

Contract Air Mail: The Catalyst of Commercial Aviation

Michael L. Wilson GPSCC September 17, 2024





American Philatelic Society

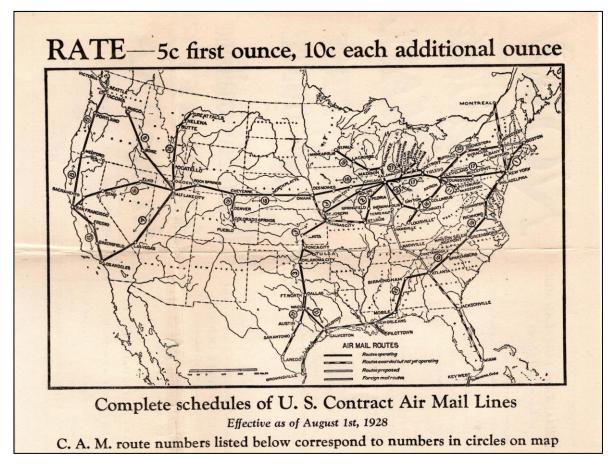


American Air Mail Society

Founded 1923

Agenda

- What was Contract Air Mail (CAM)?
- How did it come about?
- How was it the catalyst of commercial aviation?
- What are the collecting possibilities?
- All stamps and covers shown are in my collection



Contract Air Mail Routes, August 1, 1928, Colonial Air Transport Brochure

Contract Air Mail

- From 1926 to 1978 (with a brief pause in 1934), private airlines were paid fees to carry air mail in the United States
- CAM commenced with the Air Mail Act of 1925 and ended with the Airline Deregulation Act of 1978
- Presentation focuses on the CAM era between 1926 and 1934
- CAM system spearheaded the development of commercial aviation in the United States, but how did it come about in the first place?
 - To understand that you need to step back to the beginning of air mail

Genesis of Air Mail in the United States

Air Mail Was Not a New Concept



On August 17, 1859, at Lafayette, Indiana, aeronaut John Wise carried mail on his balloon *Jupiter*. His attempt was honored by this 1959 U.S. air mail stamp (Scott C54)



Mail was carried out of Paris by balloon during the Prussian siege in 1870-71. This Par Ballon Monte is postmarked November 17, 1870.



Zeppelins carried their first mail in July 1908. This postcard was postmarked onboard LZ 10 *Schawben* on October 3, 1911.

But Fixed-Winged, Powered Flight Was a Breakthrough



- Wright Brothers made the first sustained, controlled and powered flight in 1903
- By 1909 powered flight was an established technology:
 - First full-scale public performance of a Wright airplane in the U.S. took place at Fort Myer in Arlington, Virginia in September 1908 followed by more performances in June and July 1909
 - First international aviation meeting was held in France in August 1909
 - Wright Company was incorporated in November 1909



A spectator watches a Wright airplane at Fort Myer, Arlington, VA, on July 8, 1909. Photo by Harris & Ewing/Library of Congress

Role of the Federal Government and USPOD Were Crucial

- Aviation technology together with...
- Federal government's traditional support of new technologies along with the end of the laissez-faire theory of government and...
- U.S. Post Office Department's (USPOD) long-standing goal of speeding mail...
- Resulted in air mail service



Seconds into the Wright Flyer's First Flight, December 17, 1903



Great Seal of the United States



Post Office Logo 1837-1970



U.S. Air Mail Service

Experimental Period 1910-1917

Congress Showed Interest as Early as 1910

- Rep. Morris Shepard (D-TX) read about Charles K. Hamilton's historic flight from New York to Philadelphia on June 13, 1910
- On June 14, 1910, proposed bill directing the Postmaster General (PMG) (a cabinet-level position at the time) to study practicality of operating an experimental air mail service between Washington, DC and another suitable point





New York Times Front Page, June 14, 1910

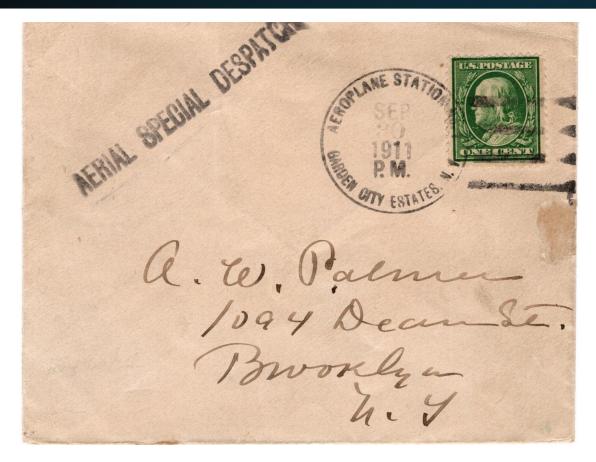
Frank H. Hitchcock, "The Godfather of Air Mail"

- Shepard's bill did not advance, but Frank H. Hitchcock, PMG under President Taft and an advocate for air mail, pressed on
- Hitchcock flew for the first time in November 1910 and predicted airplanes ultimately would be "extensively used for carrying mail"
- Hitchcock continued to push Congress to provide funding for air mail tests, but was unsuccessful by the time the Wilson administration came to power and Albert Burleson took over as PMG



Frank H. Hitchcock (1867-1935), PMG from 1909 to 1913, passing a bag of mail to Earle Ovington in September 1911. Source: National Postal Museum.

Hitchcock Authorized First Experimental Air Mail Flight in September 1911



Cover flown at International Aviation Meet on September 30, 1911. American Air Mail Catalogue (AAMC) 3.

- First official U.S. air mail flown September 23-October 1, 1911
- Route was from Garden City to Mineola, New York by one of three pilots: Earle L. Ovington (1879-1936) (who flew the first flight on September 23), Thomas Sopwith (1888-1989) and Captain Paul W. Beck (1876-1922)
- Total of 43,247 pieces of mail were carried
- Hitchcock flew the mail with Captain Beck on September 27, thus qualifying as an "aerial carrier"!

