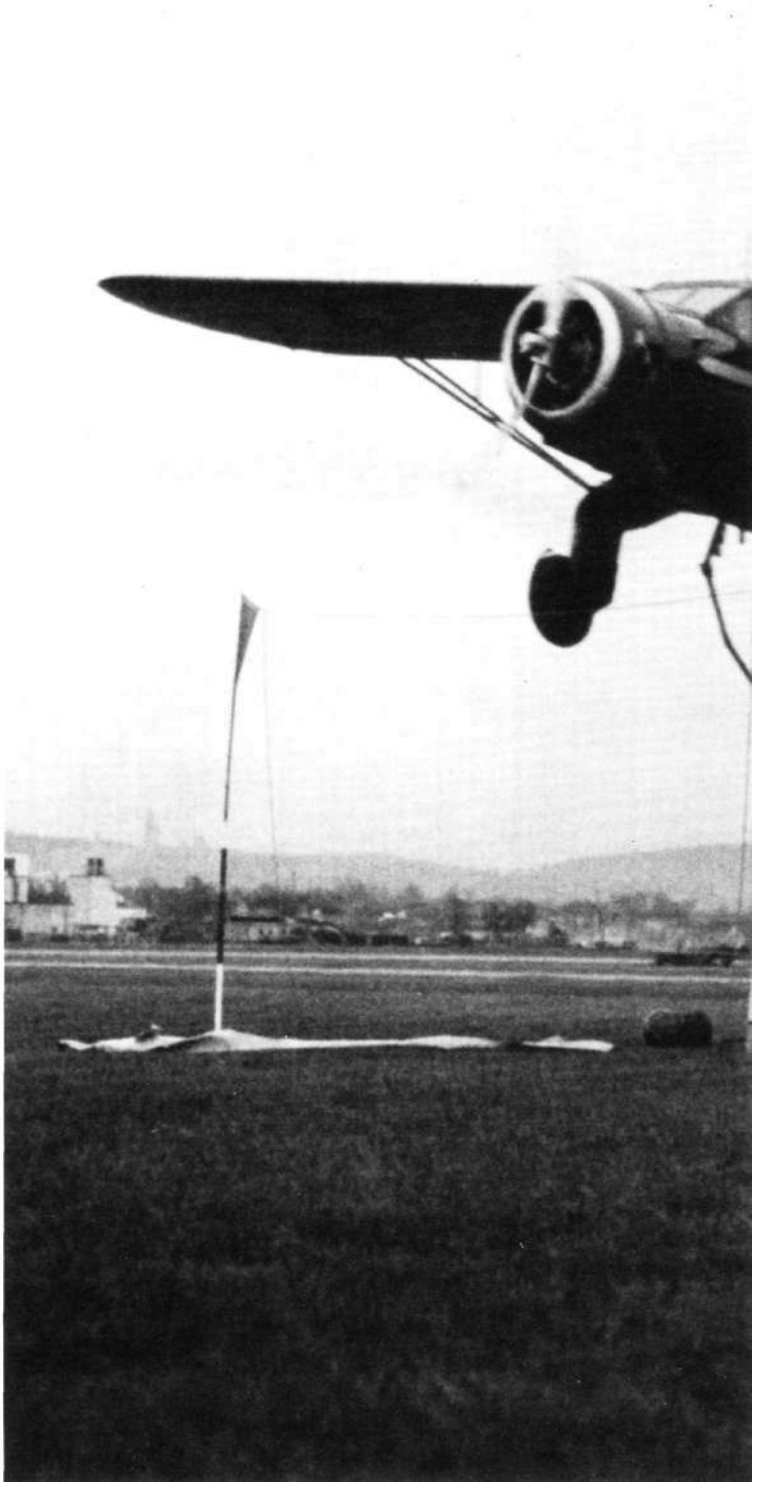
TREETOP AIRMAIL-II

by Earl R Stahl Illustrations by the author

An Account of the Development and Implementation of a System to Provide Aerial Delivery of Letters and Light Cargo to Small Communities by All American Aviation, Inc.

