was passed but no immediate action was taken by the states to implement it. It would not be until Lindbergh’s famous flight in 1927 that ground was broken on the infrastructure called for

---

by the act. The work of the board also resulted in the adoption by the Army and Navy of five year plans to greatly expand their aerial capabilities to 1,600 and 1,000 aircraft respectively by 1931. The aircraft manufacturers that profited from this plan were also benefiting from the doubling of federal subsidies for aviation from $6 million in 1922 to $12 million in 1926. As the war surplus was at last wearing out, the U.S. government prepared a new injection of money into the aviation industry. The American aviation industry of the 1920s remained close to the federal government as it was the only reliable source of business during that period.

This trend would only continue into the 1930s. It was then that a growing resentment towards the large aircraft conglomerates and grumbling among smaller aircraft manufacturers about an “aircraft trust” began to be heard. Between 1927 and 1933, 93.9% of commercial sales were reported by the two largest conglomerates: United Aircraft and North American Aviation. In that same period, 92% of Army contracts and 93% of Navy contracts were given without competitive bidding, mostly to the subsidiaries of these large companies. This concentration of business resulted in a small number of successful companies relying largely on the U.S. government. Between 1927 and 1933, major aircraft manufacturers received most of their profits from Army and Navy contracts including Boeing (59%), Pratt & Whitney (64%), Grumman (75%), Douglas (91%) and Martin (100%). Thus by the late 20s and early 30s, a small group of

---

39 Rae, Climb to Greatness, 23.
40 Pattillo, Pushing the Envelope, 87.
aircraft manufacturers had become the beneficiaries of most of the U.S. government’s patronage, allowing them to weather the economic storm of the Depression.

However, the most lucrative of contracts were the air mail routes which, by 1933, represented 75% of the profits for the industry. At that time, passenger service had still not become a reliable source of income. Businesses, however, embraced the speed of airmail and relied on it to move advertising copy, bills of lading, cargo manifests and, especially, bank checks. In 1930 these contracts were distributed with United Aircraft and North American Aviation Group holding 18 of the 20 air mail contracts. This sparked an outcry from those who were left out of the negotiations. Postmaster General Walter Folger Brown was criticized by smaller aviation firms for not making the process open, but he defended himself by saying that he wanted to ensure that the companies that got the contracts were capable. This line served the government whenever it had to justify sticking with the larger companies. Why risk taxpayers’ money on some tiny, fly-by-night operation that can’t guarantee results? This reasoning held less sway with the rise of anti-corporate sentiment during the Depression. In February of 1934, Roosevelt cancelled all air mail contracts and turned the responsibility over the Army Air Corps. What followed was a disaster. After only five months ten pilots were killed, six during training and four while carrying mail, forcing President Roosevelt to return air mail to private carriers. The Army pilots suffered from their unfamiliarity with their new routes and the fact that they had to begin their task in the harsh winter weather of February.

---

42 Bilstein, Flight Patterns, 41.
44 Ibid, 93-96.
Whether the cancellation of the air mail contracts was a reasonable measure is still a matter of debate. John B. Rae refers to the cancellation as “arbitrary” as the large aviation companies had done “nothing that could be taken to court.” Others have been less critical. Roger Bilstein and David D. Lee see the event as an institutional success, in that the 1934 Air Mail Act managed to break up the large conglomerates whose domination of the industry had prompted Roosevelt’s actions, but failed to create an alternative to the private carrying of airmail. The Act forbade the ownership of both aircraft manufacturers and airlines by the same company as airlines tended to favor the aircraft produced by their sister companies and other airlines found their orders for new aircraft being filled last. The reshuffling of the aviation industry resulted in less collusion within the industry but left in place a complex web of corporate ownership. The transportation arm of United became American Airlines and its manufacturing arm became the Aviation Manufacturing Corporation. North American was divided into two airlines, Transcontinental and Western Airlines (TWA) and Eastern Airlines. Its manufacturing wing was split into a number of different companies including Sikorsky, Chance Vought, Boeing and Pratt & Whitney.

By the time the NAR became an established feature of the aviation world in 1929, a cadre of leading aircraft manufacturers had already moved to the forefront and left smaller manufacturers in their wake. The period of the Great Depression was one that ostensibly saw the large aircraft conglomerates broken up into more competitive pieces. In reality, the incestuous nature of the industry simply became less overt. The most

---

45 Rae, Climb to Greatness, 53.
47 Rae, Climb to Greatness, 54.
lucrative business, air mail routes and military contracts, had already been divvied up by
the industry. As the 1930s progressed, the NAR continued to operate with the supposed
purpose of fostering innovation by independent aircraft designers that could be applied to
production aircraft. The NAR management never ceased to claim that the races were a
forum for the “fearless men who dare to prove or disprove the product of aeronautical
engineering genius.”

However, the period in which any backyard builders had a chance
to launch a successful aircraft manufacturer had already passed. The Great Depression
saw the disappearance of the capital necessary for a small aircraft manufacturer to grow
into a large one. As the industry collapsed, capital and engineering talent became
concentrated in those companies which benefited from military and air mail contracts.
The aviation industry of the 1930s was not amenable to the entrepreneur. An independent
aircraft builder, such as those who built aircraft for NAR races, could not compete on a
level playing field with the large aviation companies that had survived the Depression.

Air Racers as Businessmen

The early 1930s were the high water mark for the NAR, at the same time that the aviation
took its place as a mature industry. During this period a number of aircraft producers
established themselves as the leaders of their industry and federal government began to
take serious steps towards regulating these machines and their pilots. What had been a
young technology with opportunities available to anyone willing to embrace them;
aircraft were now a familiar machine. In 1929, the editor of The Nation’s Business, a
newsletter published by the U.S. Department of Commerce, spoke on behalf of American
industry, saying that he “welcomes aviation to transportation’s fourth estate. Rail, ship,

---

48 Clifford and Phil Henderson, “Aviation Marches On” in Official Program of the 1935 National Air
highway, air.”49 Despite aviation’s industrial stature, there were still aircraft producers
who were working to turn their humble operations into industrial powers in spite of the
overwhelming odds against them. These individuals were still working in the sheds and
barns that fostered the burgeoning aviation industry during the previous two decades.
Following the 1939 races, the last of the pre-World War Two races, high-performance
aircraft moved far outside the realm of the backyard tinkerer and the NAR could no
longer sustain its image as a laboratory for the aviation industry.

Though the builders of racing aircraft at the NAR bore little resemblance to well-
connected and well-financed industrial outfits like Boeing or Curtiss, they do bear a
resemblance to the type of businesses which had sprung up during aviation’s early years.
In both times, these operations began as small-scale operations that survived on the back
of the skills of their namesake pilot/entrepreneur. In most cases, a serendipitous business
relationship proved to be the necessary stepping stone to financial stability. The
following examples will illustrate how the racer builders of the NAR were similar to the
early entrepreneurs of aviation.

The origin stories of these early aviation companies bear a striking resemblance to
the origin stories of air racer builders. Take as one example the case of Donald Douglas,
who set up his own aviation business at the age of 28. After studying aeronautics while in
the military, Douglas consulted for a few aircraft manufacturers before going into
business for himself with $1,000 of savings and the rented out back room of a barber
shop in Long Beach, California. His first prototype, the Cloudster, was completed in
1921 but crashed on a trial flight and his sole investor walked away. Luckily for Douglas,

(March 1929): 43.
a college acquaintance was head of the Material Division of the Bureau of Aeronautics. This connection got him a contract to build three biplane torpedo bombers for the U.S. Navy. Harry Chandler, publisher of the *Los Angeles Times*, who Douglas had met during his consulting days, then connected him with local businessmen to sponsor his company.

Glenn Martin, another early aviation entrepreneur, used an abandoned Methodist church in Santa Ana California as his workshop in 1912. He aroused the public interest by crisscrossing California in a plane of his own design, performing dangerous maneuvers. In 1916, Martin merged with the first Wright Company, forming the Wright-Martin Aircraft Company. A year later, he left that company to start another eponymous aircraft manufacturing outfit. Through Frank Garbutt, Martin’s principal investor, Martin was introduced to Alva Bradley, a shipping mogul and owner of the Cleveland Indians baseball team. Bradley managed to get a group of Cleveland industrialists, including Charles E. Thompson, for whom the Thompson Trophy is named, interested in Martin’s business plans in 1917. The second Glenn L. Martin Company relocated to Cleveland and received an injection of $2.5 million in capital.