Government Period 1918-1925

Otto Praeger Arrives in 1915, "The Father of Air Mail"

- Burleson was a fan of air mail, but it was Otto Praeger, 2nd Asst. PMG and a strong proponent of technology to speed up mail, who spearheaded the initiative
- Initially pushed for air mail service in Alaska and Massachusetts because of interest expressed in those two areas and advertised for bids
- Alas, no private company was ready to provide air mail service even with a USPOD contract
- U.S. entry into World War I temporarily shelved air mail service, but Praeger did not abandon the idea



Otto Praeger (1871-1948)

U.S. Army Steps Up

- Formed by Congress in 1915, National Advisory Committee for Aeronautics recommended in 1917 that the USPOD itself operate an experimental route between Washington, DC and Philadelphia or New York
- On February 12, 1918, the USPOD called for bids to fly the East Coast route
- U.S. Army notifies Praeger on March 1, 1918, that it is willing to fly airmail to give pilots more flying time



Curtiss JN-4D "Jenny" in the Collection of the National Air and Space Museum. This was the first U.S. Army air mail plane.

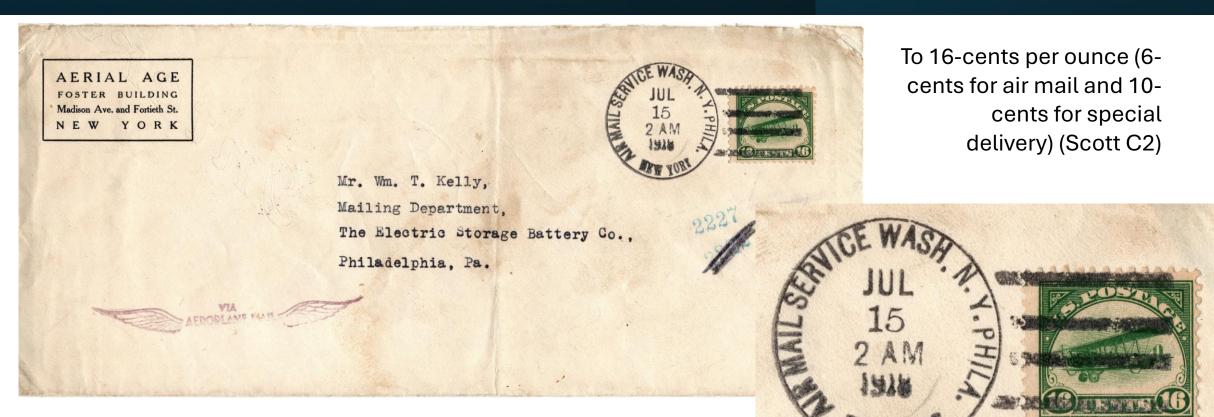
First U.S. Air Mail Service New York to Washington, DC May 15, 1918 (AAMC 101F1)



Businesses balked at paying 24 cents versus the 3-cent First Class Letter rate (wartime) to save a few hours. Thus, less than 15% of the mail carried in the first month bore the 24-cent rate.

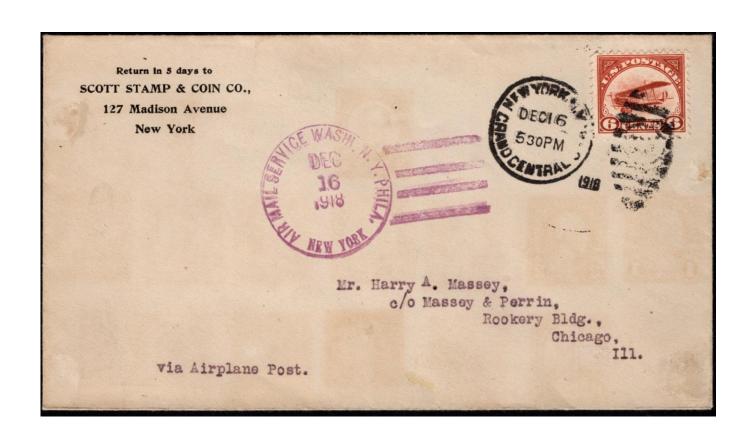
Rate was a steep 24-cents per ounce (14-cents for air mail and 10-cents for special delivery) (Scott C3)

Consequently, Air Mail Rates Dropped Rapidly Starting on July 15, 1918...



And by August 12, 1918, the USPOD took over flying the mail from the U.S. Army, which is a whole other story

And then Again on December 16, 1918...

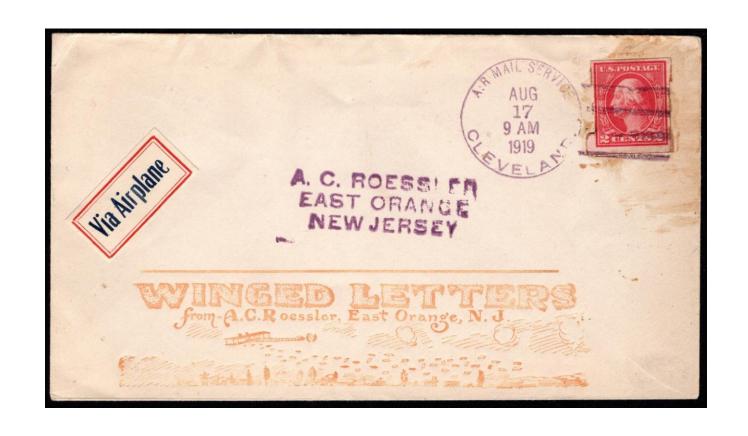


To 6-cents per ounce (no special delivery) on December 16, 1918 (Scott C1)



...Until July 18, 1919, When There Was No Special Air Mail Rate

- If there was room, mail was carried by plane at the First Class Letter rate of 2 cents
- This air mail cover, postmarked in Cleveland on August 17, 1919, was flown to New York at the rate of 2cents before being delivered to A.C. Roessler, a stamp dealer, in New Jersey
- Stamp is Scott 482 with Schermack Type III Perforation



An Aside: Air Mail Rate History

5/15/1918 24 cents/ounce, of which 10 cents was for special delivery

7/15/1918 16 cents first ounce and 6 cents each additional ounce, of which 10 cents was for special delivery

12/15/1918 6 cents/ounce, without special delivery

No airmail rate from 7/18/1919 to 7/1/1924. Small percentage of letters flown at First Class rate of 2 cents/ounce.