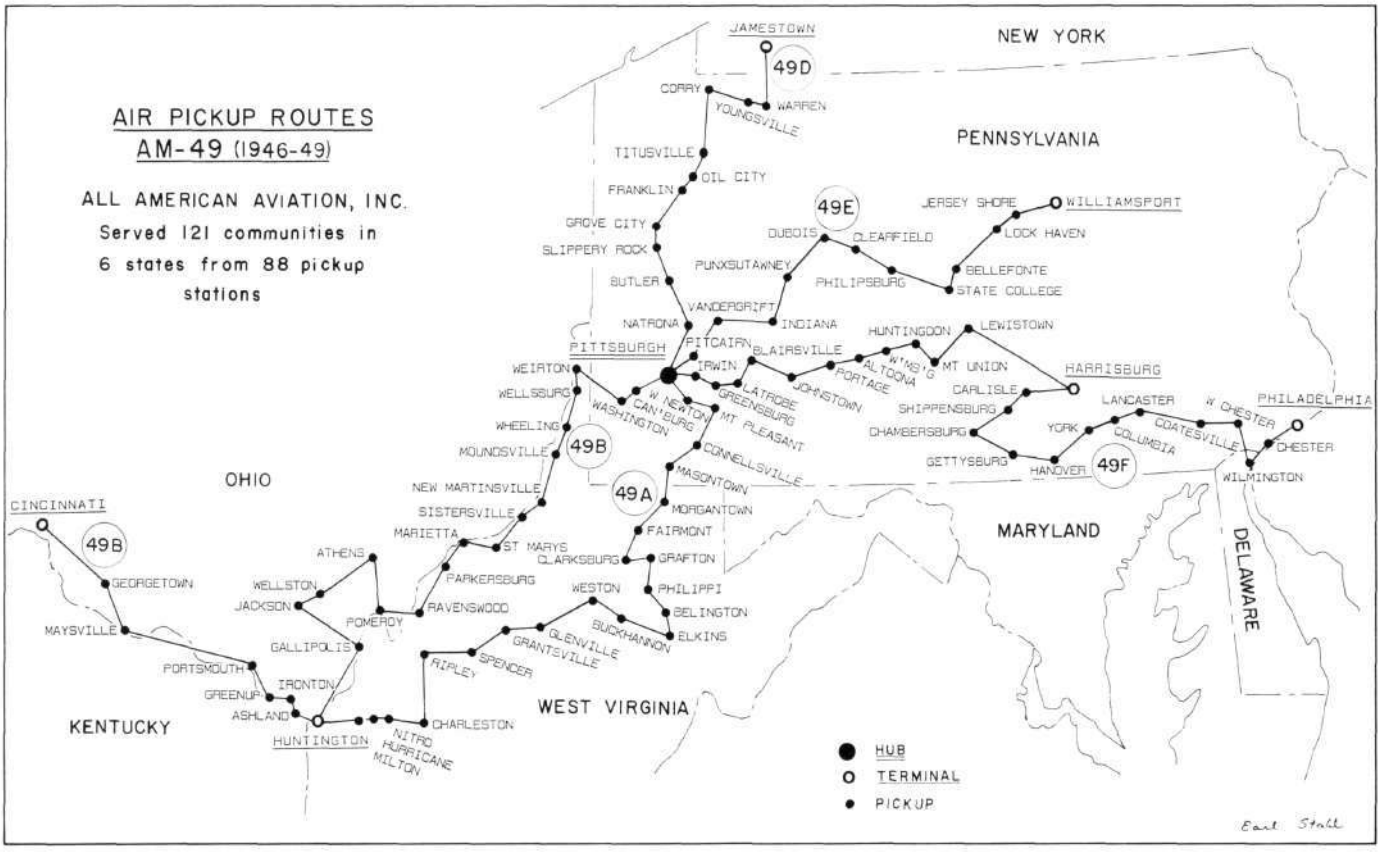


AIRMAIL PICKUP SERVICE CAME TO A HALT ON MAY 13, 1940, when the Post Office Department determined it had no legal authority for further sponsorship since the one-year trial had satisfactorily demonstrated it was both practical and useful. Members of Congress from West Virginia and Pennsylvania, bolstered by resounding constituent support, organized to battle for restoration. In several months of concerted activity, the enabling legislation for the trial period, the Experimental Air Mail Act, was repealed. To replace that act, the Civil Aeronautics Board (CAB) was granted jurisdiction over the newly proven system of aerial deliveries. Exercising its expanded authority, the Board on July 22, 1940, awarded All American Aviation, Inc. (AAA) a Certificate of Public Convenience and Necessity for five pickup lines to transport mail and property. Realigned routes, totaling 1,380 miles, would radiate from Pittsburgh to Huntington, West Virginia (two routes), Jamestown, New York, Williamsport, Pennsylvania, and Philadelphia to serve 112 localities in six states. Communities to be served in this plan ranged from 800 people to 120,000. This approval represented, by far, the largest single expansion of domestic air transportation to that time.