Of all the early aviation pioneers, the one most prone to reinvention is probably Allan Loughead. Loughead and his brother Malcolm started their aircraft business in 1912 out of a rented garage on the San Francisco waterfront. Max Mamlock, owner of the Alco Cab Company, added $1,200 to their $1,800 in capital and their first plane, a flying boar named the *Model G*, rolled out of the garage in June of 1913. Their short-lived charter service ended when Allan struck a levee and, not wanting to risk his investment or

---

50 Thompson’s involvement in the Glenn L. Martin Co. is mentioned in an undated press release for the 1933 National Air Races, Folder 72, The Clifford W. Henderson National Air Races Collection.

pay to have the plane repaired, Mamlock locked the *Model G* in a garage. The Lougheads tried unsuccessfully to pay off the aircraft by resorting to California’s funding of last resort, panning for gold. In 1915, Allan met the owner of a successful Alaskan bakery named Paul Mayer who bought out Mamlock and unlocked the *Model G*. After earning some money by giving short airplane rides to the public, the brothers bought Mayer’s shares. The Loughead Manufacturing Corporation then placed its money on a new design, the *F-1*. When it failed to get the Navy’s attention, the brothers converted it from a flying boat to a land plane and attempted to fly it cross-country as a publicity stunt. It crashed, taking the brothers’ business with it. That did not dissuade Allan, who changed his name and in 1926 and formed the Lockheed Aircraft Corporation, financed largely by investors who appreciated how the Loughead Aircraft Manufacturing Company had been a convenient place to park their sons for draft-exempt status. Lockheed was absorbed into the Detroit Aircraft Corporation and the new company, with Lockheed as its head, folded in 1929 when a military fighter prototype failed in the face of the Depression. When the company came out of receivership in 1932 as the Lockheed Corporation, Allan Lockheed could not raise sufficient capital to purchase it and it fell into the hands of another aviation businessman named Walter Gross who would carry the company to financial success.53

Lockheed, Martin and Douglas are all examples of small-scale entrepreneurs whose companies grew out of their own ambition and the fortuitous intervention of outside investors. The circumstances of these companies’ founders, toiling away in garages on a single aircraft, were akin to the circumstances of NAR racer builders, men

---

such as the Granville Brothers, Jimmy Weddell and Matty Laird. The histories of their companies reveal these similarities.

The best example of the self-taught air race engineer was Zantford “Granny” Granville the brains of the Granville Brothers Aircraft, an aircraft manufacturing operation based in abandoned dance hall near the airport of Springfield, Massachusetts. Zantford’s inclination towards the mechanical began at a very young age when he built working adding machines out of wooden gears and cigar boxes. He and his four brothers collaborated to build their first aircraft, the Gee Bee Model A. After a serendipitous encounter with the Tait brothers (four men who had made good money in the ice cream business) at an air meet in July of 1929, the Granville Brothers were given a check for $1,000 and told to put a “real engine” in their prototype. Nine Model As were constructed before the Depression hit and orders vanished. Their business in danger, the Granvilles had no choice but to keep their business afloat by winning air races. To this end they organized the Springfield Racing Association and constructed the Super Sportster with Lowell Bayles, who had been the personal pilot for the Taits, as the designated pilot. Bayles, flying shoeless to increase his sensitivity to the controls, took first place in the 1931 Thompson race. Shares in the racing venture immediately quadrupled in price to $400 apiece. Unfortunately for the Granville operation, their high performance aircraft quickly developed a deadly reputation. Within four years, all seven of Granvilles’ Gee Bee Model Z, the ultimate expression of Zantford’s ideal racing aircraft, had crashed and with most of their pilots killed.

54 Hull, A Season of Eagles, 142.
56 Gwynn-Jones, Farther and Faster, 164.
Another notable builder of air racers was Jimmy Weddell. His adolescence was spent in the hangars of southern Texas where he cobbled together makeshift aircraft whose alterations were meant to push the machine farther and faster than anything available on land or in the air. In a border town, there was always someone who had a use for a machine that left no tracks and could outrun any person on the ground. David T. Courtwright has argued that prohibition acted as a sort of indirect subsidy of the early aviation industry. Moving liquor into the U.S. could be a very profitable venture that called for aircraft that could fly fast enough to outrun the authorities while carrying as much cargo as possible. While Jimmy Weddell was never convicted of any crime related to smuggling, he did move up to New Orleans around the same time that U.S. Border Patrol got an Aviation Division in the early 1920s. Continuing to work on planes, Weddell struck up a business relationship with Louisiana lumber millionaire Harry Williams after teaching Williams how to fly. Impressed by Weddell, Williams invested $2 million in facilities and crewmen to assist Weddell in designing aircraft. At no point did Weddell ever receive formal training in aerodynamics, or even in the basic manual skills involved in airplane construction. Weddell’s skills came exclusively from a lifetime of hands-on experimentation. Weddell, like Zantford Granville, achieved what modest success he had through a combination of luck and a commitment to aviation.

Other builders of air racers struggled to prove themselves in the races and demonstrate their engineering skill. Emil “Matty” Laird was an office-boy who was captivated by flying and took up barnstorming. After a crash crippled him, he set to

57 Courtwright, Sky as Frontier, 202.
designing aircraft and at the age of 23, formed his own company. Laird produced some of the most notable aircraft of the NAR, especially the Super Solution, an aircraft he designed after 28 days of round-the-clock work. It would go on to win the first Bendix race in 1931.60 Another builder of racers, Keith Rider, set up his operation in Santa Monica, California, inside an abandoned casket factory. Rider conceived some of the best light plane racers that competed in the NAR, selling the airframes to other racers while never competing in the races himself. Rider eventually formed a partnership with the reluctant Story-Gawley Company in 1936, a propeller manufacturer to whom Rider was indebted. The partnership resulted in the Union Aircraft Company, a venture that intended to profit from the race winnings of the Rider R-6, christened the Eightball, a design he had been sketching for several years.61 It is unlikely that the venture ever turned a profit as the Eightball never placed higher than third. The builders of the aircraft that competed in the NAR shared a common desperation. The tenuous existence of their business, always a hair’s breadth away from a career-ending disaster and financial meltdown, raised the stakes on the performance of their aircraft.

The NAR racer builders, like the early aircraft manufacturers, were threatened by several potential disasters. Due to their small size and lack of human resources, dangers such as insolvency, shop accidents, or a tarnished reputation were enough to put some other these companies out of business. Weddell-Williams was an excellent example of this precarious existence. In June 1934, Weddell was killed while teaching a student pilot. With him, Weddell-Williams was left without its source of innovation and work on new aircraft designs came to a halt. Two years later in May of 1936, Harry Williams was

---

60 Gwynn-Jones, Farther and Faster, 158.
killed when he crashed his personal airplane, thus putting and end to Weddell-
Williams.62 A similarly untimely death spelled the end of Granville Brothers Aircraft. In
the same year as Weddell’s final flight, Zantford Granville, the company’s engineering
prodigy, was killed when he was personally delivering a new Gee Bee Sportster to a
customer in Texas.63 That crash effectively spelled the end for the business and no new
aircraft designs were produced by the company, which also suffered from the
increasingly negative reputation of Gee Bee aircraft with regards to safety. These deaths
demonstrate just how tenuous was the existence of these companies. Aviation can be a
dangerous profession, particularly for those sitting in the cockpit. Any flight might be
their last. In the case of these two aircraft companies, their existence depended on a
single talented individual. If that individual were to die, the company would die with him.
Without the human resources to replace a gifted designer, such small businesses were
unable to continue.

When the earlier group of successful aerial entrepreneurs is compared to the latter
group, several similarities can be found. Both generations started their companies in very
modest circumstances. The old Methodist church that sheltered Glenn Martin’s early
creations was not a well-equipped hanger, nor was the old dance hall where the Granville
Brothers built their Gee Bee Model A nearly twenty years later. In both generations,
bearers became profitable manufacturers thanks to fortuitous encounters with
sympathetic investors. The Granville Brothers were kept aloft by the Tait Brothers’ ice
cream business and Jimmy Weddell’s ideas for high performance aircraft would have

never left the drawing board without Harry William’s fortune in the timber industry. Similarly, the Wright Brothers relied on the profits from their bicycle shop to sustain their experimentation. Even with their successful prototype, the Wright Company would not be formed until $200,000 had been raised from among the Vanderbilts, Belmonts and Algers. Douglas needed the backing of a large group of Los Angeles investors while Lockheed needed backing from Mamlock, Mayer, and another group of investors. Donald M. Pattillo also points out that the large aircraft manufacturers of the 1930s benefited from very close ties to the military. The founders of these companies were of a similar age to leading military and government officials which eased cooperation between them. In some cases a very intimate connection existed, such as the marriage between Donald Douglas’s daughter Barbara to Bruce Arnold, son of General Henry “Hap” Arnold.