7/1/1924 8 cents/ounce/zone (New York-Chicago; Chicago-Cheyenne; Cheyenne-San Francisco)

7/1/1925 10 cents/ounce overnight service New York-Chicago, 8 cents/ounce daytime zone rate

2/15/1926 Contract air routes

Under 1,000 miles: 10 cents/ounce; 1,000 to 1,500 miles: 15 cents/ounce over 1,500 miles: 20 cents/

ounce plus 5 cents/ounce/zone if carried partly over government routes

Government routes

Daytime zone rate: 8 cents/ounce; New York-Chicago (overnight): 10 cents/ounce

2/1/1927 10 cents/half-ounce, regardless of distance

8/1/1928 5 cents first ounce, 10 cents each additional ounce

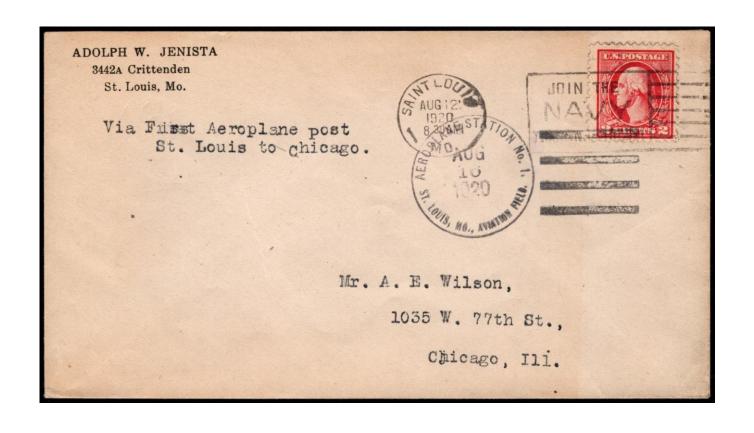
7/6/1932 8 cents first ounce, 13 cents each additional ounce

Source: USPS

More than Air Mail Rates Were Changing

- Praeger knew real time savings of air mail would be realized over longer distances
- Concentrated on expanding service from New York to Chicago and from Chicago to San Francisco with feeder lines into Chicago to connect with the transcontinental route
- On May 15, 1919, air mail service commenced between Cleveland and Chicago and on July 1, 1919, between Cleveland and New York
- On August 16, 1920, a route was established between Chicago and St. Louis and on December 1, 1920, between Chicago and Minneapolis
- Air mail along the transcontinental route was inaugurated on September 8, 1920, although mail only traveled by air during the day; mail continued its journey by train at night

First Flight St. Louis to Chicago, August 20, 1920 (AAMC 131)

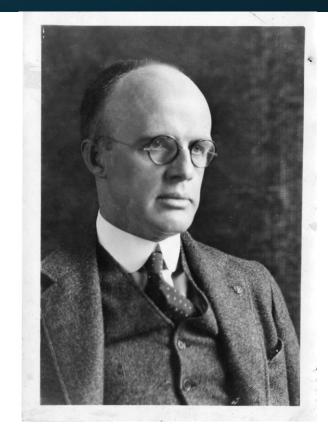


Cover has regular St. Louis postmark dated August 12, 1920, and the original 1911 "Aeroplane Station No. 1" cancel dated August 16, 1920.

Russell G. Jones (1885-1933) was the pilot from St. Louis to Chicago. He covered the 270-mile distance in 3 hours and 45 minutes for an average speed of 72 miles per hour.

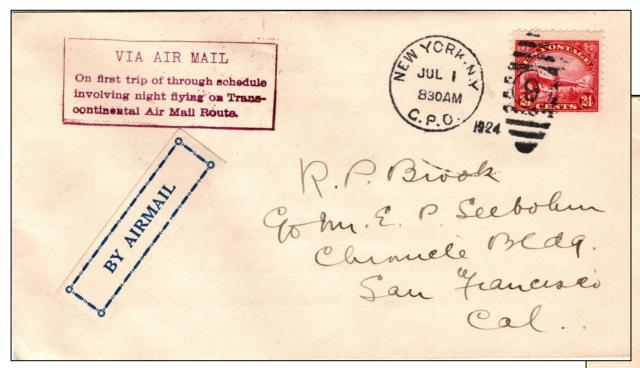
Paul Henderson Leads the Way Forward

- With President Harding's election in 1920, Praeger was out and eventually replaced by Paul Henderson as 2nd Asst. PMG
- Henderson favored private operation of airmail but did not want the service to stagnate until that day came
- Recognized airplanes had an advantage of speed in transporting mail, but the real benefit would not be realized until mail could fly night and day
- Henderson was instrumental in building the infrastructure for nighttime flying, which became a reality on the transcontinental route on July 1, 1924
- Henderson resigned in 1925 but left behind a flourishing enterprise proving that aviation was a viable, albeit still infant, industry



Paul Henderson, 2nd Asst. PMG 1922-1925 (1884-1951)

Nighttime Flying on Transcontinental Route Was a Milestone in Air Mail Infrastructure



Cover postmarked July 1, 1924, in New York and flown to San Francisco on first transcontinental flight involving nighttime flying. AAMC 167.

