

References

Notes

1: The Flight

- 4 Record-setting categories: fai.org website.
- 4-5 Van Cotthem and other distance records: fai.org website, last accessed on February 20, 2016; the site now only lists current records.
- 5 *The Spirit of St. Louis* ... certified in the “experimental” category: Charles Lindbergh, *The Spirit of St. Louis* (New York: Scribner, 2003 edition), p. 112.
he wasn’t even certain his flight would be eligible for the twenty-five thousand dollars:
- 6 *Ibid.*, pp. 15-16, 101-102, 169.
- 6 The day he departed: *ibid.*, pp. 171-172.
- 6 carried only minimal survival gear: *ibid.*, pp. 97-98, 516.
- 6 To guard against running out of fuel: *ibid.*, p. 100, 105.
- 7 Lindbergh figured all he had to do was keep flying east: *ibid.*, pp. 103-104.
- 9 Experimental amateur-built term: Title 14, Code of Federal Regulations (14 CFR) Part 21, Section 21.191 on “Experimental Certificates”—definition is found in paragraph 21.191(g).
- Percentage of homebuilt aircraft relative to the overall fleet in the United States: One can download the current FAA Registry at http://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/.
Searching the database on June 6, 2016, I found 318,510 entries for all aircraft, with 153,799 individually owned aircraft (as opposed to corporate/commercial ownership), and 28,349 aircraft registered as experimental amateur-built aircraft. This is not a perfect way to determine percentages—some amateur-built and personal aircraft are registered as corporations for liability or partnership purposes—but it provides a good estimate.
- 10 Current aviation world records and homebuilt aircraft: fai.org website, accessed on February 20, 2016.
- 10 “perfection is finally attained”: Antoine de Saint-Exupéry, *Wind, Sand and Stars* translated by Lewis Galantière (New York: Harcourt, 1939), p. 42.
- 11 “Birthplace of Aviation” term: <http://www.birthplaceofaviation.com/>
- 11 Wright had no formal engineering education: Howard S. Wolko (editor), *The Wright Flyer: An Engineering Perspective*, (Washington, DC: Smithsonian Institution Press, 1987), p. 10.
- 12 The Wrights researched aerodynamics: *ibid.*, p. 7.
- 12 Solving the lateral control problem: *ibid.*, p. 10.
- 12 1902 glider demonstrations: *ibid.*, p. 12.

- 12 Engine for the *Wright Flyer*: *ibid.*, p. 86.
- 12-13 Propellers for the *Wright Flyer*: *ibid.*, p. 13.
- 13 Bicycle chains to drive propellers: *ibid.*, pp. 80-81.
- 13 Wingspan of Boeing 787: <http://boeing.mediaroom.com/2007-05-15-Wings-for-Boeing-787-Dreamliner-Delivered-to-Everett>, accessed October 22, 2016.
- 13 Wright Brothers first flight: Howard S. Wolko (editor), *The Wright Flyer: An Engineering Perspective*, (Washington, DC: Smithsonian Institution Press, 1987), p. 15.
- 13 Congress gave flying Army officers a 35 percent increase in pay: Falk Harmel, "A History of Army Aviation," *Popular Aviation*, (December 1928): 17-27.
- 13 Blériot early designs: Tom D. Crouch, *Blériot XI: The Story of a Classic Aircraft*, (Washington, DC: Smithsonian Institution Press, 1982), pp. 10-25.
- 14 *The Daily Mail* £1,000 prize: "The New Daily Mail prizes," *Flight*, (April 5, 1931): 393.
- 14-15 Blériot's English Channel Crossing: "Blériot Tells of His Flight," *New York Times*, (July 26, 1909) on nytimes.com.
- 15 FAI established the Louis Blériot medal: <http://www.fai.org/awards/fai-general-awards>.
- 15 In 1910, *Popular Mechanics* began offering the Demoiselle: *Popular Mechanics* ran a ¼-page ad for the Demoiselle on page 12 of the December 1910 issue.
- 15 Allan and Malcolm founded their eponymous aircraft company: <http://lockheedmartin.com/us/100years.html>.
- 15 Airplanes still had a long way to go: Tom D. Crouch, *Blériot XI: The Story of a Classic Aircraft*, (Washington, DC: Smithsonian Institution Press, 1982), pp. 69-76, describes common problems with early airplanes.
- 16 Engine technology struggled to catch up: Herschel Smith, *A History of Aircraft Piston Engines*, (Manhattan, KS: Sunflower University Press, 1986), p. 4.
- 16 Prewar engines were a maintenance nightmare: *ibid.*, p. 8.
- 16 World War I ushered in many improvements: *ibid.*, p. 143.
- 16 Personal flying was the best way to reduce the cost: "Amateur versus professional pilots," *Aviation* 18, no.13(March 30, 1925), p. 341.

2: The Pilot's Rock

- 18 Wildly optimistic estimates: Robert S. Clary, "Go up young man – go up," *Popular Aviation*, (October 1928): 39-48.
- 18 A commercial pilot's license cost about \$1,000: This was actually just the cost for a "Limited Commercial" license. An advertisement for the Bennett Flying School in the September 1, 1928 *Aviation*, p. 774, offered Limited Commercial training for \$750 (60 hours of flying) and Transport training for \$2,000 (200 hours of flying).
- 18 Expense of flying: "Manufacturer's specifications of American commercial airplanes and seaplanes as compiled by *Aviation*," *Aviation*, (Sep 1, 1928): 723-724 provides a table with a good overview of how much a typical aircraft cost in the late 1920s.

18 Jenny still cost less than \$1,000: A classified ad on page 34 of the December 1924
Popular Mechanics offered used Jenny's for \$800.

OX-5 engine: "Manufacturer's specifications of American commercial airplanes and
18 seaplanes as compiled by *Aviation*," *Aviation*, (Sep 1, 1928): 723-724 lists 18 aircraft
using OX-5 engines. Factory prices provided by the manufacturers (only 12 listed
prices) range from \$2,150 to \$2,950. All eighteen aircraft had three seats.

18 August Valentine's glider: August J. Valentine, "Sling-shooting our home-made glider,"
Popular Aviation, (September, 1930): 17.

19 Heath had no formal education. Wayne Foster, "Forgotten Pioneer," *Flying* (July 1945):
56-57, 92, 94, 96.

19 Early Heath aircraft/flights: "The Edward Heath Memorial completed," *Popular
Aviation*, (December, 1931): 86.

20 Heath's business sold new and used airplane parts: Ad for Heath Airplane Company,
Popular Aviation, (March, 1928): 79.

20 Heath used his aircraft for vacations: Otto Klein, "Airports and airways: Chicago, Ill.,"
Aviation 21, no. 26 (December 27, 1926): 1090.

20 Clare Linstedt, chief designer: "The Heath sport plane," *Aviation*, 21, no. 8 (August 23,
1926): 321-322.

20 A single-seat airplane called the Parasol: "The National Air Races: The event of the
year," *Popular Aviation*, (November, 1927): 7-10.

20 Heath's five-foot-one, 105-pound frame: Jack Cox, "Rod Gehrlein's Heath Baby
Bullet," *Sport Aviation* (December 1995): 69-75.

20 Differences in wing mounting position: George Collinge, "The Case for Small Low-
Wing Monoplanes," *Sport Aviation*, (January, 1958): 9-10, 31 and John W. Thorp,
"Practical Design Approach for Light Planes," *Sport Aviation*, (March, 1960): 12-14, 30
offer a good discussion on the pros and cons of different mounting positions.

21 Early designers thought thin airfoils had less drag: John D. Anderson, Jr., *The Airplane:
A History of its Technology*, (American Institute of Aeronautics and Astronautics,
Reston, Virginia, 2002): 141-151 has an excellent discussion on the evolution of airfoils.

22 Heath and National Air Races in 1927: "The National Air Races: The event of the
year," *Popular Aviation*, (November 1927): 7-10.

22 Placed as high as third: "On-to-St. Louis Race won by C. S. Jones," *Aviation*, (October
15, 1923): 476-477.

22 In 1925, he failed to get off the ground: "The events of the New York Air Races,"
Aviation, 19, no. 16 (October 19, 1925): 533-543.

22 Fortunes changed in 1926: "The National Air Races," *Aviation*, 21, no. 12 (September
20, 1926): 500.

22-23 1927 race: "Official results of the National Air Races," *Aviation*, 23, no. 14 (October 3,
1927): 81-86. Also Owen S. Billman, "Jack Irwin—Lightplane Pioneer," *Sport
Aviation*, (February 1977): 57-65.