It is impossible to say whether Douglas and Lockheed would have still succeeded without these business connections. What can be said is that if any one of these individuals were removed from their equation of success, Douglas or Lockheed would have faced an almost insurmountable challenge in trying to move their business forward on their own. “Competition for the slender volume of business was intense, and a company’s future could easily turn on winning or losing a single contract.” So historian John B. Rae describes the business climate weathered by Douglas and Lockheed. The NAR racer builders who were still trying to perfect their prototypes had arrived too late

---

64 The timber industry also financed William Boeing, who began building aircraft in 1915 with the proceeds from his family's lumber mills in the Pacific Northwest. Even after cultivating contracts from the Navy and connections in Washington during the First World War, Boeing’s family business helped the company meet the payroll and even furnish the spruce needed to build his aircraft. Thus Boeing was able to be his own benefactor. T. M Sell, *Wings of Power: Boeing and the Politics of Growth in the Northwest* (Seattle: University of Washington Press, 2001), 12-15.
66 Pattillo, *Pushing the Envelope*, 118.
67 Rae, *Climb to Greatness*, 17.
to compete on a level playing field with the more established aircraft manufacturers of the 1930s. Their outfits, powered by little more than the ambition and experience of their founder, can be better characterized by the earlier model of aeronautical progress. Their motivation was as much a passion for their aircraft as it was for building a competitive business. Like the prototype aircraft built during the 1910s and 1920s, the performance of air racers was measured in terms of dramatic displays, not demonstrations of utility. Though they were at a great disadvantage by the 1930s, their businesses were on par with the sort of companies that had started ten to twenty years earlier.

**Finding a Reason to Race**

While the NAR’s pilots had a clear goal: to design profitable production aircraft, the NAR itself had trouble identifying its own purpose. The nomadic nature of first NAR events was mandated by the National Aeronautic Association (NAA), the American branch of the Fédération Aéronautique Internationale, the international body which officiated air speed records. Originally, the NAR were to change venues each year and no city could have the event again until 20 years after its first hosting. This was meant to encourage the investment in airport infrastructure that was needed to host the event. The 1920s were a decade that saw a great deal of municipal investment in airport facilities.68 Following World War I, the United States had only a few scattered Army and Post Office airfields, a fact that contributed to the post-WWI slump in the industry.69 Held in conjunction with the NAR was the annual meeting of the National Airport Executives Association. At their 1928 meeting, Henderson addressed the group by saying that despite the meeting’s small size, “it is the most basic and fundamental of all that will take

place during the period of the races, because the foundation of future airport construction, maintenance and operation are being formulated.” In 1929, Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, praised the NAR’s support of aeronautical infrastructure. “In recent years, the National Air Races have been the cause of either totally new construction of extensive improvements. These are permanent in character and place the community definitely and permanently on the “airway map” of the country.” Promotions for the 1930 race in Chicago boasted of the “model Custiss-Wright-Reynold airport” (today the Naval Air Station Glenview) which “incorporates the last word in facilities for modern airports, lessons learned from the best air terminals of this country and Europe.”

The transformation by the NAR of bare country fields into critical economic infrastructure follows the pattern laid out by Janet Bednarek’s study of airports as public spaces during the first half of the twentieth century. According to Bednarek, the airfield was originally considered to be a type of park. Leisure and recreation were its main purposes. However, by 1930 city planners had realized the incongruity of the airfield as both a park and a locus of economic activity. As the spectacle of everyday aviation waned and the mere sight of an aircraft did not rouse much attention, the airport was no longer a place to find some excitement on a Saturday afternoon. This allowed the airport to be transformed into a place of business. The early days of the NAR did make a

---

material contribution to the aeronautical world in the form of airports. However, the event was unable to contribute in such a way once the event became rooted in Cleveland.

Bednarek’s thesis sheds light on the irony of the original goal of the NAR. During the 1920s, the NAR sought to modernize aeronautical infrastructure by hosting a spectacle. Stunts and races were not in keeping with the practices of a respectable industry, but their use was a compromise that got the airports built. Thus the attendees were subjected to two contradictory messages. While the race program boasted that aviation had become a reliable and useful part of modern life, the aeronautical theatrics playing out over their heads implied danger and thrills. The races were attempting to resuscitate the enthusiasm that had previously drawn crowds to the verdant airfields to see a famous flyer pass through. The NAR sought to lure the public back to what had been a site of leisure. However, the park-like airfield had now been turned into an organized and regulated airport. Once the infrastructure, in the form of administrative buildings, hangars and parking lots, had been built, the races could no longer boast of having a transformative effect on their host city. The renovation of airfields in Cleveland, Chicago and Los Angeles into bustling economic hubs, the original mandate of the NAR, had been accomplished. Once the nation’s aeronautical infrastructure was in place, the NAR would have to articulate a new purpose for itself.

The NAR of 1930 would be the last year in which the improvement of airports was a stated purpose of the event. In 1931, Henderson convinced the N.A.A. to establish the Cleveland Municipal Airport (now Cleveland Hopkins International Airport) as the home of the races, where the cost of new infrastructure would not burden the balance books of that year’s races. A good example of one such expense was the grandstands,
which were built for the 1928 races at a cost of $30,000.\textsuperscript{74} In the 1931 race program Connecticut Senator Hiram Bingham, President of the NAA, asserted that the nomadic air races had proved successful as the numerous air meets and air shows that had sprung up around the U.S. were “events of considerable value in the fostering of aeronautic competition in their respective regions.” Major John Berry, manager of the Cleveland Municipal Airport, asserted that the airport was developing as a place of business, saying that in 1929, 40 passengers a day passed through it facilities and by 1931 that figure had risen to more than 230.\textsuperscript{75} By 1931, The NAR could no longer claim to be promoting aeronautical infrastructure. After this year, one of the founding purposes of the NAR was pushed to the side by the event’s management. By planting itself in Cleveland, the NAR left behind its origins as nomadic exhibition. This transformation is paralleled by the consolidation of the aviation industry in general which occurred at the same time. Both the NAR and the industry were cutting their ties to their adventurous and romantic origins in favor of becoming more structured, capital-intensive operations.

According to the management of the NAR, the central reason for the existence of the races was that the technical knowledge generated by the air racers could be applied to aviation in general. The event was not designed to enrich its organizers. The program of the 1934 races assures its readers that “all of the profits that accrue revert to a fund for the promotion of aviation in the Cleveland area. No profit can, under the circumstances,

\textsuperscript{74} Press Bulletin: “What the National Air Races Are”, May 21, 1928, Folder 1 The Clifford W. Henderson National Air Races Collection.

\textsuperscript{75} Program of the 1931 National Air Races. Senator Bingham’s article, “The National Air Races Enter a Second Decade of Progress” can be found on page 47 and Major Berry’s article, “An Air Terminal Extraordinary”, can be found on page 65, Folder 51, The Clifford W. Henderson National Air Races Collection.
accrue to members of the corporation formed to sponsor the project.”

The goal of technological progress was laid out in the article of incorporation of The National Air Races of Cleveland Inc., created “To organize, conduct and participate in aeronautical races, contest and other aeronautical activities and to advance the science and art of aeronautics.” The NAR’s management, led by Henderson, never passed up a chance to sing the praises of the event and claim that the races were a showcase of cutting-edge technology. “The National Air Race project was developed not as a dazzling spectacle, but rather as a serious competitive laboratory challenging aeronautical engineering genius, manufacturing ability and flying skill. It offers a broad panorama of aviation achievements and is a true barometer of subsequent development.”