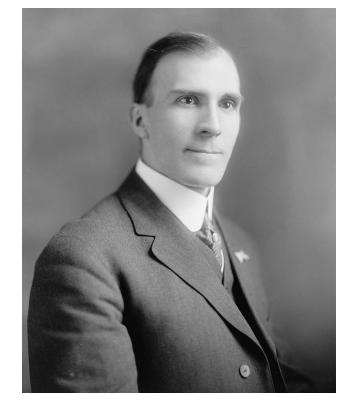
Postage was 24-cents since this cover passed through the three air mail zones established on July 1, 1924. (Scott C6)



Final Steps to CAM and Commercial Aviation 1925-1927

Air Mail Act of 1925, aka "The Kelly Act"

- As Henderson and his predecessors recognized, existing legislation allowing air mail contracts was inadequate
 - USPOD could pay no more for airmail contracts than it could for rail contracts and there was no separate budget for air mail
- May 13, 1924, Rep. Melville Clyde Kelly (R-PA) introduced legislation establishing 10-cent per ounce air mail rate and guaranteed 80% of revenues would flow to contractors, which allayed fears they would be left holding the bag
- Although a subsidy, payment was from postal receipts, not general tax revenues, which calmed budget hawks
- Bill passed the House on December 18, 1924, the Senate on January 27, 1925, and was signed into law by President Calvin Coolidge on February 2, 1925



Rep. Melville Clyde Kelly (1883-1935)

But One More Piece Was Needed for Commercial Aviation To Take Off

- Air mail was working; aviation in general was not
- Not seen as a safe, reliable means of transportation without rules and regulations
- Herbert Hoover, Harding's secretary of commerce, led the charge: "It is interesting to note that this is the only industry that favors having itself regulated by the government."
- Hoover strove to establish a viable businessgovernment relationship based on voluntary cooperation to the benefit of both parties



President Herbert Hoover (1874-1964) pictured on a 1965 U.S. commemorative (Scott 1269)

Air Commerce Act of 1926

- Kelly Act created first successful airlines in the United States and that created the impetus to push Congress toward the passage of necessary regulation of the industry
- With funding in place, government regulation focused on safety – would ensure the public would come to accept air travel
- Air Commerce Act of 1926 was the result, which established the Aeronautic Branch, a forerunner of the Federal Aviation Administration, within the Department of Commerce



1976 Postage Stamp Commemorating 50 Years of Commercial Aviation (Scott 1684)

Setting Up CAM Routes

Rigorous Bidding and Vetting Process

- Kelly Act passed February 1925, but many months would pass before first flights
- Rigorous process:
 - Pilots and aircraft needed to be certified by USPOD as airworthy
 - Companies had to post bond
 - Encouraged to seek other sources of revenue (passengers, cargo)
- USPOD would initially control the transcontinental route and the CAMs would feed into it
- Bids were due September 15, 1925

First CAM Awards

- CAM 1 Boston-New York: Colonial Air Transport
- CAM 2 Chicago-St. Louis: Robertson Aircraft Corporation
- CAM 3 Chicago-Dallas: National Air Transport
- CAM 4 Salt Lake City-Los Angeles: Western Air Express
- CAM 5 Elko, NV-Pasco, WA: Walter T. Varney
- CAM 6 (Detroit-Cleveland) and CAM 7 (Detroit-Chicago) awarded to Ford Air Transport, which was flying auto parts on these routes since July and April 1925, respectively

A New Air Mail Stamp

- To meet the 10-cent per ounce air mail rate for distances less than 1,000 miles, a new stamp was placed on sale on February 13, 1926
- The stamp was designed by C.A. Huston with engraving by J. Benzing and R. Hall
- Total of 24,664,060 issued
- 15-cent (Scott C8) and 20-cent (Scott C9) versions were issued in late 1926 and early 1927, to meet longer distances



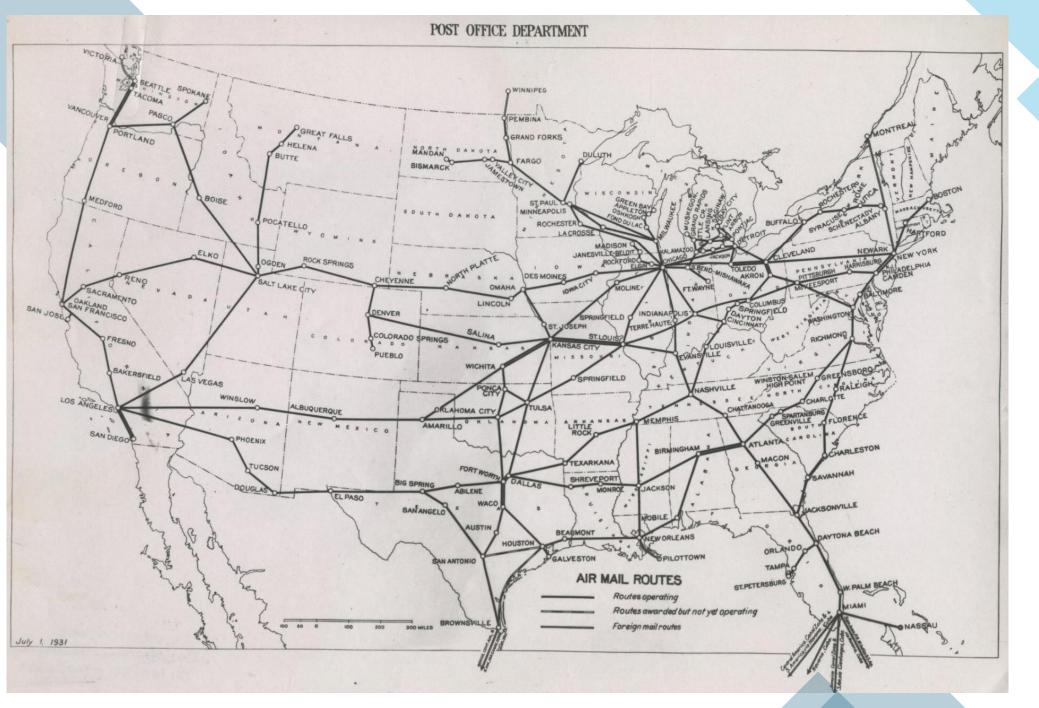
Scott C7

First to Fly – Ford Air Transport (FAT)