23 Heath took out a three-quarter page ad: *Popular Aviation*, (November 1927): 57.

- 26-27 Although very early aircraft fuselages were made from wood: Leslie Long, "Is the Wooden Airplane Doomed?" *Popular Aviation*, (October, 1939): 38-39, 80 and John W. Thorp, "Practical Design Approach for Light Planes," *Sport Aviation*, (March, 1960): 12-14, 30 offer a good discussion on wood versus metal.
- 27 Make two side struts: E. B. Heath, "How to Build the Heath Parasol: Part IV, The Bolted Fuselage," *Popular Aviation*, (April 1931): 53.
- 28 Bolt the propeller to the engine: E. B. Heath, "How to Build the Heath Parasol: Part VII, Completing the Heath Parasol," *Popular Aviation*, (July 1931): 60.
- 28 Stanley Rowan's Parasol: "Progress Made in L.A.A. Drive," *Popular Aviation*, (April 1933): 234 and Stanley Rowan, "He Builds 'em In Bedrooms," *Popular Aviation*, (September 1933): 186, 209.
- 28 Performance of the Heath Parasol: Bernie Rice and George Watt, "The Herreman Heath," *Sport Aviation*, (August 1966): 13-14.
- 28-29 Cost of the Heath Parasol: Heath had many ads with his prices in *Popular Aviation* magazine. For an example ad, see page 51 of the May, 1931 *Popular Aviation*.
- 29 Builders and pilots demanded more speed: "An Airy Chat with the Editor," *Popular Aviation*, (April 1931): 8 and Wayne Foster, "Forgotten Pioneer," *Flying* (July 1945): 56-57, 92, 94, 96.
- 29 His marriage now in tatters: "'Flivver Plane' Maker Dies in Chicago Crash," *New York Times*, (February 2, 1931).
- 29-30 Heath's death was widely reported in national newspapers. For an example, see "'Flivver Plane' Maker Dies in Chicago Crash," *New York Times*, (February 2, 1931). Wayne Foster, "Forgotten Pioneer," *Flying* (July 1945): 56-57, 92, 94, 96 has additional details about the accident.
- 29-30 Heath's mother continued to run the company: Dick Derrick, "BH Man Restoring Wreckage of Early 'Parasol' Airplane," *Benton Harbor News Palladium* (May 19, 1973): 3, 19.

3: Death Knell

- 33 Congress chartered multiple studies: For example, see "President's Air Board Reports," *Aviation*, (December 11, 1925): 834-837 and "The Lampert Committee Report," *Aviation* (December 28, 1925): 906-909.
- 33 Regulation debate in the 1920s: "The Danger of Official Regulation," *Aviation*, (October 5, 1925): 421, "Inspection of Commercial Aircraft," *Aviation*, (November 2, 1925): 619 and an editorial in *Aviation* (February 8, 1926):199, as well as multiple letters to the editor in *Aviation* starting with the January 18, 1926 issue and continuing for 3 months.
- 33 Air Commerce Act of 1926: *The Statutes at Large of the United States of America from December, 1925, to March, 1927, Vol. XLIV, Part 2*, Chapter 344: 568-576, available at <https://www.loc.gov/law/help/statutes-at-large/69th-congress/c69.pdf>.

34 Strength testing of airplanes: Tom D. Crouch, *Blériot XI: The Story of a Classic Aircraft*, (Washington, DC: Smithsonian Institution Press, 1982), p. 73 discusses testing with sand bags. “States Seek to Limit Experimental Aircraft,” *Popular Aviation*, (July 1931): 40, 60 mentions loading and drop tests.

34 Stress analysis and unlicensed aircraft: “Question and Answer Department,” *Popular Aviation*, (January, 1932): 33-34 quotes paragraph (B), Section 2, Air Commerce Regulations Bulletin 27.

34 A small percentage of aircraft accidents was due to structural failures: Major Falk Harmel, “Experimental Crack-Ups,” *Popular Aviation*, (July, 1931): 13-14, 58 reported that only 6.8% of accidents between Jan 1, 1927 and Jun 30, 1930 were attributed to structural failure.

34 July 1, 1929 crashes: “Two Passengers of Airplane Die,” *North Adams Transcript*, North Adams, Massachusetts, (July 1, 1929): 1. Three other articles about licensed pilots and aircraft are also on the front page.

34-35 Crates fit only for the junkyard: “Gypsy Flyers Outlawed,” *Popular Aviation*, (January, 1928): 40 and “That Matter of Home-Building,” *Popular Aviation*, (August, 1928): 35.

35 Some questioned the need for homebuilt aircraft: “Editorial,” *Aviation*, (August 9, 1929): 241.

35 Conspiracy-minded aviators: “Howl Department,” *Popular Aviation*, (September, 1932): 155, 192.

35 Legislatures decided to ground unlicensed aircraft: “States Seek to Limit Experimental Aircraft,” *Popular Aviation*, (July, 1931): 40, 60.

35 Air Commerce Act: *Air Commerce Regulations*, Department of Commerce, Aeronautics Branch, Information Bulletin No. 7, effective as amended June 1, 1928, Section 15, page 12.

35-36 Leslie Long’s background: Loren H. Milliman, “Worldwide Industry Rises from Modest Oregon Farm,” *The Oregonian*, (July 31, 1938): Section 6, p. 4; “First Airplane Built in County is Success; Les Long, Cornelius Radio Man, Designer,” *Hillsboro Argus*, (October 17, 1929): 1 and “Leslie L. Long Dies Suddenly,” *Hillsboro Argus*, (January 25, 1945): Section 2, p. 8.

36 Long’s advocacy for homebuilding is well documented in multiple *Popular Aviation* articles from the 1930s; e.g., see Leslie Long, “A Few Remarks on Amateur Flying,” *Popular Aviation*, (December, 1932): 360, 388 where Long makes his remarks about protecting the lives of young men. See also Leslie Long, “Laws that Affect Amateur Aviation,” *Popular Aviation* (June, 1932): 362, 392 for a discussion on the “Oregon System.”

36 Howl Department examples and getting around the rules: “What Our Readers are Building,” *Popular Aviation*, (January, 1933): 33-35 describes the “hedge-hopper.” “An Airy Chat with the Editor,” *Popular Aviation*, (December, 1932): 346, 384 describes the ranch pilot. “What Our Readers are Building,” *Popular Aviation*, (May, 1934): 315 describes two “ice boats: — airplanes without wings on skis.”

36-37 Ross Peters arrest: “An Airy Chat,” *Popular Aviation* (January, 1934): 6 and “Into the Jail-House He Must Go!” *Popular Aviation*, (January, 1934): 24.

- 37 Minnesota and Iowa arrested pilots: “An Airy Chat with the Editor,” *Popular Aviation*, (April, 1935): 235 discusses the Minnesota arrests. “Say! Do They Treat ‘em Rough in Iowa!” *Popular Aviation*, (February, 1936): 106, 134 discusses the Iowa arrests.
- 37 Massachusetts ban on model airplanes: “An Airy Chat with the Editor,” *Popular Aviation*, (October, 1937): 14, 67.
- 37 The Corben Junior Ace: O. G. Corben, “Building the Corben Super-Ace,” *Popular Aviation*, (February, 1935): 102-104.
- 37 It was rumored that the magazine deliberately mismatched names and airplanes: This was a comment made to me by Dennis Parks, former EAA Library/Archives Director during my research at the Museum of Flight in Seattle, September 3, 2015.
- 37 Amateur Aircraft League: Leslie Long, “L.A.A Becomes the A.A.L.,” *Popular Aviation*, (April, 1934): 234.
- 37 Oregon flirted with changing its liberal aviation laws: Leslie Long, “Progress of the Amateur Aircraft League,” *Popular Aviation*, (June, 1935): 364.
- 38 By 1935 other states had outlawed unlicensed aircraft: *ibid.*. See also “An Airy Chat with the Editor,” *Popular Aviation*, (April, 1935): 235.
- 38 1938 Civil Aeronautics Act: U.S. Department of Commerce, *Civil Air Regulations As Amended to May 31, 1938*, Section 01.12 on Experimental Aircraft Certificates.
- 38 Introduction of the Aeronca C-2: “The Detroit Show,” *Popular Aviation*, (May, 1930): 398, 414 and Alan Abel, Drina Welch Abel, and Paul Matt, *Aeronca’s Golden Age*. (Brawley, CA: Wind Canyon Books, 2001).
- 38 Hammond-Standard Y-2: “An Airy Chat with the Editor,” *Popular Aviation*, (February, 1934): 117 first mentioned this airplane. “More Upheaval Concerning the \$700 Plane,” *Popular Aviation*, (November, 1935): 288 and “Production Started on Hammond Y’s,” *Popular Aviation*, (February, 1937): 42 provided updates.
- 38-39 Introduction of the Taylor E-2 Cub and problems with the early A-40 engines: Devon Francis, *Mr. Piper and His Cubs*, (Ames: Iowa State University Press, 1973).
- 39 Introduction of the Piper J-3 Cub: *ibid.* and William D. Strohmeier, “The Lightplane Goes to War,” *Flying and Popular Aviation*, (November, 1941): 30-32, 102. Also see various Piper advertisements in *Popular Aviation*; e.g., (March, 1939): 69, (July, 1939): 61, (September, 1939): 61, and (December, 1939): 59. Francis says that the J-2 evolved into the J-3, also called the Cub Sport, in late 1937. Piper ads in 1939 referred to a series of aircraft called “Cubs,” including the “Cub Sport (Continental 40 H.P. engine) \$1395; Cub Sport (choice of 50 H.P. engines) from \$1499.” Other models included the Cub Trainer, the Cub Coupe, the Cub Seaplane, and the Cub Skiplane.
- 39 Cessna 172 production number: Russ Niles, “Cessna to Offer Diesel Skyhawk,” https://www.avweb.com/news/aopa/AOPAExpo2007_Cessna_172SSkyhawk_DieselEngine_196294-1.html, last accessed January 22, 2018.
- 39 More than four thousand Cubs still exist: Searching on the terms “Piper” and “J-3” in the FAA’s Aircraft Registry returns more than 4,000 registrations for J-3 variants; http://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/

4: Sprouting Wings

40 Freddie Lund: Fred Lund as told to Legette Blythe, “Freddy Lund—Exhibition Thriller), *Popular Aviation* (December 1931): 95-96, 126. Lund died before the article was published. Lund’s name is spelled both “Freddie” and “Freddy” in historical documents, including “Freddie” in the text of this article and “Freddy” in the title.