The idea of the races as being a laboratory for the industry was repeated throughout the 1930s whenever Henderson tried to explain why the aviation industry needed the NAR. However, over the years his admonitions of the value of the races became vague. The official race program of 1934 featured an article by Henderson that listed no fewer than five different purposes of the event. These ranged from the pragmatic, “[that the races] will serve as a pleasant and profitable rendezvous for the pilots, aviation technicians and laymen public interested in this great industry” to the more ambiguous desire to, “serve as a convincing factor of enlightenment and inspiration to the American public.” By end of the decade, Henderson would no longer point to

---

77 Articles of Incorporation of the National Air Aces of Cleveland Inc., June 24, 1929, Folder 1, Air Foundation Records.
specific examples of aeronautical equipment that had been (supposedly) made better through the trials of the races. Instead he justified the races as being an expression of the progress of the aviation industry. He still tried his best to draw attention away from the theatrics of the event. For his article titled *A Drama of the Skies* for the 1937 race program, Henderson wrote that “Aviation is no longer a “game” but the expression of the dominant will of brave men and women who set about to prove the usefulness of aircraft as the ultimate factor in modern transportation – speed in commerce – speed in industry – speed in moving things and men.”

It is difficult to determine whether NAR racing aircraft could have found practical applications. During the 1930s the only reliable client was the US military. Ed Granville, one of the builders of the infamous Gee Bee racers, explained how desperate they were to win a reliable military contract and rise out of the mire of air racing. “In the years ’29 through ’31, if you had enough to eat, you were fortunate. We attempted to keep the organization together long enough so that, hopefully, we could get a military contract for a fighter or something like that.”

According to Pete Miller, an employee of the Granville Brothers, “Suppose the Gee Bee had succeeded in revolutionizing racing and had gone on to win and win. Was there something beyond that in our plans? There certainly was. In those days there was the military market. That was the only market.”

That no production aircraft resulted from the NAR was not for lack of effort on the part of the participants.

---

82 Hull, *A Season of Eagles*, 140.
In order to evaluate the practicality of NAR racing aircraft one needs to study the aircraft that competed and extrapolate how they would have been modified for other duties. Just such a technical study has been undertaken by Birch Matthews in *Race with the Wind*. In his work, Matthews applies his engineering background to evaluate the practicality of adapting the racing aircraft of the NAR to military purposes. He points out that unlike simple racing craft, military aircraft are encumbered with weapons, armor, radios and other equipment. This extra gear could add as much as 500lb. to the weight of an aircraft while also harming the machine’s aerodynamics. Such additions would also increase the wing load (the amount of weight distributed over the wing’s surface) and the needed take-off speed.\(^3\) According to Matthews, the only aircraft built specifically for the NAR which was considered by the military for conversion into a fighter aircraft was the Weddell-Williams *Model 44* which won the 1933 Bendix race. However, the alternations necessary to turn the aircraft into a fighter would have ruined the aircraft’s speed and maneuverability. According to the military’s assessment of the aircraft it would have been at best on par with, if not worse than, then-current fighter aircraft.\(^4\)

Weddell-Williams also submitted a bid for a fighter prototype design in 1933 which it based off its *Model 45*. The proposal was underpowered (to change the design later to a newly-available engines would have been unfair to the losing bidders) and only a scale mock-up was built. Matthews points out that larger aircraft companies such as the Curtiss-Wright Corporation were able to fund working prototypes for the competition and

---


\(^4\) The fighter aircraft to which Matthew’s compares the Model 44 is the P-26. The addition of military equipment to the Weddell-Williams increased wing loads by 9.5 pounds per square foot, a 38% increase to 34.3 pounds per square foot, much larger than the military’s P-26A with 20.2 pounds per square foot.
put them at the disposal of military officials. Such an expense was beyond the means of smaller outfits.85

A similar fate awaited a light-weight fighter proposal made by racer-builder Harry Crosby based on his *CR-4*, a plane that he designed in 1938. The military passed on his design since heavy-weight, rather than light-weight, fighters were preferred by military planners. Its all-wood construction was not seen as a boon since the US had not yet entered the war and there was not yet a shortage of metal.86 The material used in aircraft construction is very important, as demonstrated by Eric Schatzberg *Wings of Wood, Wings of Metal*. According to Schatzberg, the transition from wood to metal in aircraft construction during the “airframe revolution” of the 1930s was not simply a result of metal’s superior characteristics as a building material. Rather, metal aircraft replaced wooden ones on account of metal being seen as a “scientific” material and wood being a “traditional” material.

“The preference for “science” in technology over nonscience was another cultural prejudice, a central legitimating ideology for engineers in the early twentieth century. The techniques subsumed under the concept of science did offer practical advantages, but the legitimating, ideological functions of science often exceeded its instrumental role in engineering design.”87

Crosby’s fighter proposal was undermined by its disobedience to the “central legitimating ideology” that determined what made a proper fighter aircraft. The racing aircraft built for the NAR were primarily constructed of wood.88 In this way they could not have been considered on equal terms with the latest all-metal aircraft. While these aircraft proposals

---

85 Matthews, *Race with the Wind*, 108.
88 Matthews, *Race with the Wind*, 98.
demonstrate that the participants in the NAR made the effort to apply their aircraft to military ends in the mid-1930s, there is no evidence that they formed the basis of future aircraft design. Matthews comes to the conclusion that even though builders themselves gained a great deal of engineering experience from the construction of racing aircraft, “[t]here was, however, no material racing contribution or influence on WWII fighters in the United States.”

Unable to find a use for specialized racing aircraft, representatives of the aviation industry were more likely to see the races as a promotional opportunity rather than a fountainhead of innovation. The spectacle of the event did not endear the NAR to aircraft manufacturers as it characterized flight as a perilous adventure rather than a reliable form of transportation. The loudest voice in the industry at the time was certainly that of Clarence M. Young, Assistant Secretary of Commerce for Aeronautics. In 1929, just as the NAR were hitting their stride, Young made it known that “Civil flying is no longer a circus. The stunt element is passing out.” Young was expressing a desire to move from aviation’s romantic early model of progress to the more business-oriented definition of progress. Despite Henderson’s claims to the contrary, the aviation industry saw the NAR as a theater rather than as a laboratory. In the official program of the 1930 races Young wrote that there are two main purposes to the air races: “They afford the American aircraft industry…the opportunity to make a formal presentation to the public…of the accomplishments recorded since the last annual event” and that “They afford the public an opportunity to witness in picturesque almost theatrical form, the advancement of the

---

89 Ibid, 165.
science and industry of flying.”91 Nowhere in his article does Young mention any innovations coming out of the races. A history of the Cleveland Municipal Airport prepared in 1956 by Thompson Products, a major sponsor of the NAR, was unable to identify any specific contribution that the races made to the aviation industry. As a manufacturer of aeronautical parts, Thompson Products would have been well-situated to identify whatever particular innovation the NAR might have spawned. Instead the document reiterated the race management’s ambiguous claims by saying that the NAR would simply “dramatize the progress of aviation.”92 The progress to which the document refers is the second model of aeronautical progress since the original model of aeronautical progress was centered around the dramatic. Thompson Products was a large company focused on its bottom line so its work on aircraft parts was not motivated by a pursuit of the glamour of the skies. The NAR, which harkened back to a heroic vision of aeronautical progress, was a tightly controlled oasis of this older model of progress. The NAR tried to use the imagery and rhetoric of aviation’s early days to capture the public’s attention without risking tarnishing the industry’s newfound reputation for safety and reliability. The industry did not reiterate Henderson’s claims of the NAR being a source of technological innovation and it kept a safe distance between themselves and the racers.

If the NAR did not provide any material contribution to the development of new aircraft then how did the event find sponsors in the aviation industry? Here it is important to make the distinction between those companies that were related to the aviation industry and those who were directly involved in the manufacture of new aircraft.

92 Inter-Office letter from Bill Crowley to F.C. Crawford, April 23, 1956, Folder 96, Frederick C. Crawford Family Papers, 1726-1996 (1900-1994), Western Reserve Historical Society, Cleveland, Ohio.
Companies which manufactured aircraft components were not completely reliant on the aircraft business. Companies that sponsored the races such as Thompson Products, Cleveland Pneumatic Tool Company, Republic Steel and the Aluminum Company of America, produced goods that could be applied to a wide range of industrial uses. Of all the 113 members of NAR’s Board of Directors, none were completely reliant on the aviation industry. The only example of aircraft manufacturers lending their support to the NAR came in the form of ad space purchased in the event’s program. However, none of these ads promoted a connection between air racing and those companies’ aircraft. The 1937 program featured a full page ad from aero engine manufacturer Pratt & Whitney showing a formation of fighters flying above a billowing American flag. Beneath it proclaimed “To Pratt & Whitney comes the honor of powering the largest fleet of pursuit planes ever ordered by the U.S. Army Corps in peace time.” It appears as though they did not find any honor in powering the air racers that were flying overhead. Similarly, an ad in the same program displays Boeing’s new B-17 bomber proclaiming that these enormous aircraft were “Shaping the greater future of air transportation, these four-engined bombers of the United States Army Air Corps have pointed the way to remarkable developments in the field of commercial aviation.”