- FAT flew CAM 6 and 7 routes on February 15, 1926
- Other five first CAM routes were all in operation by July 1, 1926
- USPOD relinquished control of the transcontinental route in mid-1927, awarding the New York-Chicago route (CAM 17) to National Air Transport and the Chicago-San Francisco route (CAM 18) to Boeing Air Transport
- Thus, by September 1, 1927, all air mail was carried under contract
- USPOD would establish 34 CAM routes by 1930



Stout 2-AT All Metal Monoplane Used on CAM 6 and 7



CAM and Foreign Air Mail (FAM) Routes as of July 1, 1931

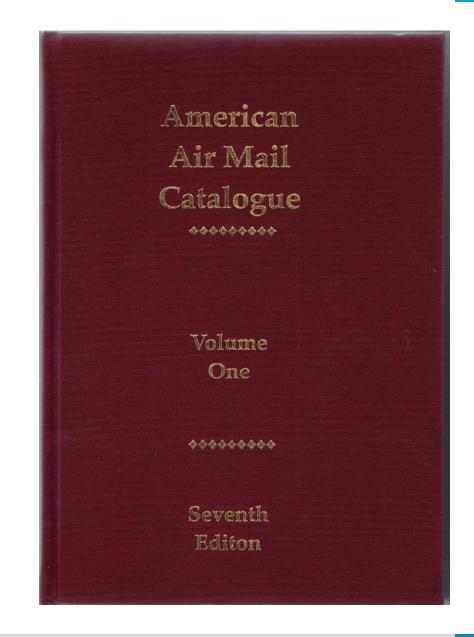
Some Collecting Possibilities

Collecting Bible for CAM Flights

AAMC numbering system:

- CAM number: 1-32
- Direction: E, W, N, or S
- Sequence number

So, 6E1 would be a cover carried on the inaugural flight eastbound from Detroit to Cleveland



Handful of Collecting Ideas

- First Flight Covers
 - CAMs 6 and 7 First Routes Flown Plus First Day Covers (FDCs) for Scott C7
 - All First Flights from One CAM
- CAM Routes Flown by Famous Pilots
- Signed CAM Covers
- Personally Interesting Covers What Collecting is All About!

First Flight Covers

Covers from CAM 6 Flights

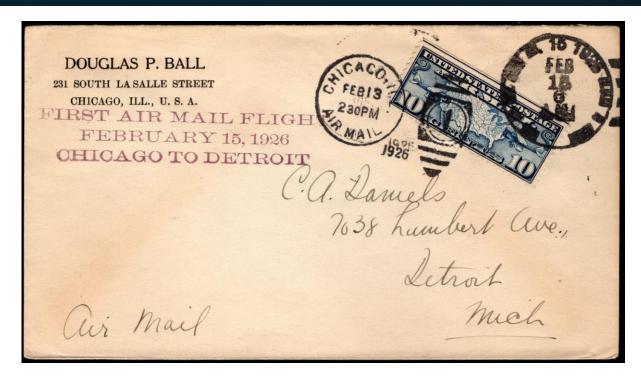


Scott C7 FDC (postmarked February 13, 1926) flown on 10:00 a.m. flight from Detroit to Cleveland, February 15, 1926. AAMC 6E1.

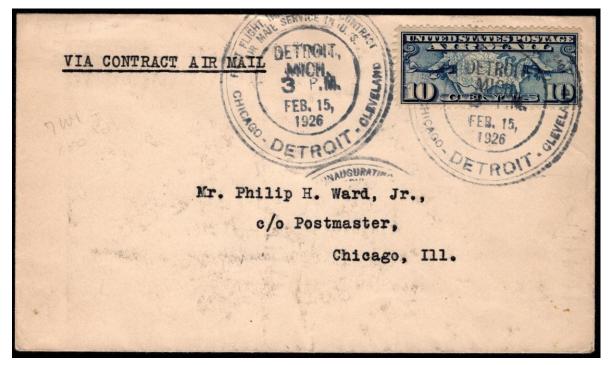


Detroit cachet. AAMC 6W3f.

Covers from CAM 7 Flights



Scott C7 FDC (postmarked February 13, 1926) flown on 6:00 a.m. flight from Chicago to Detroit, February 15, 1926. AAMC 7E3a.



3:00 p.m. flight from Detroit to Chicago, February 15, 1926. Recipient of this cover, Philip H. Ward, Jr. (1886-1963), was a famous philatelist from Philadelphia. AAMC 7W1.

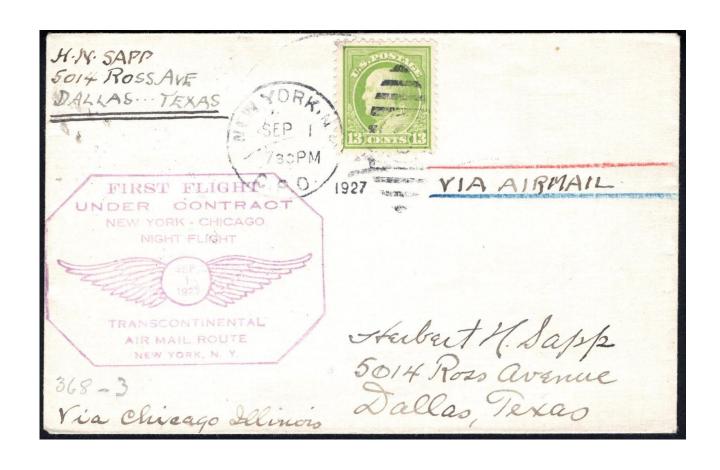
First Flight on CAM 18 – Western Portion of Transcontinental Route



Flown by Boeing Air Transport. Postmarked July 1, 1927, in San Francisco. AAMC 18E11.