40 Zeppelin model: J. B. Roberts, “How to Build a Flying Model Zeppelin,” *Popular Aviation*, (August, 1930): 27-28.

40 Intoxicating advertisements: For example, see the ad in *Popular Aviation* (November, 1936): 7.

41 Portage Airport history: Michael J. Goc, *Forward in Flight: The History of Aviation in Wisconsin*, Friendship, WI: New Past Press, Inc., 1998. The airport was apparently not very active initially, as it was not listed in Aeronautical Bureau directories for the 1930s; it’s likely the airport was a private field during the 1930s and only opened for public use in 1940 or 1941. The airport was originally referred to as Mael Field and the layout of the airport is the same today as in the 1930s.

47 The military had trained more than three hundred thousand pilots: Phillips J. Peck, “When Johnny Comes Flying Home,” *Flying*, (December, 1944): 30-31.

47 Jobs projected for aviation post-WWII: *ibid.*

47 Five hundred thousand aircraft seemed within reach: “Want a Warplane?” *Flying*, (December, 1944): 71 reported that “More than 12,000 second-hand aircraft are now on sale at 20-odd bases throughout the United States.” An Aeronca *Grasshopper* could be had for \$375; purchasers were given an NC number for the airplane and a ferry permit so they could fly the aircraft home; there were on their own after that to get a CAA license.

49 Military shopping spree: Editors Fred Hamlin, Lynn Black, and Eleanor Thayer. *1954 Aircraft Year Book*, Official Publication of the Aircraft Industries Association, Inc. (Washington DC: Lincoln Press, Inc., 1955) lists, with the exception of 1,219 military aircraft produced in 1928, less than 1,000 (and in many cases less than 500) military aircraft produced after WWI until 1936, when the numbers began to rise: 1936: 1,141; 1937: 949; 1938: 1,800; 1939: 2,195; 1940: 6,019; 1941: 19,433. No civilian aircraft were produced during the years 1942-1944; military production peaked at 96,318 in 1944.

49 University programs trained pilots: Virginia Withington, “The CPTP . . .?” *Flying and Popular Aviation*, (March, 1941): 31, 58, 72. CPTP stood for the Civilian Pilot Training Program, which launched in 1939.

49 Unlicensed aircraft had dwindled to fewer than 500: “License Summary,” *Flying and Popular Aviation*, (August, 1940): 91.

49-50 Amendment requiring all aircraft to be certified and private pilots to prove citizenship and loyalty: Technically, Amendment 135, CAR, Oct 10, 1941 effective Dec 1, 1941 had already required airworthiness certificates of all aircraft, but *Order No. 3*, Administrator of Civil Aeronautics, Dec 7, 1941 (effective Dec 8, 1941); 6 F.R. 6403 also provided CAA inspectors with the authority to seize any aircraft that violated the rules. In addition, the rule provided that “all pilot certificates except those held by pilots

employed as such by scheduled air carriers are suspended.” See also “No Private Flying Pending Probe of Citizenship and Loyalty,” *Bluefield Daily Telegraph*, (December 9, 1941): 1.

50 Within two years had entered the fight again: Letter from Leslie Long to Joseph Yutz of Pottsville, PA, dated 9-6-44, from the Leslie Long biography file at the EAA Museum Library.

50 Long’s death: “Leslie L. Long Dies Suddenly,” *Hillsboro Argus*, (January 25, 1945): Section 2, p. 8.

50 Safety Regulation Release No. 194: Bob Burbick, “Experimental Aircraft Certificates,” *Sport Aviation*, (July, 1986): 60-62.

50 George Bogardus, the American Airmen’s Association and his first trip to Washington: “Who Got the First NX Certificate?” *Sport Aviation*, (February, 1956): 12 and George Hardie, Jr., “The Long Road Back . . . The American Airmen’s Association,” *Sport Aviation*, (June, 1986): 35-37.

51 Safety Regulation Release No. 236: Bob Burbick, “Experimental Aircraft Certificates,” *Sport Aviation*, (July, 1986): 60-62.

51 George Bogardus’ second trip to Washington: George Hardie, Jr., “Arrives in New York in His Home-Made Airplane,” *The New York Times*, (August 25, 1947) and George Hardie, Jr., “The Long Road Back . . . The American Airmen’s Association,” *Sport Aviation*, (June, 1986): 35-37.

52 Definition of a homebuilt aircraft: *Civil Aeronautics Manual 1*, CAR 1.73-1(c) Experimental Certificates, Amateur-Built Aircraft.

5: Foundations

53 1947 National Air Races: “Have You Heard?” *Flying*, (March, 1947): 8.

56-57 New Ulm breakfast flight: “20 Planes Make Visit to City,” *New Ulm Daily Journal*, (October 12, 1950): 1, 6.

57 Arnold Ebnetter’s patents: “Balloon suspension system,” US2728540A, granted December 27, 1955 and “Balloon rip panel,” US2823876A, granted February 18, 1958.

58 Larry Walters lawn chair balloon: “Flying in a Lawn Chair at 16,000 Feet,” *Santa Ana Orange County Register*, (July 3, 1982): A1, A18.

59 “...another of those hours . . .,” Antoine de Saint-Exupéry, *Wind, Sand and Stars* translated by Lewis Galantière (New York: Harcourt, 1939), p. 14.

61 Ensuing media hullabaloo: A clipping service hired by the Navy found several dozen articles throughout the U.S. related to the incident. For example, “Mystery Man Descends from Sky,” *Minneapolis Tribune* (March 28, 1952) and “Wisconsin Balloon Reported Used in Secret Cosmic Test,” *Washington Post*, (March 28, 1952).

62 Hand-typed cards announcing first EAA meeting: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 260.

- 62 Paul Poberezny had also looked to the skies: *ibid.*, p. 18.
- 62 “Lucky Lindy made it!” *ibid.*, p. 24.
- 62 Paul began making daily treks: *ibid.*, p. 50.
- 62 He found a prize behind the Midwest maintenance hangar: *ibid.*, p.51.
- 62 A less-than-stellar student: *ibid.*, p. 124.
- 62-63 Poberezny’s glider construction and first flight: *ibid.*, pp. 57-61.
- 63 Consulted his 1931 *Flying and Glider Manual*: “A Rare Shot,” *Sport Aviation*, (January, 1958): 15.
- 63 Joined the Milwaukee Flight Club: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 72.
- 63 Took lessons in the Porterfield and soloed in May 1939: *ibid.*, pp. 72-74.
- 63-64 Waukesha Airport background: Warren S. O’Brien, *The History of Aviation in Waukesha County*, (Waukesha, WI: self-published), 1957, pp.38, 67.
- 64 Media coverage of October 20, 1936 accident: “Pilot is Killed in Crash Here,” *Waukesha Daily Freeman*, (October 20, 1936): 1 and “Airplane Crashes Follow Lax Rules in State,” *Milwaukee Journal*, (October 25, 1936): 1.
- 64 Sheriff agreed to station a deputy at the airport: “One Airplane Leaves Field at Waukesha,” *Milwaukee Journal*, (October 26, 1936): 1.
- 64 Outlaw Field: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 122. I could not independently verify the existence of Outlaw Field, but the airplanes that left Waukesha had to go somewhere, so something named “Outlaw Field” would have been highly probable; just about any farmer’s field would have worked for the homebuilt aircraft. After researching old airfields in Wisconsin, I found an airport still in existence, Capitol Drive Airport, that may have been the original Outlaw Field, but I was unable to conclusively identify it as such.
- 64-65 *Munson Special*: *ibid.*, pp. 112-113, 117.
- 65 Three days later, the license loss meant little: *ibid.*, pp. 131-132.
- 65 Poberezny returned to Wisconsin: *ibid.*, pp. 191, 194.
- 65 Now married to Audrey ... took a full-time job with the Wisconsin Air National Guard: *ibid.*, p. 209.
- 65 Clip-wing aircraft: *ibid.*, p. 215.
- 65 Clipping a wing requires a lot more: Budd Davisson, “The Original Bargain Basement Akrobat,” originally published in *Air Progress* (January, 1980); available at <http://www.airbum.com/pireps/PirepClippedCub.html>, accessed September 20, 2015.
- 66 With a cigar often clamped in his mouth: “The Baby Ace,” *Experimenter*, (February, 1955): 3 shows a photo of Poberezny with a cigar and the caption “Paul Poberezny with his usual cigar ...”
- 66 The name *Little Poop Deck*: *ibid.*, p. 208.
- 66 CAA certification of *Little Poop Deck*: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 224.