Aircraft manufacturers, as companies that were entirely reliant upon the good image of air travel, were always careful to keep the dangerous sport of air racing at an arms length. Other companies, who provided the nuts and bolts that made up those aircraft, could afford to associate with the more theatrical elements of the aviation world. They benefited from an increased interest

93 Board of Directors, National Air Races of Cleveland, Elected April 20, 1939, Folder 139, The Clifford W. Henderson National Air Races Collection.
in aviation as they profited from the construction of aircraft in general. A manufacturer might lose its reputation (and contracts) due to a fatal crash, but the parts maker will continue to produce the steel, tires and bearings regardless of who is building the aircraft or what its purpose might be.

One factor that severely limited the ability of the racers to innovate was that the prize money offered by the racers was insufficient to build new aircraft for each subsequent race. According to an estimate by one industry commentator, it would take at least $50,000 to produce a brand-new aircraft that was capable of beating the planes that had flown the 1939 Thompson race. This would account, he continues, for the continuing decrease in the number of new aircraft entering the Thompson, Bendix and Greve races. This commentator had not even bothered to stay at the 1939 races long enough to watch the Thompson race since everyone he knew could tell who would win the race before it even started.  

His argument holds up when the amounts of prize money being offered to Thompson Trophy winners are compared from year to year. The first Thompson race had a purse of $10,000, half of which went to the first place finisher, the rest split between second and third place finishers. For the next seven years, the total prize money doubled, and the race winner’s prize doubled. However, over time the money not won by the first place finisher was spread out so that by 1937, even the seventh place finisher would win $250. The races for 1938 and 1939 followed this same trend where the first place winner received the lion’s share of the prize money, while the rest was divided amongst the rest of the racers. The 1939 race called for the prize money to be split among all twelve

---

entrants, though the winner still received $16,000, nearly half the total purse.96 While the amount of prize money increased over the course of the decade, only the first place winner ever walked away with a substantial amount of money. In order to cover the $50,000 price tag of a new racing aircraft, a pilot would have to have won several races, something that would have become less and less likely as a machine wears out and newer, faster aircraft enter the competition. According to Steve Wittman, who competed in several NAR events during the 1930s, air racing was a source of income, but an insufficient one at that. “I was drawn to air racing because I like to eat. The prize money wasn’t great, but was enough to make it seem worthwhile.”97

If the prize money was meant to encourage the development of aircraft for next year’s races, then it only gave the means to do so to the winning pilot. This relationship between prize money offered and aircraft participation was known by the NAR’s organizers. Builders made it clear that they would not put money into aircraft without a chance to recoup their investment. As Clifford Henderson emphasized in a letter to Louis Greve, “Several sensational new racing planes are in prospect for this year. However, the pilots and constructors are very properly waiting to hear definite plans for this year’s National Air Races before going forward with construction.”98

It should be noted, however, that the NAR management was not simply being stingy. The event was plagued by difficulty in balancing its financial books. To this end the company that ran the NAR, The National Air Races of Cleveland, Inc. transformed itself into a non-profit entity, National Air Races of Cleveland, in 1937. Though this new

---

96 Untitled table comparing the Purses, Distances and Cities of the Thompson Trophy Race, 1939, Folder 139, The Clifford W. Henderson National Air Races Collection.
97 Hull, A Season of Eagles, 102.
entity faced a decreased tax burden, it still assumed the debts of the old company.\footnote{Legal Agreement, March 2, 1937, Folder 1, Air Foundation Records.}

Without any profit from operations, the funding for trophy prizes came entirely from corporate donations and underwriting. A 1945 audit of the National Air Races of Cleveland Inc. for the period from 1929 to 1944 shows a net loss of $75,653.49.\footnote{Special Financial Report: National Air Races Cleveland as of June 30, 1944 with Supplemental Schedules as of February 12, 1945, Schedule III, 1945, Folder 4, Air Foundation Records. The audit shows that for just the period during which the races were held, from June 1 to September 30, the NAR made an average yearly net income of $35,951.34. Income taxes, depreciation costs of buildings and administrative expenses outside of that period ate into profits.}

While the lack of funds means that the NAR management cannot be blamed for withholding funding from the pilots and builders, those competitors also cannot be blamed for not putting their hard-earned money into aircraft that were unlikely to recoup the investment. The money given out by the NAR was insufficient to maintain a field of that would return each year with the latest improvements to their aircraft, let alone new aircraft entirely.

According to \textit{Aero Digest}, a monthly trade magazine, “No matter how much a pilot makes in the game he usually puts it all back in a faster airplane, is then completely broke until the next air races, when he starts all over again to win enough to get a still faster airplane and be twice as broke again until the following year, and so on and so on.”\footnote{Cy Caldwell, “Three Days in a Daze at the Air Races” \textit{Aero Digest}, 33, no. 4 (October 1938): 47.}

While the prizes offered to racing pilots by the NAR increased from year to year, the amounts were insufficient to finance a group of new aircraft for each subsequent race.

Clearly, the NAR had a great amount of difficulty in trying to bring new aircraft to each year’s show. Despite the NAR’s inability to point to any specific technological achievement, the assertion that the event contributed to aeronautical progress remained firmly rooted in the minds of its organizers. At the funeral following the death of Doug Davis in the 1934 Thompson race, Louis W. Greve gave a eulogy that glorified Davis as
a hero of science who gave his life towards the goal of progress. “It’s true that we DO try
to entertain the public, but in so doing we are trying to sell the most important thing man
can possess – faith. If the public were not inclined to BELIVE the men of science we
bring together, there would be no progress in aviation.”102 Another eulogy for a victim of
the NAR shares a similar appeal to the idea of progress. Louise Thaden, winner of the
1929 Women’s Air Derby said of Marvel Crosson who died in a crash during the race,
“We women pilots were blazing a new trail. Each pioneering effort must bow to death.
There was never been nor will there ever be progress without sacrifice of human life.”103
A similar display of the progressive mindset was demonstrated by the opening
ceremonies of the 1933 NAR which featured a “pageant of transportation progress from
the Greek runner to the 300 mile an hour airplane” running from downtown Los Angeles
to the airport.104

It is quite odd that figures such as Louis W. Greve and Louise Thaden would use
such language. Greve, as president of a company which manufactured aircraft
components, and Thaden, whose job as a salesperson was to demonstrate the safety of
aircraft, had strong interests in the newly-matured aircraft industry. However, when
presented with the task of explaining the death of a pilot, the new definition of
aeronautical progress did a poor job of rationalizing such an event. They certainly could
not have said that these pilots died in order to improve the cost effectiveness of the latest
aircraft. Instead they revived the earlier definition of the aeronautical progress because it
could explain such tragedies in spiritual terms. The deaths which occurred during the

102 Greve’s Eulogy to Doug Davis, Sept. 4, 1934, Folder 82, The Clifford W. Henderson National Air
Races Collection.
104 Press Release for the 1933 National Air Races, 1933, Folder 72, The Clifford W. Henderson National
Air Races Collection.
NAR demonstrate that races tried to have the best of both worlds when it came to the defining aeronautical progress. In good times the NAR pointed to safety records and practicality of aircraft. In the face of tragedy their work became “blazing a new trail.”

One method by which the NAR could demonstrate the technological maturity of the aircraft in its races in an entertaining manner was to juxtapose them beside older aircraft. The 1930 NAR held in Chicago promised that “Quaint pusher biplanes, flimsy monoplanes and ancient ‘motored box kites’ will be flown and exhibited” at the event.105 “Models of quaint old planes which excited Chicagoans by their speed and maneuverability during the first national air meet here in 1911, are being constructed to once more take to air, as evidence of the progress in airplane and motor design in nineteen years.”106 These aircraft were described in one radio advertisement as being “queer looking crates now, but back in 1911 when the first air meet was held here, they were about the best thing that flew.”107 The NAR was constantly promising to display the latest in aviation technology to its attendees. The description of the old aircraft demonstrates that the new aircraft proved their worth not only through greater speed, altitude and distance, but also through the aesthetics of the machine itself. The resemblance of these “flimsy” aircraft to “ancient motored box kites” was underscored so as to lend air of cutting edge futurism to the racing aircraft. Indeed, the early pusher biplanes described in the event program bore little resemblance to the Travel Air Model R “Mystery Ship”, the sleek, streamlined low-wing monoplane that captured the 1930

Thompson Trophy. The presence of old aircraft at the NAR encouraged the audience to consider racing aircraft as highly sophisticated machines. This comparison focused on performance, rather than practical application, as a measure of aviation’s development. Such a criterion was naturally preferred by the NAR, whose signature events placed speed above all other factors in choosing the superior machine.