First Flight on CAM 17 – Eastern Portion of Transcontinental Route

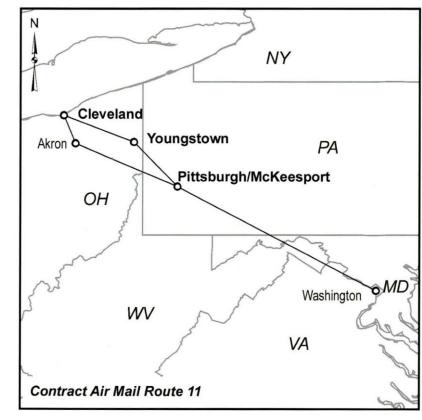


Postmarked New York, September 1, 1927, marking the day on which all air mail was carried under contract. AAMC 17W1D.

The carrier on this route, National Air Transport, had a familiar name as general manager: Paul Henderson, former 2nd Asst. PMG.

All First Flight Covers from CAM 11

- USPOD advertised for bids for Cleveland-Pittsburgh route on January 22, 1926, with sealed bids due March 24, 1926
- Clifford Ball of Pittsburgh, the only bidder, inked the contract for CAM 11 on March 27, 1926
- First flights on Cleveland-Youngstown-Pittsburgh line (southbound and northbound) occurred on April 21, 1927
- Ball's company was acquired and renamed Pennsylvania Air Lines (PAL) on October 25, 1930
- Akron and Washington, DC were added as stops on CAM
 11 on June 8, 1931, and Youngstown was dropped
- All CAM routes, including #11, were canceled on February 19, 1934



CAM 11 Map. Source: AAMC, Vol. 1, 7th Ed., p. 75.

Waco 9 Plane Used on CAM 11



Waco 9 was an open-cockpit biplane built by the Weaver Aircraft Company ("Waco")



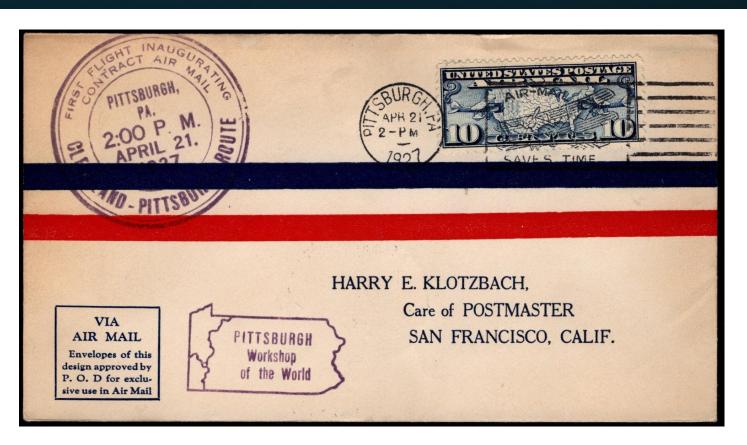
Three Waco 9s were flown on CAM 11 on April 21, 1927. They were named *Miss Youngstown*, *Miss McKeesport*, and *Miss Pittsburgh*. The *Miss Pittsburgh* hangs in the Landside Terminal of the Pittsburgh International Airport.

First Flight Received Good Press Coverage

- First air mail flight into Pittsburgh warranted a spread on Page 2 of the April 22, 1927, Pittsburgh Post
- Might have gotten Page 1 coverage if the Pittsburgh Pirates hadn't won their opener against the Cincinnati Reds!
- Among those in attendance: Rep. Kelly, "Father of the Air Mail Bill," who represented the 33rd Congressional District in the Pittsburgh metro area and was lobbied by Ball for this route



One of 12 Covers Needed to Complete CAM 11



- April 21, 1927, 2:00 p.m. flight from Pittsburgh to Cleveland. AAMC 11N4.
- Cover likely transferred to gov't operated transcontinental flight in Cleveland
- Only 10 cents of postage needed for the journey



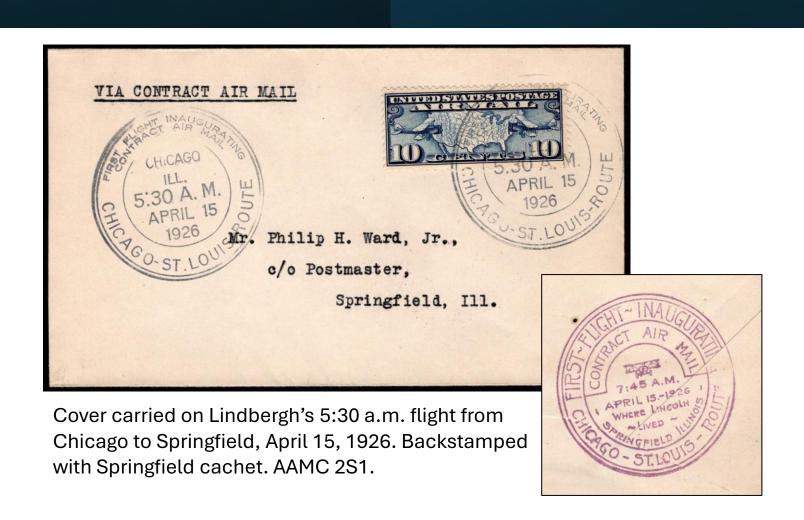
Backstamped in San Francisco on April 23, 1927

^{*}See binder for other 11 first flight CAM 11 covers.