- 66 Airshow for the 1950 Labor Day Weekend: *ibid.*, p. 218.
- 66 Convinced Poberezny he should start a club dedicated to homebuilding: *ibid.*, p. 260.
- 66 Poberezny sent to Korea: *ibid.*, p. 236.
- 66 The person left in charge lacked vision: *ibid.*, p. 258.
- 66 Article advocating kit-built aircraft: Charles J. Burton, "Let's Give Aviation Back to the People," *Flying* (August, 1952): 34, 64.
- 66-67 Flood of letters, including Poberezny: *Flying* published three letters to the editor clamoring for kits in the December, 1952 issue and five more letters advocating kits in the February, 1953 issue. Poberezny's letter was published in April, 1953, along with five other letters from people interested in kits.
- 67 Bill Lotzer offered a classroom: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 260 and Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational), p. 9.
- 67 First EAA meeting: *ibid.*, p. 262 (Parnall and Poberezny) and p. 9 (Cole). There is some disagreement as to the number of people who actually arrived at the first meeting. Parnall and Poberezny say "more than thirty" while Cole says "thirty-six." I also saw other numbers during my research (for example, the first *Experimenter* says 31), but all were in the low-to-mid-thirties. I decided to use the higher number because the discrepancy may simply be due to how different people counted attendance; e.g., Paul Poberezny may not have counted Lotzer, himself, Audrey and a few others as attendees, whereas Cole was more likely to count everyone in the room.
- 67 Audrey typed up her husband's scribbled notes: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 264-265. Also see *Experimenter*, (February, 1953).
- 67-68 Second EAA meeting and advocacy for Neal Loving: Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational): p. 9-10.
- 68 Steve Wittman background: "Steve and Paula Wittman" in "Hotline from Headquarters," *Sport Aviation*, (June, 1995): 5-7. Wittman's speed record was established on September 19, 1937.
- 68 Wittman's talk at early EAA meeting: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 267-268.
- 68 Tony Maugeri was another popular speaker: *ibid.*, p. 267.
- 68-69 *Little Audrey* construction: *ibid.*, p. 270-271.
- 69 First EAA fly-in: *ibid.*, p. 271-272, Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational): pp. 15-21, and "21 Experimental Aircraft Attend First Fly-In," *Experimenter*, (October, 1953): 1-2.
- 69 George Bogardus never joined the EAA: email conversation with Richard Van Grunsven, November 27, 2015 and December 11, 2015.
- 69 Restoration of *Little Gee Bee*: Ken Scott, "VanGrunsvens, Chapter 105 Volunteers Restore *Little Gee Bee*," *Sport Aviation*, (January, 2007): 78-85
- 70 Ray Stits background and the Sky Baby: Leo J. Kuhn, "Our Friend Ray Stits," *Experimenter*, (April, 1955): 4-6.

- 70 Riverside/Flabob Airport background: <http://www.flabobairport.org/home/history/>, accessed September 27, 2015; detailed material has since been removed. Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational), pp. 29-33 has additional information on Flabob Airport and Ray Stits.
- 70 Chapter formation allowed: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), pp. 275-276.
- 70 By the end of 1954, the EAA had seven chapters: Paul Poberezny, “The Homebuilders Corner,” *Experimenter*, (December, 1954): 2. Page 3 of the same issue lists only six chapters with thirteen in formation; the discrepancy is possibly due to different authors writing at slightly different times.
- 71 *Mechanix Illustrated* readers wrote 1,758 letters to EAA in one month: : Paul Poberezny, “The Homebuilders Corner,” *Experimenter*, (April, 1954): 2.
- 71 Homebuilders would soon be cranking out creative designs: Leo J. Kohn, “CAA Official Addresses EAA Members,” *Experimenter*, (April, 1954): 1, 5.
- 71-72 Second EAA fly-in: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 286.
- 72 The newer generation of homebuilders was more mature: “EAA Recommendations to CAA,” *Experimenter*, (February, 1956): 3-4 and Bob Whittier, “Popular Flying in the U.S.A, Part I”, *Sport Aviation*, (January, 1959): 14, 26 (reprint from *Popular Flying* magazine).
- 72-73 State of homebuilding regarding plans and kits: “EAA Recommendations to CAA,” *Experimenter*, (February, 1956): 3-4. Although the term “kit” was used widely in magazines such as *Popular Aviation* and *Experimenter*, this was the first reference I found that discussed the possibility of a kit with pre-cut and pre-fabricated parts.
- 73 Scherer approached Poberezny: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 281.
- 73 The remains of the Corben Sport Plane Company: *ibid.*, p. 274.
- 73 Redesign of the Corben Ace: *ibid.*, p. 281.
- 73-75 Corben Ace construction and first flight: *ibid.*, 298 and “The Baby Ace,” *Experimenter*, (February, 1955): 3-4.
- 75 Additional articles about EAA and homebuilding: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 294.
- 75 Poberezny flew around the country to recruit: *ibid.*, p. 269.

6: The Dream Begins

- 79 Elton Bocage accident: “Jet Pilot Killed in Gulf Mishap,” *Victoria Advocate*, (January 11, 1955): 1. Bocage was one of a handful of African-American fighter pilots in the 1950s.

- 80 George Welch F-100 accident: “‘Graveyard of Aces’ Crash Kills Pearl Harbor Hero,
Long Beach Press Telegram, (October 13, 1954): 10.
- Panama Canal exercise: “Non-Stop Foster Jets Rout ‘Foe’ at Panama,” *Victoria Advocate*, (April 25, 1957): 1. The book incorrectly reports this attack as taking place in
81-82 the fall of 1956; it actually took place in the spring of 1957. Another exercise not included in the book, “Mobile Baker,” took place in the fall of 1956.
- 82 Lindbergh fought to stay awake: Charles Lindbergh, *The Spirit of St. Louis* (New York: Scribner, 2003 edition), pp. 343-344, 354-401.
- 84 John Hungerford accident: “Foster Pilot Dies in Utah Plane Crash,” *Victoria Advocate*, (January 19, 1957): 1.
- 85 The Air Force closed Foster Air Force Base: “Pentagon Trolley Has Jumped the Track in Foster Closing,” *Victoria Advocate*, (September 1, 1957): 5A.
- Juhani Heinonen’s record flight: Michael Friend, “Long Distance Flyers,” *Today’s*
87-88 *Pilot*, (February, 2007): 58-60 and H. Best-Devereaux, “Ultra-Light Pot Pourri,” *Flight*, January 17, 1958, p. 85.
- Aircraft design phases: John D. Anderson, Jr., *The Airplane: A History of Its*
88-89 *Technology* (Reston, VA: American Institute of Aeronautics and Astronautics, 2002) does a good job of summarizing the design process.
- Arnold’s design process is documented in his student project report, *Preliminary*
89-94 *Design of an FAI Class I Airplane and Plans for Establishing International Distance Records*, undated, available at <http://thepropellerunderthebed.com/wp-content/uploads/2013/12/E-1-Preliminary-Design.pdf>.

7: Stagnation

- 95 A few builders collided with CAA inspectors: Bob Nolinske, “Minutes of the Meeting, February 25, 1957,” *Experimenter*, (April, 1957): 13.
- 95 CAA officials turned to Poberezny: Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 303.
- 96 CAA had muddled the modification issue: *Civil Aeronautics Manual I*, Paragraph 1.74-3(b)(1), “Certification, Identification and Marking of Aircraft and Related Products,” U.S. Department of Commerce, Civil Aeronautics Association, October 1952).
- 96-97 Modifying production aircraft controversy: I found discussions about modifying production aircraft as early as the April 1955 issue of *Experimenter*. Multiple related issues, such as what could be included in a kit, how to define an amateur-built aircraft, and what restrictions homebuilt aircraft should have placed on them (e.g., homebuilts originally could not carry passengers or be used for aerobatics), were discussed in almost every issue of *Experimenter* through 1957. Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational): Chapter 5 provides a good summary of the various arguments.