The NAR as Entertainment

The NAR, despite its assertions that it was a forum of technological progress, was unable to clearly demonstrate its material contribution to aviation. Rather than technical innovation, the NAR was at its heart a form of entertainment. This entertainment took many different forms as the event tried to cater to as wide an audience as possible. Some attendees were eager to see an aircraft fall out of the sky, others paid close attention to military displays and others simply wished to see an exciting race. The NAR competed with the latest cinematic depictions of aviation, trying to live up to the thrilling depiction of aviation on the silver screen. However, unlike aviation films of that time, the NAR maintained a close relationship with the military, whose displays were a regular feature of the NAR. The importance entertainment to the NAR can be demonstrated with a comparison of the event with automobile racing, which had begun in the 1910s. In both cases, racing put more emphasis on danger than on the development of new technology. At its core, the NAR was a spectacle. Despite its vocal assertions of it being a source of technological development, most of the attractions at the NAR did not support this message. All they did was put on a great show.

The most pernicious accusation made against the NAR was that they were merely spectacles of death and carnage. This criticism was not without some merit. When pilot
Doug Davis crashed in the 1934 Thompson race, the crowd in the grandstand bowed their heads upon the news of his death. Meanwhile, another mob raced to the scene of the accident in pursuit of souvenirs. Arriving before the police, these people set upon the aircraft, tearing off bits of metal and fabric. Even Davis’s body was not respected. It was reported that one woman tore a button of the corpse’s overalls and sold it on the spot for five dollars. When the police did arrive, the crowd refused to disperse. Those civilians who tried to help the police keep the crowd at bay were met with fists and insults. “Why should you have all the fun?” shouted one disappointed souvenir hunter.108 Such gruesome displays drew some of the most forceful condemnation issued by the management of the races. The public, it asserted, was there to see planes fly, not to see them crash. “The doubters see in the audience attending chiefly a mob of ghoulish-minded yokels out for thrills from the hair-raising nature of events by which they will be impressed with the Dangers of flying rather than its genuine offerings of Safety, Convenience and Speed.”109 Condemnation of the NAR for these gruesome displays would be unfair because such morbid fascinations were far from exclusive to air race attendees. Harold Schechter’s Savage Pastimes, a history of violent entertainment, asserts that people have always been attracted to gruesome scenes of death, gore, and crime. Some may have criticized the NAR for such displays, but according to Schechter, people have been collecting morbid keepsakes for centuries. He states that “contrary to the hysterical claims of such alarmists, there is absolutely nothing new about the public’s prurient interest in sensational crime, nor even about the desire of some people to own

---

108 Benjamin Cohn, “Thousands Claw at Wreck and Body for Souvenirs,” Cleveland Plain Dealer, September 4, 1934.
109 Clifford Henderson, “The Value of the National Air Races”, Aero Digest 17, no. 1 (July 1930): 70.
Though the behavior of some NAR attendees illustrates a grisly side to the races, such behavior was acknowledged and strongly condemned by the NAR management.

It is difficult to say what people were expecting when they attended the races. It can be said that some, but certainly not all, came with the hope to see some unfortunate pilot fall from the sky. However, those with a perverse fascination with airplane crashes were not necessarily skeptics of aviation. Conversely, those who expressed repulsion towards the crowds who picked over crashed aircraft were not immune to the same sense of awe and danger that aviation embodied. Michael Sherry’s history of American air power points out that the ever-present danger of airplane crashes was an integral part of aviation’s mystique. “In truth,” he write, “the disasters were as essential a part of aviation’s image as the records set and inventions tested. They contributed to a sense of individual daring, of machine frailty, and of man’s resourcefulness that made aviation a benign attraction, a fusion of frontier spirit and machine-age discipline.” While the NAR sought to encourage enthusiasm for aviation, it was unable to marginalize the inherent danger of flying.

As is demonstrated by the reaction to crashes and the ignoble behavior of some of the attendees, progress and perfection of the aircraft were not the sole draw of the NAR. In addition to the air races there were a large collection of performers who were brought to the NAR simply as entertainment. The sideshow acts in the NAR were not meant to be attractions on par with the races. However, they were numerous and varied. These events

shed all pretensions of being vehicles for technological development and simply focused on being entertaining. The 1930 NAR promised that, “Comedy stunts by small low powered airplanes with dummy motors and ridiculous supplementary equipment will supply a comic relief for the serious program of speed events.”112 In many cases the side shows abandoned association with aviation altogether. This was the case with acts such as “Jimmie Lynch and his Death Dodgers” which featured “Jumping Jimmie” Daniels and “Suicide Abe” McEntyre making motorcycle jumps over things, through things and into one another.113

The inclusion of such acts follows trends in the American entertainment industry in the 1920s and 1930s. According to Dominick A. Pisano, this decade saw a shift in the medium of aviation as entertainment from the live performances of barnstormers to the action-adventure films of Hollywood. This included films such as Wings (1927), which was the first film to win the Academy Award for Best Picture, and Hell’s Angels (1930). “Improved film technology and the advent of aerial cameras also helped improve an intimacy that live production could not approximate, and, by the end of the 1930s, Hollywood was almost exclusively the main purveyor of aviation as entertainment.”114 If a live aerial show such as the NAR was to keep the public attention then it would have to appear as fast, as thrilling and as dangerous as it possibly could. In fact, the NAR made direct comparisons between its events and what one could see on film.

“Put together a hundred or so of the fastest planes in the world, a similar number of the most daring pilots, 3,000 feet of grandstand, packed with

100,000 thrill-hungry spectators, set this combination down inside the biggest commercial airport in the country and you have one of those super-colossal-tremendous things they are always talking about in the movies.”115

This excerpt from a 1937 press release shows what sort of experience the NAR hoped its attendees would feel. The event also tried to incorporate itself into the business of aviation films by bringing in stars of the latest aeronautical action adventure.116 The NAR also allowed the use of race footage by MGM, specifically for Test Pilot (1938) featuring Clark Gable.117 The NAR was promising the public live demonstrations of the sorts of thrills they had come to expect from glamorous movies.

Though the cinema managed to capture the glamour and danger of World War I aviation, its message was different from that of the NAR. Movies like Wings, Hell’s Angels and another 1930 film, Dawn Patrol, tackle the conflict and the ruinous effect it had on the soldiers who participated. According to Robert Eberwein’s history of military films, such movies “reflect the disillusionment of the 1920s and 1930s about the Great War, its terrible destruction, and its failure to resolve the conflicts that caused it.”118 This contrasts sharply with the depictions of war and its consequences at the NAR. The perennial military demonstrations lent the entire event a militaristic tone. An example of the sort of demonstration that was held can be seen in a press release for the 1933 NAR: “A heavy bombardment squadron from March Field will let loose a barrage of bombs

116 Examples of this includes the appearance of Jack Holt at the 1930 races. He had starred in Flight, and was about to start shooting for his next film, Dirigible. International Press Release, 1930, Folder 27, The Clifford W. Henderson National Air Races Collection.
The appearance of movie stars would continue into the late 1930s with the appearance of Wallace Beery, star of Hell Divers (1931) and West Point of the Air (1935), as an honorary referee at the 1939 NAR. Press Release, August 14, 1939, Folder 139, The Clifford W. Henderson National Air Races Collection.
which at all appearances entirely destroys a set representing a village on the airport. Pursuit and fighting planes of the Army, Navy and Marine Corps will dive in and out to protect the heavy bombers against fire from the ground.\footnote{Press Release, 1933, Folder 72, The Clifford W. Henderson National Air Races Collection.} One cannot help but raise an eyebrow at their choice to bomb a simulated “village” rather than a simulated “base,” “station” or “garrison.” Clearly, the military felt comfortable putting on its destructive power for show at the NAR. Such demonstrations show that while both the NAR and cinemas focused on the drama of aviation, the tone and message differed.