CAM Routes Flown by Famous Pilots

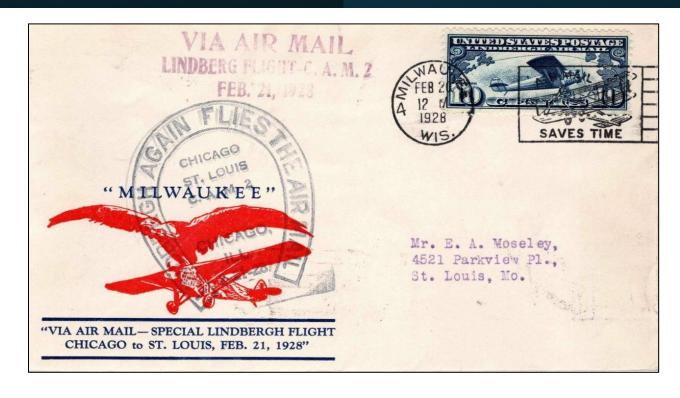
Charles Lindbergh Flown Cover on CAM 2

- Charles A. Lindbergh was the chief pilot for Robertson Aircraft Corporation and flew the first CAM 2 flight southbound from Chicago on April 15, 1926
- Lindbergh would make his famous transatlantic flight in the Spirit of St. Louis in May 1927



Lindbergh Flew Mail on CAM 2 Again in February 1928

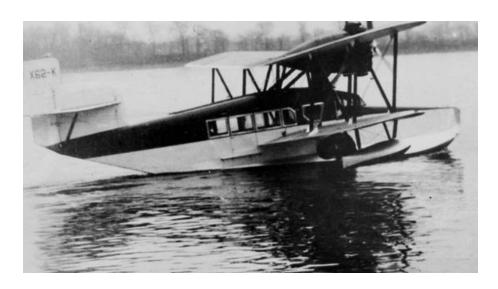
- To highlight his previous career as an air mail pilot, Lindbergh was authorized to carry mail over CAM 2 February 20 and 21, 1928
- Volume of mail was huge, and a number of planes were required but Lindbergh personally flew each plane for at least a portion of the trip
- Cover might have flown from Milwaukee to Chicago on CAM 9



Cover postmarked in Milwaukee February 20, 1928, and flown from Chicago to St. Louis, February 21, 1928. Backstamped in Chicago at 4:00 a.m. and in St. Louis at 11:00 a.m. on February 21.

Amelia Earhart Flew Mail on CAM 27

- Amelia Earhart piloted the first amphibian flight for Thompson Aeronautical Corp. (TAC) from Detroit to Cleveland on May 14, 1929
- Flight carried 385 mail pieces



TAC's Keystone-Loening Amphibian Plane



Backstamped Cleveland, May 15, 1929. AAMC 27E27.

Signed CAM Covers

First Official Non-Stop Air Mail Pick-up on CAM 11, August 30, 1929



Pilot Trowbridge E. Sebree (1904-1998) of Cleveland signed this cover. AAMC 186.

- Device designed by Dr. Lytle C. Adams of Spokane. Also, invented the "bat bomb" during World War II
- Mail pick-up device featured on the cover of Popular Mechanics, December 1928



First Night Flight on CAM 11 Cleveland to Pittsburgh, May 20, 1929

- Cover is signed by Pilot Horace Stark
- Stark was born in New Jersey in 1901 and died in 1947 when the passenger plane he was piloting crashed in the Blue Ridge Mountains killing all 50 people on board
- At the time, it was the second worst airplane accident in the history of U.S. domestic air travel
- Stamp is apropos for a night flight; issued in 1928, it depicts the Sherman Hill beacon in Wyoming that helped guide pilots on the night portion of the transcontinental route (Scott C11)





Horace Stark

First Eastbound Flight from Oshkosh, Wisconsin, CAM 9, December 15 (16), 1928



Cover signed by Pilot Chad B. Smith (1903-1931) and Oshkosh Postmaster Ernest Schlerf (1877-1964). Smith flew for Northwest Airlines; he died after an operation. Schlerf was a minister in his early years. AAMC 9E10.



All eastbound mail from Oshkosh is postmarked December 15, 1928, but flew the next day, explaining the date of the backstamp

Personally Interesting Covers

Cover from CAM 9 Extension Milwaukee to Green Bay, December 15, 1928



Backstamped Green Bay December 15 and with Indian Motorcycle internal date stamp of December 18, 1928.

Cachet to the left is AAMC 9W8. The purple cachet is not listed.

Interrupted Flight Cover from CAM 25, March 1, 1929





After departing Daytona Beach, the plane developed engine problems and the pilot, Charles "Jimmy" Faulkner made a forced landing in the bay. He was unhurt. The mail was retrieved and placed on another westbound flight. All covers show evidence of submersion. AAMC 25W6 and AAMC 290301.

A First Flight Cover that Never Flew!



After arriving in San Francisco, cover was carried southbound to Fresno, so it has San Francisco 11:30 a.m. cachet (AAMC 8S4) as well as five-line Sacramento cachet (AAMC 8W8).

- Sacramento was supposed to be on the CAM 8 route from Seattle to Los Angeles but was dropped prior to the inaugural flight on September 15, 1926.
- A special flight from Sacramento to San Francisco was planned for September 14 for mail that was supposed to be carried on September 15.
- But the September 14 did not occur, and all mail was carried to San Francisco by train!