- 97 Duane Cole argument: Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational): p. 51.
- 97 Poberezny thought advocating the privilege was too risky: Paul Poberezny, "The Homebuilders Corner," *Experimenter*, (April, 1956): 2 and Paul Poberezny, "The Homebuilders Corner," *Experimenter*, (December, 1956): 2.
- 97 Only about half the original 250 members still belonged: Duane Cole, *This is EAA*, (Milwaukee, WI: Ken Cook Transnational): p. 51.
- 97 The number of new students had dropped to under 40,000: "CAA Aviation Incentive Movement (AIM)," *Experimenter*, (June, 1955): 2-3.
- 97 Congress passed a resolution: *ibid*.
- 98 Many homebuilders thought the fuselage violated the rules: The CAA put out new rules in 1958 clarifying that prefabricated parts were not allowed in kits at the time. See Dick Fischbach, "A Summary of New Regulations Dealing with Homebuilt Aircraft," *Sport Aviation*, (November, 1958): 15-16.
- 98 CAA rules now allowing passengers in homebuilts: "Wittman Two-Place Homebuilt First to Receive License," *Experimenter*, (February, 1954): 1.
- 98 EAA Design Competition: Wes Schmid, "EAA's International Design Competition," *Experimenter*, (February, 1957): 3.
- 98 The competition slipped to 1959: Harry Zeisloft, "EAA Design Competition," *Sport Aviation*, (October, 1958): 34.
- 98 By 1959, a promising twenty-four designers: H.C. Zeisloft, "EAA Design Contest," *Sport Aviation*, (January, 1960): 27 lists the 24 competitors.
- 98 EAA membership totaled more than 8,000: "A Report on EAA," *Sport Aviation*, (March, 1960): 4. Exact numbers are hard to come by for an organization that adds and drops members on an almost continuous basis; other articles in this timeframe refer to "some 7,000 members." The point here is not exact numbers but the continuous growth of the organization.
- 98-99 Almost half the experimental category aircraft were built by amateurs: "Revisions to CAA Regulations Being Studied," *Popular Aviation*, (January, 1958): 7 reported that 460 of about 1,000 aircraft certified as "experimental" were amateur-built.
- 99 Homebuilt rotorcraft ... were becoming popular: Ted Arias, "My Gyro Experiences," *Sport Aviation*, (January, 1960): 11 and Lt. Donald R. Voland, "Some Pointers on Homebuilt Gyrocopters," 12-14.
- 99 First jet-powered homebuilt: Joan Trefethen, "The 'Weejet'," *Sport Aviation*, (May, 1959): 4-5.
- 99 First woman homebuilder: Joan Trefethen, "The Product of a Dare," *Sport Aviation*, (May, 1958): 4-6.
- 99 Steve Wittman's landing gear: Georges Jacquemin, "Landing Gears For Light Aircraft," *Sport Aviation*, (April, 1959): 7.
- 99 Flattened fuel tanks: "Editorial," *Experimenter*, (August, 1954): 7.
- 99 Most members thought the new title was a good thing: Duane Cole, "Sport Aviation," *Sport Aviation*, (June, 1958): 12. The name change occurred with the January, 1958

- issue. Endorsement by Cole, an original EAA founder and often critic, was crucial to acceptance of the name change.
- 99 Members began complaining about a lack of parts: Lewis B. Wilson, “Letters to the Editor,” *Sport Aviation*, (January, 1960): 3, 31.
- 99 How to get smooth cuts in wood: “Getting Smooth Cuts,” *Sport Aviation*, (January, 1960): 25.
- 99 Straight or curved lower longerons: “Question & Answer Department,” *Sport Aviation*, (January, 1960): 21.
- 99 1960 fly-in at Rockford: “’59 Fly-In Site Selected,” *Sport Aviation*, (October, 1958): 26, “Aircraft at the Fly-In,” *Sport Aviation*, (October, 1960): 4, 6, 8, 10, 12, 14, and Ray Scholler, “The Honeymoon at Rockford,” *Sport Aviation*, (October, 1960): 11, 13.
- 100 The disappointed judges examined the two entries: Bob Whittier, “Thoughts on the Fly-In,” *Sport Aviation*, (October, 1960): 5, 7 and Harry Zeisloft, “EAA Design Competition,” *Sport Aviation*, (October, 1960): 24.
- 100- Design competition results: Harry Zeisloft, “The 1962 EAA Design Competition,”
101 *Sport Aviation*, (October, 1962): 5-8.
- 101 Edgar Lesher attendance at Rockford: “1962 Fly-In Trophies and Awards,” *Sport Aviation*, (October, 1962): 25, 27, 29, 31.
- 101 Lesher background: Thomas Adamson interview, November 4, 2014; Ann Pellegrino interview, October 29, 2014 and Ann Holtgren Pellegrino, “Professor Lesher, Record-Setter,” *Air Trails Homebuilt Aircraft*, (Summer 1970): 10-15, 85-86.
- 101- *Nomad* design: Edgar J. Lesher, “‘Nomad,’” *Sport Aviation*, (June, 1963): 24-29.
102
- 102 Lesher seized upon Davis’ idea: Ed Lesher, “Teal,” *Sport Aviation*, (March, 1968): 6-11 and “Ed Lesher and His ‘Teal’ To Go After Records,” *Sport Aviation*, (May, 1967): 10.
- 102 The two-seater weighed nearly 1,000 pounds empty: Edgar J. Lesher, “‘Nomad,’” *Sport Aviation*, (June, 1963): 24-29; diagram on p. 27 lists the empty weight as 998 lbs.
- 103 *Teal* design: Ed Lesher, “Teal,” *Sport Aviation*, (March, 1968): 6-11.
- 103 Lesher’s first idea was to find a jockey-size aviator: *ibid.*
- 103 *Teal* first flew ... had set all the records: Stan Wallis, “One Down, Five to Go,” *Sport Aviation*, (September, 1967): 8-10 and Ed Lesher, “Teal Progress Report,” *Sport Aviation*, (February, 1971): 10-12.
- 112 Viet Cong attacked Tuy Hoa: “VC Raid Wrecks C130s, Damages Other Planes,” *Pacific Stars & Stripes*, (July 31, 1968): 23.

9: Young Aviation Turks

- 118 Bob Whittier comments: Bob Whittier, “One Man’s Meat,” *Sport Aviation*, (October, 1962): 21, 23.

Amateurs sought out auto engines: Although many of the earliest homebuilt designers used motorcycle and automotive engines, homebuilders in the 1950s relied heavily on engines designed for certified aircraft. The renewed interest in automotive designs began again around 1960, with a series of articles by Bob Whittier in *Sport Aviation* that culminated in “Converting the Volkswagen Engine for Flight,” *Sport Aviation* 118-119 (May, 1961): 6-11. After that, an explosion of articles on conversions appeared; e.g., Robert G. Huggins, “More About My Corvair and VW Conversions,” *Sport Aviation*, (December, 1962): 24-26. The Sonerai made its debut at the 1971 Oshkosh Fly-In; see Bob Whittier, “Oshkosh 1971 The Best Yet,” *Sport Aviation*, (October, 1971): 4, 6, 8, 9, 11.

Aluminum designs, John Thorp and Robert Bushby: Dennis Parks, “The Second Decade 1960-1969,” *Sport Aviation*, (February, 1988): 40-41 provides a good summary of the *Sport Aviation* articles from this era.

Ladislao Pazmany: Ray Gordon, “Ladislao Pazmany . . . Designer and Builder,” *Sport Aviation*, (October, 1971): 13-14; “Latest Report on Chinese Pazmany Production Program,” *Sport Aviation* (September, 1970): 28-29; and Jack Cox, “PL-4 Progress Report,” *Sport Aviation*, (July, 1972): 25-26. The Taiwanese Air Force adopted an earlier Pazmany model, the PL-1, which was very similar to the PL-2 reportedly used or considered for use by Hong Kong, South Korea, South Vietnam, and Thailand.

Amateur-built aircraft surpassed the number of transport aircraft: David H. Scott, “Washington Report,” *Sport Aviation*, (October, 1968): 75.

Fly-in move to Oshkosh: Paul H. Poberezny, “The Homebuilders Corner,” *Sport Aviation*, (January, 1970): 2, 58.

Poberezny tried Oshkosh one year in the 1950s: Leo J. Kohn, “One Eye to the Past, the Other Eye to the Future,” *Experimenter*, (September, 1956): 3, 18.

Twelve-year lease with Oshkosh: Fly-in move to Oshkosh: Paul H. Poberezny, “The Homebuilders Corner,” *Sport Aviation*, (January, 1970): 2, 58 and Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13. The year of the actual lease is a little unclear. In 1970, Oshkosh offered a lease of up to fifteen years; Whittier reported “an agreement . . . for twelve more years.”

The 1972 Fly-in: Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13.

Jim Bede had previously designed the BD-1: John Shuttleworth, “The Bede BD-4,” *Sport Aviation*, (September, 1969): 36-42.

The BD-2 and distance record: “Bede Scores Three World Records,” *Sport Aviation*, (January, 1970): 4-5.

BD-4: John Shuttleworth, “The Bede BD-4,” *Sport Aviation*, (September, 1969): 36-42. Also see ad for BD-4 on page 60 of the March, 1970 *Sport Aviation*.

Others thought the “erector set” kit flaunted FAA rules: Kevin V. Brown, “Build This New 4-Place Cabin Plane,” *Popular Mechanics*, (May, 1969): 112-117, 208 coined the phrase “Erector Set homebuilt” and pointed out that the FAA had yet to approve a kit as being eligible for amateur-built certification.