The relationship between the NAR and the military was demonstrated in other formats as well. Advertisements in the event’s official program often proclaimed of a company’s talent in constructing weapons. Boeing’s ad in the 1939 program proudly displayed its new B-17 Flying Fortress bombers. United Aircraft Corporation’s full-page ad boasted that “At every base of the Army Air Corps…on the catapults and the carrier decks of the United States Navy…airplanes, engines or propellers built by the three divisions of United Aircraft are faithfully performing their duties, day after day, year after year.” Meanwhile Grumman’s ad proclaims that “Every Navy Carrier has Its Grumman Fighting Squadron” and is accompanied by large pictures of each of the US Navy’s aircraft carriers.\footnote{Official Program: 1939 National Air Races, 1939, Folder 5, TRW Inc. Records.} This enthusiasm for the military was not simply a result of the buildup to World War II. Military participation had been a constant of the NAR.

While the NAR welcomed military participation with open arms, the NAR’s management was more likely to describe the NAR as a sporting event. In order to enliven their event and bolster its glamour, management repeatedly made direct comparisons between air racing and other types of racing, automobile racing in particular. A press
release for the 1931 races proclaimed that “Since their inception eleven years ago, the National Air Races have become as much an institution to aeronautics as the Kentucky Derbies are to horses, the Indianapolis Speedway races to automobiles and the Gold Cup races to motor boats.”\textsuperscript{121} This assertion was maintained throughout the 1930s, as promotional material for the 1937 race demonstrates. “Just as the 500 mile Indianapolis Speedway event is the proving round for the automotive industry, just as the Kentucky Derby furthers the breeding of fine horses, so do the National Air Races give the aviation industry a great laboratory where the conceptions of the drafting board are given their practical tests.”\textsuperscript{122} These comparisons were not merely rhetorical. The NAR incorporated elements of these other sports into its own events. A good example of such borrowing is the adoption of the “race horse start” for the 1930 races onward. Previously, races had been simple time trials. The “race horse start” meant that all competitors would take off at the same time and from the same line, thus making the event much more dramatic. Another borrowed feature were the air pits, analogous to automobile racing’s pits or horse racing’s paddocks, where aircraft were prepped for their races under the gaze of onlookers. The NAR encouraged aircraft owners to adopt a distinctive color for their aircraft and its ground crew which would “thereby heighten for the air pageant an atmosphere of rivalry.”\textsuperscript{123} It would be unfair to consider the NAR to have been usurping the reputation of these other sports. It is not uncommon for organizations to model themselves on successful predecessors. As Robert C. Post has pointed out, the National Hot Rod Association modeled itself on the Golden Gloves Association, an amateur

\textsuperscript{121} Press Release, 1931, Folder 46, The Clifford W. Henderson National Air Races Collection.
\textsuperscript{122} Promotional Material, 1937, Folder 115, The Clifford W. Henderson National Air Races Collection.
boxing organization.124 By implementing these features, the NAR was attempting to associate itself with more traditional sporting events. These measures demonstrate the importance placed on the events being entertaining. If the NAR was meant to be about technological development, it should not have mattered that the ground crew’s jackets had matching colors.

The NAR also asserted that it was another example of how racing can contribute to the technological development. The NAR “constitute[s] the most valuable proving ground of the aviation industry. Just as in the automobile field, radical designs applied to racing cars eventually appear on production models.”125 While the development of the automobile spawned a cadre of automotive racing enthusiasts, they received scorn from the automobile industry just as racing pilots received scorn from the aviation industry. During the 1900s, when automakers were trying to convince consumers that their products were safe, automobile racing identified itself with the danger and drama of this new technology. According to James J. Flink’s history of the automobile, “Track races [including the Indianapolis 500] were viewed by the public as little more than exciting spectacles, involving as they did specialized monstrosities designed for maximum speed rather than practical road vehicles.”126 This was the same criticism faced by the NAR in general and the unrestricted Thompson Trophy Race in particular. As a promotional pamphlet for the Thompson race stated in its defense, “The freak “bullet plane, all motor and no wings,” built for a brief, spectacular dash, has no place in this closed course circuit. To test practical maneuverability there is no substitute for the bank, the turn of

the pylon, the straightaway sprint and the limited take off and landing restrictions of the high speed closed course.”

Similarly, automobile manufacturers did not appreciate the blood spilled by reckless racing drivers, especially on road races which were set on the same roads that were to be used by the average motorist. “Road races were considered to be dangerous exhibitions, unwarranted because their relation to the development of a reliable family car.”

This same concern would be expressed by those in the aviation industry during the 1930s. Racing effectively captured the public’s attention but it undermined the message of safety and reliability that the aviation industry was trying to convey. As an Aero Digest contributor, pointed out, “Instead of trying to sell this service and to notify the public that we have it for sale, we deliberately, every year, put it in the back-ground and proceed to demonstrate that aviation is, as the public suspects, merely a thrilling display of daring and personal achievement.” There was a similarity between the NAR and early automobile racing, although this was not a comparison that NAR organizers would have appreciated. Both technologies had a cadre of reckless racing enthusiasts who presented a challenge to an industry trying to market their products as safe and reliable. Criticism of these racers by manufacturers was not particular to air racing. Like the NAR, automobile racing was exciting entertainment first and foremost. It primary goal was to entertain the crowds while the development of more reliable and safer automobiles was an afterthought.

Women and the National Air Races

128 Flink, The Automobile Age, 31.
While the NAR proclaimed itself to be a very forward-thinking in terms of technological innovation, its treatment of female pilots was far from revolutionary. The event did not challenge the prevailing definition of women’s roles in the world of aviation. The NAR, like the aviation industry in general, saw female pilots as a means of serving the publicity needs of the aviation industry rather than as a means of encouraging more women to take up the profession. Women who flew in NAR events made no claims to making aircraft safer or more reliable. Their participation rested on the novelty of seeing a woman fly an aircraft. While the NAR did include women as participants in sex-segregated events, female participation in air racing remained eclipsed by higher-profile, all-male events.

The subject of female participation in the development of aviation has already received a great deal of attention. Dean Jaros’s _Heroes Without Legacy_ is a thorough examination of the trials faced by early female pilots. She asserts that such women were able to participate in the world of aviation due to two factors. The first of these was the progressive movement of that era which encouraged women to assert themselves as equals to men. The second was aviation’s “strong performance dimension” where the spectacle element of flight meant that women had a place on stage since “even in traditional male-dominated culture, there has usually been a place for female performers.” He compares these early pilots to actresses who could make a great deal of money despite their disadvantaged social position.130 According to Jaros, women were able to carve out a niche for themselves because the airplane had not yet been assimilated into mainstream society and its strict gender hierarchy. Thus the emergence of a new technology brings with it opportunities for underprivileged members of society to enjoy a

temporary equality. “At least until older, established elites recover from their surprise, it may be possible for newcomers to get in on the ground floor.”

This scenario was not unique to aircraft as something quite similar had occurred with the automobile. According to Georgine Clarson’s history of women motorists, early American women motorists used early automobiles as a means by which to express their suffragist beliefs. Automakers were even willing to back such efforts as the use of cars by women would have created a whole new market. Women were able to showcase their skill as motorists with highly-publicized cross-country journeys. These women abandoned imagery of traditional mothers and instead saw themselves as “technologically sophisticated women of the future at the wheel of their own destinies.” However, this use of the automobile would not last. Clarson points to the transition of the automobile from a wealthy amusement to a commonplace tool as the point where women were forced from the driver’s seat.

During the 1930s, the relationship between women and aircraft was altered in the same manner as that between women and automobiles. In both cases, the adoption of new technology came with a new definition of its operator, one that was unquestionably male. According to Corn, by the late 1920s aircraft manufacturers had realized that the image of pilots as superhuman, macho birdmen did a disservice to their industry. The industry had presented an image of aviation as being outside of the practical realm for the average person. They came to see women as a solution to this image problem. By putting a woman in the cockpit of their aircraft, manufacturers hoped to prove that their machines

were simple, practical, and above all else, safe. This resulted in a small niche in the aviation world for female pilots to find work as sales associates. This was the case with a number of female participants in the NAR. Women such as Louise Thaden, who worked for Travel Air and later Beechcraft Aircraft Corporation and, most notably, Amelia Earhart, who worked for the Lockheed Aircraft Corporation, worked as sales associates. They all participated in women-only events and were entered under the aegis of the company for which they worked. However, Corn points out that while these women were allowed to fly, their efforts precluded them from ever expanding the role of women in aviation. To do this would be to question the “lady flier” stereotype of women as sub-par pilots who were racked by weak nerves and poor stamina. Female pilots were compelled to fly in feminine, comfortable-looking clothes, often applying makeup immediately upon landing, so as to lend their work an air of effortlessness. Female aviators of the 1930s were thus faced with a paradox. They could use aircraft as a tool to pursue a greater role for women in society much like early female motorists had done. Conversely, they could put the interests of the aviation industry first and accept what little opportunity they had. Female pilots of this time largely chose the latter. According to Corn, “To the extent that their feminism conflicted with their airmindedness, the women fliers invariably subordinated the cause of equality for women to the cause of aviation.”