Well-Traveled Cover: CAM 32 Plus FAM 6



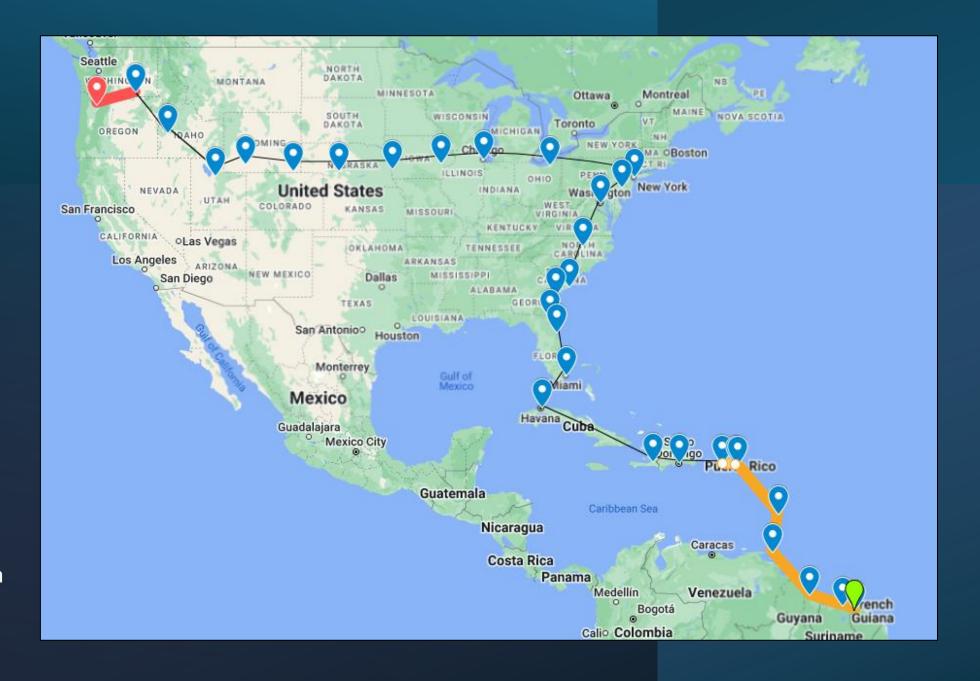


55-cents of postage (Scott 517 plus Scott C11) for 15-cent registry fee plus 40 cents for journey to St. Laurent, French Guiana on the northeast coast of South America. Cover departed for New York from Portland, Oregon on 9/15/1929 (AAMC 32E2). Carried on first air mail flight piloted by Charles Lindbergh from San Juan to Paramaribo, Dutch Guiana (Suriname) on 9/22/1929. Arrived in St. Laurent on 10/1/1929 and back in Portland on 11/8/1929.

Likely Route from Portland, Oregon to St. Laurent, French Guiana in 1929

CAM 32
Portland,
OR to
Pasco, WA

FAM 6 San
Juan, PR
Portland to
Paramaribo,
Dutch Guiana
(Suriname)



Epilogue

Air Mail Scandal and the End of CAM Routes

- Air Mail Act of 1930 aimed to reduce expense of air mail and bring efficiencies to the system
- President Hoover's PMG, Walter Folger Brown, held meeting with top airline executives that forced small carriers to merge and consolidated air mail contracts under three carriers
- Congressional investigation ensued and following charges of fraud and collusion (which were dismissed by courts in 1941), PMG James A. Farley canceled all air mail contracts February 9, 1934
- U.S. Army was given the task to fly mail again with disastrous results; 12 pilots killed
- Air Mail Act of 1934 restored competitive bidding but also abolished aviation holding companies and airlines were separated from aircraft manufacturers
- Air mail was contracted out again in April 1934 (called simply "Air Mail" or AM routes), and the contracts would continue until the Airline Deregulation Act of 1978

Final CAM Flight February 18, 1934

- Final CAM flight occurred on February 18, 1934
- It was a speed test from Los Angeles to Newark on a DC-1 that only made two stops: Kansas City, Missouri and Columbus, Ohio
- Captain Eddie Rickenbacker was a pilot on this flight



Conclusion: USPOD Deserves Credit for Today's Commercial Aviation Industry

- Experimented with aviation to carry mail and developed the infrastructure needed to fly cross country day and night and through weather of all types
- Through air mail contacts, provided the financial wherewithal for private investors to further develop aviation
- Direct connection between growth of air mail and creation of a system of regulation to ensure the safety of air travel
- Many deserve credit PMGs Hitchcock and Brown, 2nd Asst. PMGs Praeger and Henderson, Rep. Kelly and Sec'y of Commerce Hoover – but so too the brave pilots who took to the skies, many of whom lost their lives in the early days



Airmail pilot
"Wild Bill"
Hopson was
one of 35
pilots who
died flying
the mail for
the USPOD.

About Michael L. Wilson

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Has had articles published in *Air Post Journal*, *First Days*, *StampEd* and Kelleher's *Stamp Collectors Quarterly*

Member American Philatelic Society, American Air Mail Society, American First Day Cover Society, American Topical Association, Greater Philadelphia Stamp & Collectors Club, U.S. Stamp Society, U.S. Philatelic Classics Society, Collectors Club of New York, Philatelic Society of Lancaster County, Bermuda Collectors Society, Civil War Philatelic Society, Pennsylvania Postal History Society, and Wisconsin Postal History Society

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Resources

Airlines and Air Mail: The Post Office and the Birth of the Commercial Aviation Industry, F. Robert Van Der Linden, The University Press of Kentucky, 2002.

Aerial Pioneers: The U.S. Air Mail Service, 1918-1927, William M. Leary, Smithsonian Institution Press, 1985.

American Air Mail Catalogue, Volume One, Sixth Edition, American Air Mail Society, 1998.

American Air Mail Catalogue, Volume One, Seventh Edition, American Air Mail Society, 2014.

American Air Mail Catalogue, Volume Three, Seventh Edition, American Air Mail Society, 2017.

United States Postage Stamps 1902-1935, Max G. Johl, Quarterman Publications, Inc., 1978.

U.S. Domestic Postal Rates 1872-2011, Henry W. Beecher and Anthony S. Wawrukiewicz, American Philatelic Society, 2011.