Bede insisted the builder still had to provide 80 percent of the labor: *ibid.*

The FAA agreed and approved the kit in 1973: “Hot Line from HQ: FAA Approves Homebuilt Materials Kits,” *Sport Aviation*, (May, 1973): 6. The BD-5 kit was also approved at this time, along with Bryan Aircraft’s HP series sailplanes, and Rotorway’s Scorpion I and II. These are believed to be the first kits ever approved by the FAA as “eligible for certification as amateur built aircraft, providing the builder complies with other applicable FARs and constructs the machine for his own educational or recreational purposes.”

BD-5 performance: Jack Cox, “A Hot Time in Oshkosh,” *Sport Aviation*, (October, 1975): 10-19 coined the phrase “California to Illinois non-stop for \$30” to describe the fantasies of many pilots. The BD-5 likely would have met the \$30 goal, but its range of about 1,000 miles would have required a fuel stop to fly from California to Illinois.

Number of BD-5 kits ordered: John W. Olcott, “Bede Fever,” *Flying*, (September, 1973): 43-47.

The BD-5 prototype flew on September 12, 1971: *ibid*. There is a discrepancy in the date reported for the first flight. *Sport Aviation*, (October, 1971) reported the date as September 13, 1971 in “Hotline from Headquarters: The Micro Flies.”

Failures besieged the Hirth: *ibid*.

Oshkosh attendees settled for jackets: “Convention Comments,” *Sport Aviation*, (October, 1970): 27-28 reported on the various items Bede had for sale in his booth, including “jackets, lapel pins, mustache wax and navel dusters, all with the BD trademark.”

Films of the airplane flying over Kansas: Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13.

Bede became one of the most polarizing figures in homebuilding: Richard L. Collins, “A Dream of the Seventies,” *Sport Aviation*, (April, 2013): 72-78.

VariViggen design: Art Stockel, “Rutan ‘Vari-Viggen’ Completed,” *Sport Aviation*, (May, 1972): 11-14.

Burt Rutan background: *ibid*.

Vari-Viggen at Oshkosh in 1972: Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13 and “1972 EAA Convention Fly-In Award Winners,” *Sport Aviation*, (October, 1972): 57-60.

Richard VanGrunsven’s background and the story of his Playboy to RV-1 conversion were primarily taken from my interview with him on September 2, 2014. Some details on the RV-1 were taken from Richard VanGrunsven, “Cantilever-Wing ‘Playboy,’” *Sport Aviation* (June, 1968): 51-52.

RV-3 design and Oshkosh 1972: VanGrunsven interview, Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13, and Jack Cox, “The Amazing RV-3,” *Sport Aviation*, (October, 1972): 20-23.

EAA had become the second-largest association for pilots: Bob Whittier, “Oshkosh 1972,” *Sport Aviation*, (October, 1972): 4-13.

More than five thousand aircraft landed at some point: *ibid*.

One manufacturer spent nine million dollars to certify a four-seat airplane: *ibid*.

125 More than fifty exhibitors displayed wares at Oshkosh: *ibid.*
125 FAA blessed BD-4 and BD-5 kits in 1973: “Hot Line from HQ: FAA Approves
Homebuilt Materials Kits,” *Sport Aviation*, (May, 1973): 6.
126 “That’s it! That’s what I’ve been waiting for!”: Jack Cox, “A Hot Time in Oshkosh,”
Sport Aviation, (October, 1975): 10-19.
126 VariEze design and construction: Burt Rutan, “Reflections on Glass – VariEze –
Designer’s First Report,” *Sport Aviation*, (January, 1976): 10-19 and Burt Rutan, “Tale
of the Three EZ’s,” *Sport Aviation*, (February, 1980): 34-39.
126 Rutan initially designed the airplane with breaking Lesher’s records in mind: *ibid.*
126 Ken Rand and composite KR-1: Bob Whittier, “Oshkosh 1972,” *Sport Aviation*,
(October, 1972): 4-13 and Jack Cox, “Ken Rand’s Styrofoam Airplane,” *Sport Aviation*,
(January, 1973): 35-39.
126 Rutan used a hot wire to carve his foam: Burt Rutan, “Reflections on Glass – VariEze –
Designer’s First Report,” *Sport Aviation*, (January, 1976): 10-19.
126 A wing could be built in two days: *ibid.* had a table showing that two wings could be
built in 50 man-hours; assuming a single wing would take half that time (25 hours), 2-3
dedicated and competent people might expect to build a wing in two days.
128 Dick Rutan record in VariEze: Jack Cox, “VariEze...For the Record,” *Sport Aviation*,
(October, 1975): 20-33.
128 Leeon Davis’ record: Jack Cox, “Hot Line from Headquarters: Oshkosh ’76,” *Sport*
Aviation, (September, 1976): 6-9.
128 Another engine failure and excessive maintenance convinced Burt Rutan to abandon the
Volkswagen engine and the C-1aI distance record: email with Burt Rutan, December
10, 2015 and Burt Rutan, “Tale of the Three EZ’s,” *Sport Aviation*, (February, 1980):
34-39.
128 VariEze design changes: Burt Rutan, “Reflections on Glass – VariEze – Designer’s
First Report,” *Sport Aviation*, (January, 1976): 10-19.
128 Rutan Aircraft Factory: Jack Cox, “VariEze Update,” *Sport Aviation*, (April, 1977): 13-
20.
128 Rutan spent eight months traveling: *ibid.*
128 Long-EZ design: Burt Rutan, “Tale of the Three EZ’s,” *Sport Aviation*, (February,
1980): 34-39.
128-129 Dick Rutan records in Long-EZ: Jack Cox, “Czechmate! Dick Rutan Sets a World
Record in the Long-EZ,” *Sport Aviation*, (February, 1980): 28-33 and Jack Cox, “Trial
by Whiskey Compass,” *Sport Aviation*, (December, 1981): 56-62.
129 Five completed RV-3s appeared at Oshkosh in 1975: Jack Cox, “A Hot Time in
Oshkosh,” *Sport Aviation*, (October, 1975): 10-19.
129 Van had doubts about his RV-3: September 2, 2014 interview.
129 Two-stroke engines: George C. Larson, “Two Strokes for Plane Folks,” *Flying*,
(September, 1973): 48-49.

129 The Hirths were prone to overheating and failures: John W. Olcott, "Bede Fever,"
Flying, (September, 1973): 43-47 and George C. Larson, "Two Strokes for Plane
Folks," *Flying*, (September, 1973): 48-49.

130 A few other BD-5s used a modified Honda engine: Jerry Kibler, "Honda Powered BD-
5," *Sport Aviation*, (July, 1975): 10-12.

130 Many BD-5 builders hadn't received their kits: Debbie Gary, "Before the Fall: Jim
Bede and the 1975 BD-5 Jet Team," *Air & Space/Smithsonian*, (August, 2014): 60-65
and John W. Olcott, "Bede Aircraft: A Going Concern?" *Flying*, (September, 1973):
55-56.

130 BD-5J design and Oshkosh 1975: Jack Cox, "New from Newton . . . The BD-6 and a
Jet Micro," *Sport Aviation*, (July, 1973): 30-32; Jack Cox, "Hot Line from
Headquarters: Oshkosh Sampler," *Sport Aviation*, (September, 1973): 6-10; and Jack
Cox, "A Hot Time in Oshkosh," *Sport Aviation*, (October, 1975): 10-19. The BD-5J
actually made its debut at the 1973 Oshkosh, but it was heavily damaged during a
landing accident.

130 TRS-18 engine: William Garvey, "Homebuilt Machbuster," *Popular Mechanics*,
(December, 1989): 68-71.

130 The US Air Force was intrigued enough by the BD-5J: Gary C. Hill and Jeffrey V.
Bowles, *Study of a Very Low Cost Air Combat Maneuvering Trainer Aircraft*, NASA
Technical Memorandum TM X-73,162, August 1976. Ames Research Center, Moffett
Field, California. Also see Richard B. Weeghman, "Reporting Points: F-.5," *Flying*,
(August, 1975): 22, 25.

130 Bede's publicity director decided that a demonstration team of jets would be the
solution: Debbie Gary, "Before the Fall: Jim Bede and the 1975 BD-5 Jet Team," *Air &
Space/Smithsonian*, (August, 2014): 60-65.

130 Debbie Gary and the BD-5J airshow team: *ibid.*

130 Bede had bet the rest of the company on the microjet: *ibid.* and Seth B. Anderson, "A
Critique of the BD-5 Concept," *Sport Aviation*, (August, 1986): 46-49.

130 Bede declared bankruptcy: Jack Cox, "Hot Line from Headquarters: Bede Bankruptcy,"
Sport Aviation, (February, 1980): 6-9.

131 The settlement dragged on until 1988: Jack Cox, "Hot Line from Headquarters: Of
Historical Note," *Sport Aviation*, (April, 1988): 6-13.

131 Part of the settlement . . . required Bede refrain from selling kit aircraft: Richard L.
Collins, "A Dream of the Seventies," *Sport Aviation*, (April, 2013): 72-78.

131 Van flew the first flight of his two-seat RV-4: Dick VanGrunsven, "The RV-4 Story,"
Sport Aviation, (May, 1980): 28-34.