The role of women in the NAR fits into the overall trend of women in the aviation industry in general. The novelty factor of a female pilots could attract attention because it

---

134 Official lists of entrants included two columns, “pilot” and “entrant” in most cases male pilots’ names appeared under both headings. Female pilots were more likely to have an aircraft manufacturer listed as their “entrant.”
135 Corn, *The Winged Gospel*, 77, 82.
defied the stereo of pilots being exclusively male. No acrobatics or extreme speeds were necessary to make female pilots compelling to spectators. Female participation in the NAR illustrates that even in an event that was ostensibly a free forum of innovation and technical skills, women were still limited in the manner in which they could pursue their passion for aviation. Nevertheless, some token race events were held for women. The most notable of these was the 1929 Women’s Air Derby, a transcontinental race from Santa Monica to Cleveland that was nicknamed the Powder Puff Derby. The event was much more than a straightforward race since the participants were expected to participate in social events at each of the designated stopovers. According to Jaros, coverage of the race was characterized by “background and human interest” rather than “considerations of actual speed and technical accomplishment.”

Upon winning the race, Louis Thaden said that the social events, particularly mobs of autograph seekers, had been more tiring than the actual flying. “The actual flying was not bad at all. It was work and a hard grind at times, but what really tired us out was the round of receptions, the banquets, the speeches and the entertainments.” The women who flew in this well-publicized race did prove the capabilities of women as pilots. However, coverage of the whole event was colored by a sense of novelty. The trials endured by these women were not the typical of the sort of flying to which women were relegated. The Powder Puff Derby was an entertaining spectacle because it showed women taking a challenge much greater than what was expected of women. The event underscored the status quo for women pilots rather than challenging it.

137 Jaros, Heroes Without Legacy, 42.
Subsequent years would not provide any opportunities to redefine the role of women in the world of aviation. 1930 would mark the beginning of the Cleveland Pneumatic Aerol Trophy Race, a women’s transcontinental derby that became a closed course race the next year. The Aerol Trophy Race was essentially an underpowered, female version of the Thompson Trophy Race. NAR management claimed that they were striking a blow for gender equality by creating an event that “puts the participation of women on a par with that of men.”

This might have been true had the prize attached to the Aerol Trophy winner ever been as large as that for the Thompson Trophy. In 1932, the winner of the all-male Thompson Trophy went home with $7500 while the winner of the all-women Aerol Trophy went home with only $3750. Female pilots faced another double standard in the qualifications necessary to participate. The rules for the 1935 NAR stated that “Pilots entered in free-for-all races must furnish satisfactory proof that they have flown high-speed racing airplanes or their equivalent.” However, the very next rule specified that women racing in closed course events had to have at least 25 hours of experience in the specific plane they were going to race. Therefore, men were trusted to apply their general experience as pilots to whatever machine they might happen to be flying while women had to have experience on a specific plane.

In truth, the Aerol Trophy Race follows the trend of the aviation industry in the 1930s that used women to improve the public’s perception of aviation. Promotional material for the event made this clear. “Now, it is a universal opinion that woman’s

140 1932 Official Results Table, 1932, Folder 45, The Clifford W. Henderson National Air Races Collection.
increased participation in the field of aeronautics will mean much to hastening the acceptance of aviation as the modern means of transportation and commerce than even the most sanguine can realize.”142 There was no mention of the women’s race fostering technological innovations as was the case with the Thompson race. Other women’s events were formulated as restricted events that were more about public relations than technological progress or sport. The 1930 NAR featured two women’s derbies for aircraft with different sized engines. The course for the lesser-powered aircraft was altered so that it would pass through the U.S. South, an area whose women it was believed had not yet expressed any interest in aviation. “Only a few Southern Belles are represented among the more than two hundred licensed women pilots in the United States, and it is felt that routing the girl derby through Dixie will do much to arouse the interest of Southern girls. In flying it is felt that such prospective aviatrixes will be most receptive to the idea of flying planes of the primary type, whereas the larger, high speed planes might awe them as aircraft difficult to master.”143 Female participation in the NAR remained a side show for the male-dominated contests. At no point were they ever considered on par with the acts of male pilots and by 1934 the Aerol Trophy Race had been abandoned. From then on women’s events were limited to sporadic races that were not held on a regular basis.144 Women’s participation in the NAR is consistent with the trend in the industry of that time of women being relegated to underpowered and less dangerous events. Such danger was unnecessary as the simple fact of the pilots being women was sufficient to turn their flying into a spectacle. However, for women to challenge this arrangement

144 A good example of such a race was the Earhart Memorial Trophy Race held during the 1937 NAR.
would have put at risk what little portion of the aviation industry they could then occupy. Rather than challenging the status quo of gender relations, female pilots, including those in the NAR, put the best interests of the aeronautical community before all else.

According to Mary Haizlip, who flew in the NAR, the participants were fellow pilots first and foremost. “It certainly wasn’t a question of being masculine or feminine. It was just an inherent love of flight.”

Conclusion

The love of flight is closely related to the love of speed. Speed is a very powerful sensation and displays of speed are displays of power. According to Lewis Mumford, “Speed itself, in any operation, is a function of effective power and in turn becomes one of the chief means of ostentatiously displaying it.” The NAR sought to show the public the sort of power held by aviation world by placing particular focusing on aerial speed. It did this by not only hosting displays of military power and aerial stunting, but also by trying to maintain a field of high-performance racing aircraft. The NAR continually asserted that its participants were making practical contributions to the aviation industry, despite the inability of racer builders to achieve a fraction of the success of the industry’s main actors. Innovation had passed out of the hands of small scale, independent builders, and leaving them as entertainment for a cheering, sometimes ghoulishly-minded, throng.

The National Air Races that thrilled crowds during the 1930s were a relic of a bygone era. The difficulty encountered by the races in maintaining a coherent and believable statement of purpose demonstrates the changes which had occurred in the

---


aviation world. The event tried its best to maintain a sanctuary for independent aircraft builders in an environment that was increasingly dominated by large firms. However, the NAR was, at its heart, entertainment first and more serious industrial business second. While it aspired to emulate the sort of technical innovation of air racing during the 1920s, or automobile racing in the 1910s, the NAR remained essentially a spectacle. Its events, from the headlining Thompson Trophy Race to the most modest of the all-female competitions, needed to attract crowds before they needed to attract engineering talent. While it cannot be denied that the races produced some immensely fascinating aircraft, their single-minded focus on speed precluded them from ever finding a practical purpose in the military or commercial realms. The NAR is an example of what is left for the independent inventor or mechanic once a technology has developed beyond its humble origins. Passionate for a particular technology yet unable to break into the world of big business, NAR participants could only satisfy their love for flying by becoming entertainers. Their zeal for the air was as strong as any. The tragedy of their story lies in their having just missed out on the adventure of aviation’s pioneering days. The thrilling show which they put on for the crowd, rather than the sophistication of their aircraft, was the defining characteristic of the National Air Races.
Bibliography

Manuscript Collections

Frederick C. Crawford Family Papers, 1726-1996 (1900-1994), Western Reserve Historical Society, Cleveland, Ohio.
The Clifford W. Henderson National Air Races Collection, 1928-1978, Western Reserve Historical Society, Cleveland, Ohio.

Newspapers and Trade Journals

*Cleveland Plain Dealer*, (Cleveland, OH: Plain Dealer Pub. Co., 1842 - Present)
*Flight*, (London: Royal Aero Club (Great Britain), and Royal Aero Club of the United Kingdom, 1919 – 1939)

Published Primary Sources

Loening, Grover Cleveland. *Our Wings Grow Faster: In These Personal Episodes of a Lifetime in Aviation May Be Found an Historical and Pictorial Record Showing How We so Quickly Stepped into This Air Age - and Through What Kinds of Difficulties and Developments We Had to Pass to Get There*. Garden City, N. Y: Doubleday, Doran & Co., Inc, 1935.

Published Secondary Sources