131 A few small companies had been exhibiting at the fly-in since the mid-1960s:
"Commercial Displays," *Sport Aviation*, (October, 1965): 54-55 reported that both the
Bellanca and Aero Commander aircraft companies brought their newest models to the
1965 Rockford fly-in.

131 After Oshkosh attendance surged past the half-million mark each year: Berl Brechner,
"Aircraft Manufacturers at Oshkosh '87," *Sport Aviation*, (December, 1987): 24-26.

132 By the mid-1970s, the Big Four started hauling their latest models each year: *ibid.*

132 Roy LoPresti reportedly got from a homebuilder the idea: *ibid.*
Richard Killingsworth background: “Killingsworth Selected as Nominee to EM Post,”
132 *Playground Daily News*, (June 1, 1973): 16A and “Funeral Notices,” *Playground Daily*
News, (April 14, 1975): 3B.
Jeanie’s Teenie had been featured in *Popular Mechanics*: Kevin V. Brown, “Build This
132 ‘Flying Volkswagen’ for Less Than \$600!” *Popular Mechanics*: (May, 1968): 121-124,
176.
132- DSK-1 Hawk design: Sheldon M. Gallagher and Howard Levy, “The homebuilt you
133 have to see to believe,” *PopularMechanics*, (May, 1974): 109-111.
133 Killingsworth outlined his sales and future plans in a letter to Arnold Ebnetter dated
May 24, 1974.
Killingsworth accident: “Local Man Dies in Air Crash,” *Playground Daily News*, (April
133 13, 1975): 1A and *National Transportation Safety Board Aviation Accident Final*
Report, Accident Number MIA75FLA38, available at
https://www.nts.gov/_layouts/nts.aviation/brief.aspx?ev_id=48614&key=0.
Frank Christensen background and Eagle design: David Gustafson, “Frank Christensen
134 and the Kit Plane Revolution,” available at
<http://www.aircraftspruce.com/catalog/kitspages/frankchristensen.php>, accessed
November 15, 2015.
134 Fly-in attendees first sought out the six Rutan VariEzes: Jack Cox, “Oshkosh ’77 ... A
Sterling Silver Anniversary,” *Sport Aviation*, (October, 1977): 13-18.
134- With the first Eagle sighting: *ibid.*
135
Christensen met twice with an FAA official: David Gustafson, “Frank Christensen and
135- the Kit Plane Revolution,” available at
136 <http://www.aircraftspruce.com/catalog/kitspages/frankchristensen.php>, accessed
November 15, 2015.
BD-10J design and flight: Jack Cox, “BD-10J: The Supersonic Homebuilt,” *Sport*
136 *Aviation*, (December, 1988): 20-23 and Jack Cox, “Hot Line from Headquarters: BD-10
Flies on July 8,” *Sport Aviation*, (August, 1992): 5-12.
136- Burt Rutan announced he was getting out of the homebuilt-plans business: Jack Cox,
137 “Hot Line from Headquarters: Rutan Aircraft Discontinues Plan Sales,” *Sport Aviation*,
(August, 1985): 5-9.
137 RV-6 design: Dick Cavin, “Now Comes the RV-6,” *Sport Aviation*, (December, 1986):
23-26.
137 Don Norris’ challenge: Don Norris, “Flying the Bushby Mustang,” *Sport Aviation*,
(August, 1987): 47-50.
137 Van, having other business back east: email from Richard VanGrunsvan dated
November 27, 2015.
137- The Van versus Norris “duel”: Don Norris, “Showdown at Checkpoint Charlie,” *Sport*
138 *Aviation*, (January, 1988): 21-23.
139 Van never had a long-range plan: VanGrunsvan interview, September 2, 2014.
139 Chuck Berthe and Van at the Society of Experimental Test Pilots: *ibid.*

10: Colleen's Cub

- 140- Ed Leshner record flight: Ed Leshner, "Teal Trek," *Sport Aviation*, (February, 1976): 35-
141 37.
- 142 A slump in the early 1970s: Murray Olderman, "Seattle Isn't Giving Thanks,"
Kingsport News, (November 24, 1972): p. 43 and Eldon Barrett, "Seattle Stays Alive,"
UPI article, *Marshall evening Chronicle*, (June 12, 1972): p. 2. Much of the downturn
for Boeing was due to the government cancellation of the Supersonic Transport (SST)
program.
- 147 Stits Poly-Fiber system: *Poly-Fiber Covering & Painting Manual*, Procedure Manual
No. 1, Revision Fifteenth, Seventh Edition, February, 1993, Original Issue May 20,
1965. A newer manual published in 1996 is 135 pages long, but that is primarily
because the print is larger.
- 148- Steve Wittman's accident: Jack Cox, "Hot Line from Headquarters: Steve and Paula
149 Wittman," *Sport Aviation*, (June, 1995): 5-13 and *National Transportation Safety Board
Aviation Accident Final Report*, Accident Number ATL95FA092, available at
<https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20001207X03236&AKey=1&RType=Final&IType=LA>.

11: Doldrums

- 152- Super Cub accident: *National Transportation Safety Board Aviation Accident Final
153 Report*," Accident Number FTW83LA322, available at
<https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20001214X43743&AKey=1&RType=Final&IType=LA>. For additional details, see also *Nos. 86-2112,
86-2265*. United States Court of Appeals, Tenth Circuit, November 15, 1989, available
at [https://law.resource.org/pub/us/case/reporter/F2/890/890.F2d.1540.86-2265.86-
2112.html](https://law.resource.org/pub/us/case/reporter/F2/890/890.F2d.1540.86-2265.86-2112.html), accessed November 18, 2015. Also, case 985 F.2d 1438, *Aviation Noise
Law: Cleveland v. Piper Aircraft*," available at [http://airportnoiselaw.org/cases/piper-
1.html](http://airportnoiselaw.org/cases/piper-1.html), accessed November 18, 2015.
- 153 Lawsuit numbers: John S. Yodice, "Product Liability," *AOPA Pilot*, (February, 1988):
31-33
- 153 The average price of single-engine piston airplanes doubled: David H. Scott,
"Washington Report," *Sport Aviation*, (September, 1986): Back cover, 95.
- 153 Deliveries of all general aviation airplanes plummeted: John S. Yodice, "Product
Liability," *AOPA Pilot*, (February, 1988): 31-33 and Jack Cox, "Hot Line from
Headquarters: "Bad, Worse ... and Now, Worst!" *Sport Aviation*, (February, 1988): 6-
12, 95.

- 153 Manufacturers claimed that increased costs of engines added \$5,000: David H. Scott, "Washington Report," *Sport Aviation*, (April, 1985): Back cover, 58.
- 153 Sales of higher-performing aircraft didn't suffer as much: *ibid*.
- 153 Cessna stopped producing single-engine piston airplanes: John S. Yodice, "Product Liability," *AOPA Pilot*, (February, 1988): 31-33.
- 153 The industry shed one hundred thousand jobs: General Aviation Manufacturers Association, <http://www.gama.aero/advocacy/issues/product-liability/general-aviation-revitalization-act>, accessed November 7, 2015.
- 153 Consumers bought boats, sports cars, and motorcycles, but not airplanes: "Washington Report," *Sport Aviation*, (September, 1986): Back cover and 95 and Jack Cox, "Hot Line from Headquarters: 1986 Stats," *Sport Aviation*, (March, 1987): 6-11.
- 154 The number of newly minted private pilots dropped: "Washington Report," *Sport Aviation*, (September, 1986): Back cover, 95.
- 154 The airlines had trouble hiring enough pilots: Jack Cox, "Hot Line from Headquarters: Editorial: The Pilot Shortage," *Sport Aviation*, (March, 1989): 7.
- 154 Improvements to an aircraft design could be used as evidence in court: Henry M. Ogrodzinski, "Liability: Aviation Will Survive ... But Only if We Act Now," *Sport Aviation*, (August, 1985): 10.
- 154 One designer abandoned his idea for a new two-seat trainer: Jack Cox, "Hot Line from Headquarters: More Product Liability Woes," *Sport Aviation*, (July, 1991): 7-14.
- 154 In 1984, homebuilders outproduced lightplane manufacturers for the first time: Jack Cox, "Hot Line from EAA Headquarters: Homebuilts Ahead of Store Boughts," *Sport Aviation*, (February, 1985): 5-9.
- 154-155 FAA field inspectors lobbied their employer: Jack Cox, "Hot Line from Headquarters: One Time Certification of Homebuilts," *Sport Aviation*, (December 1985): 5-10.
- 155 EAA headquarters had trouble finding liability insurance: Henry M. Ogrodzinski, "Liability: Aviation Will Survive ... But Only if We Act Now," *Sport Aviation*, (August, 1985): 10.
- 155 One designer reported that 30 percent of the cost of his kits was for liability insurance: *ibid*.
- 155 Homebuilt lawsuits: James E. Schacht, Esq., "How Can They Sue Me?" *Sport Aviation*, (November, 1985): 51 and Jack Cox, "Hot Line from Headquarters: Burt Rutan Successfully Defends Lawsuit," *Sport Aviation*, (July, 1992): 5-12.
- 155 Sequoia Falco and Swearingen SX300: David H. Scott, "Washington Report: The New Light Plane Industry," *Sport Aviation*, (October, 1986): Back cover, 95.
- 156 Ultralight regulations: *ibid*.
- 156 Ultralight kit prices: *ibid*.
- 156 Most of these kit buyers were already pilots: *ibid*.
- 156 Coalition of lightplane manufacturers: Jack Cox, "Hot Line from Headquarters: Tort Reform," *Sport Aviation*, (August, 1987): 6-12, 103.
- 156 Various senators introduced tort reform bills: Phil Boyer, "Winners Never Quit," *AOPA Pilot*, (September, 1994): 2-8.

- 156-157: Transition of EAA presidency from Paul to Tom Poberezny: Paul H. Poberezny and Tom Poberezny, "The Homebuilder's Corner," *Sport Aviation*, (September, 1989): 2, 98.
- 157 Tom Poberezny background: *ibid.* and Chuck Parnall and Bonnie Poberezny, *Poberezny: The Story Begins* (Oshkosh, WI: Red One Publishing, LLC), p. 319.
- 157 Creation of Young Eagles program: Tom Poberezny, "My 49 Years With EAA," *Sport Aviation*, (September, 2011): 3.
- 157 In 1992, manufacturers decided to focus their tort reform efforts on just the statute of repose: Phil Boyer, "Winners Never Quit," *AOPA Pilot*, (September, 1994): 2-8.
- 157 General Aviation Revitalization Act: General Aviation Manufacturers Association, <http://www.gama.aero/advocacy/issues/product-liability/general-aviation-revitalization-act>, accessed November 7, 2015.
- 157 Cessna announced it would start producing new airplanes within two years: Phil Boyer, "Winners Never Quit," *AOPA Pilot*, (September, 1994): 2-8.
- 158 Quick-build kits: Jack Cox, "Hot Line from Headquarters: Amateur-Built Rule Meeting," *Sport Aviation*, (December, 1988): 6-12, 98.
- 158 By the 1990s, the FAA had developed a checklist: VanGrunsven interview, September 2, 2014.
- 158 Builder Assistance Programs: Tom Poberezny, "Homebuilder's Corner," *Sport Aviation*, (January, 1995): 2.
- 159 Arguments for and against builder assistance programs: Jack Cox, "Hot Line from Headquarters: Amateur-Built Rule Meeting," *Sport Aviation*, (December, 1988): 6-12, 98.
- 159 Commercial assistance guidelines: "Commercial Assistance," *Sport Aviation*, (October, 1995): 46-47.
- 159-160 New airplanes were at least as expensive as the airplanes from the 1980s: Barron Thomas, "The Cessna Buyer's Guide," *Plane and Pilot*, (February 1, 2008), available at <https://www.planeandpilotmag.com/article/the-cessna-buyers-guide/#.WuY0m0xFyM8>, accessed November 29, 2015.
- 160 Sport Pilot background: "EAA news & views hotline: Sport Pilot at Three: Where We Are and What's Ahead," *Sport Aviation*, (October, 2007): 8-16.
- 160-161 Light Sport Aircraft certifications: "Sport Pilot & Light Sport Aircraft," *Sport Aviation*, (December, 2002): Special section inserted between pages 96 and 97.
- 161 After three years, more than fifty new airplane kits were available: "EAA news & views hotline: Sport Pilot at Three: Where We Are and What's Ahead," *Sport Aviation*, (October, 2007): 8-16.
- 161 Ten new models appeared at the 2007 Oshkosh fly-in: *ibid.*
- 161 Name change to AirVenture: The name change was made in 1998. See "EAA AirVenture Oshkosh, July 29 – August 4," *Sport Aviation*, (February, 1998): 28-29. The new name is trademarked.
- 161 Cessna Skycatcher: "EAA AirVenture 2007," *Sport Aviation*, (September, 2007): 22-24; Alton K. Marsh, "Skycatcher Reaches Inglorious End," *AOPA*, (February 10, 2014), <http://www.aopa.org/News-and-Video/All-News/2014/February/10/Skycatcher>,

accessed November 29, 2015; and Robert Goyer, “How a Ghost Doomed the Cessna Skycatcher,” *Flying*, (February 11, 2014), <http://www.flyingmag.com/blogs/going-direct/how-ghost-doomed-cessna-skycatcher>, accessed November 29, 2015 (post has since been taken down).

161 Many manufacturers floundered: VanGrunsven interview, September 2, 2014.

162 XPRIZE announcement: Jack Cox, “X Prize,” *Sport Aviation*, (June, 1997): 78.

162- Burt Rutan entry into XPRIZE: Burt Rutan, “Homebuilt Spaceships and the X Prize,”
163 *Sport Aviation*, (Jun, 1997): 78 and “On the Flightline: Rutan Does it Again,” *Sport Aviation*, (June, 2003): 24-25.

163 By 2004, twenty-six teams pursued the XPRIZE: “Mojave Aerospace Ventures Wins the Competition that Started it All,” <https://ansari.xprize.org/teams>, accessed December 5, 2015.

163- XPRIZE flights: Tom Poberezny, “SpaceShipOne—Cleared to Land,” *Sport Aviation*,
164 (November, 2004): 6-8.

12: Seeping in Seattle

165- Gary Hertzler record flight: Gary Hertzler interviews, December 21, 2013 and January
166 9, 2015; Larry Ford, “1984 CAFÉ 400,” *Sport Aviation*, (September, 1984): 34-43 and Jack Cox, “Hot Line From Headquarters,” *Sport Aviation*, (August, 1984): 6.

166 *Voyager* flight: Jack Cox, “The Flight of Voyager,” *Sport Aviation*, (February, 1987): 12-26, 87-94 and Jack Cox, “Voyager Enshrined,” *Sport Aviation*, (February, 1988): 51-54.

174 For the legal listing of minimum instruments required, see Title 14, Code of Federal Regulations (14 CFR), Part 91, Section 91.205, “Powered civil aircraft with standard category U.S. airworthiness certificates: Instrument and equipment requirements.” Available at https://www.ecfr.gov/cgi-bin/text-idx?SID=e3f087f392436b48551696ee83fd6c4f&mc=true&node=se14.2.91_1205&rgn=div8.

186 By the early 1990s, a handful of electronics companies were catering to the homebuilt market: Peter Lert, “Avionics for Homebuilt Aircraft,” *Sport Aviation*, (May, 1991): 23-28.

186- Dynon Avionics history: Robert Hamilton, President, Dynon, interview on October 12,
188 (November 3, 2010), available at <https://generalaviationnews.com/2010/11/03/dynons-mission-cover-the-panel/>, accessed November 29, 2015; and “UW CSD Alumnus John Torode founds IC Designs,” available at <https://homes.cs.washington.edu/~lazowska/impact/torode.html>.

13: Where’s Dad?

- 189- For a complete listing of FAI rules, see <http://www.fai.org/fai-documents>. Current rule
190 regarding course to be approved/declared in writing prior to takeoff is in the *FAI Sporting Code – Section 2* on page 12. Previous rules are on p. 9-15 in the 1980 version of the *FAI Sporting Code – Section 2*. A copy is available from the author or from the National Aeronautic Association.
- 196 I’m never doing that again: Rebecca Maksel, “The Witness,” *Air & Space/Smithsonian*: (January, 2012), available at <https://www.airspacemag.com/history-of-flight/the-witness-81809266/>, retrieved December 18, 2013.

Epilogue

- 199 Newspaper articles: See, for example, <http://www.australianflying.com.au/news/jabiru-2200-powered-home-built-sets-unofficial-distance-record>.
- 201 Donald Rock is now a county park: <https://parks-lwrp.countyofdane.com/park/Donald>.
- 201 Currently on display at the Finnish Aviation Museum:
<https://www.ilmailumuseot.fi/tuotteet.html?id=20738/341989>.
- 201 The HK-1 is still the only Finnish aircraft to ever set a world record: I conducted an exhaustive search of FAI records and could find no evidence of other records.
- 201 *Teal* is part of the EAA AirVenture Museum’s collection: As of 2017, *Teal* was not on display full-time, but was normally shown as part of an outside collection during AirVenture.
- 201 Jim Bede died in 2015: Obituary available at
<http://obits.cleveland.com/obituaries/cleveland/obituary.aspx?pid=175270503>.
- 201 More than nine thousand of Van’s airplanes have flown worldwide: Data provided by the “Hobbs Meter” at <http://www.vansaircraft.com/>.
- 201 Burt Rutan retired from Scaled Composites in 2011: Steve Schapiro, “Burt Rutan: The Scaled Composite Years,” *Sport Aviation*, (May, 2011): 20-26.
- 201 Poberezny retirements: Tom Poberezny, “Position Report: Looking Forward,” *Sport Aviation*, (May, 2009): 6 and Tom Poberezny, “My 49 Years With EAA,” *Sport Aviation*, (September, 2011): 3. Tom Poberezny retired August 1, 2011, not in 2012.
- 201 Paul died on August 22, 2013: “Paul Poberezny: Founder, 1921-2013,” *Sport Aviation*, (October, 2013): 48-55.