Pickup Service Restored—During the several months of legislative and bureaucratic activity to restore service, AAA at considerable expense kept its organization intact, so upon award of the follow-on contract, they were ready to fly. Airmail pickup service resumed on August 12, 1940, along three of the routes designated 49A, 49B and 49F where most of the stations already had the tall steel-post ground facilities in place. Opening of the other two routes, Air Mail 49D and 49E would be deferred until a totally new pickup method was ready for introduction. As communities reacquired their links to the nation's air system, there were again crowds of spectators and ceremonies of welcome at pickup sites along the way.

Ex-military UC-64A (s/n 44-70303), major overhauled and converted by manufacturer, undergoing tests at Noorduyn factory, Cartierville, Quebec, prior to delivery to All American Aviation. AAA pilots soon declared the plane's laggered response to control inputs unsatisfactory for pickup service, so it was withdrawn from scheduled operations.

(Graetz Photo via Noorduyn)

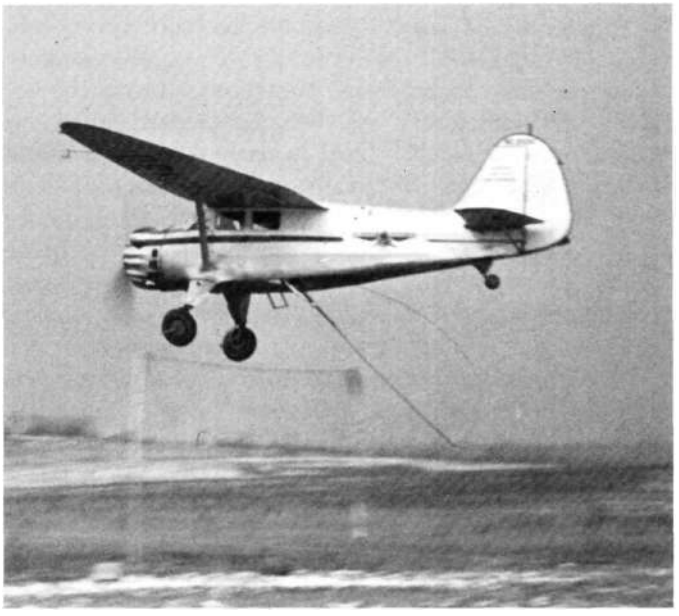


Dr. Adams Departs—From the outset, All American had notable success in fulfilling its primary mail hauling mission despite escalating discord between the two top corporate leaders. Visionary inventor and promoter Dr. Lytle S. Adams and pragmatic, moneyed Richard du Pont were increasingly at odds. As related earlier, after year upon year of effort developing an aerial delivery/retrieval method with nonstop advocacy of its worth, Adams had turned to du Pont for necessary financial backing. Disharmony of objectives and temperament surfaced almost immediately and continued to grow. Word of the conflict spilled into print when Adams openly complained his long and worthy efforts to provide rural America aerial delivery services were being usurped for the benefit of wealthy du Pont family interests. Richard du Pont vigorously rebutted the assertions. The dispute became bitter to the point of involving some members of Congress. To allay further problems, a financial settlement was negotiated with Adams around the time the permanent route awards were being finalized; Dr. Adams then withdrew from All American and faded from the feeder-line scene.

New Pickup System Developed—Although it was a modestly capitalized, small company, All American displayed a determined commitment to improve the inflight delivery/pickup system with sound research and development efforts. This was first demonstrated before scheduled flights commenced in 1939 when Operations Manager Jim Ray's task team was directed to upgrade Dr. Adams' patented method. Soon after, however, day-in, day-out operations by the various line pilots pinpointed the need to keep the plane's grapple in a stable position since its often swinging motions, at the end of 55 feet of wire cable, contributed to too many missed first attempts to snare the outgoing load. In response, a decision was reached to experiment with a retractable arm for precise positioning of the hook. An engineer, Stuart Plummer, was hired in August 1939 to work the problem. All existing methods and hardware were to be evaluated and changed if necessary.

In preliminary trials at Wilmington, Delaware, a variety of

All American Aviation SR-10C using grapple system for pickup at Johnstown, PA, August 1940. (Earl F. Stahl)



Stinson SR-10C's nimble control response enabled pilots to make pickups safely adjacent to trees, buildings and other obstructions in the frequently occurring low-level turbulence. (Earl F. Stahl)

Boom extended for pickup at Johnstown. During war years, at overhaul, Stinsons were painted silver with red and blue trim. (Earl F. Stahl)

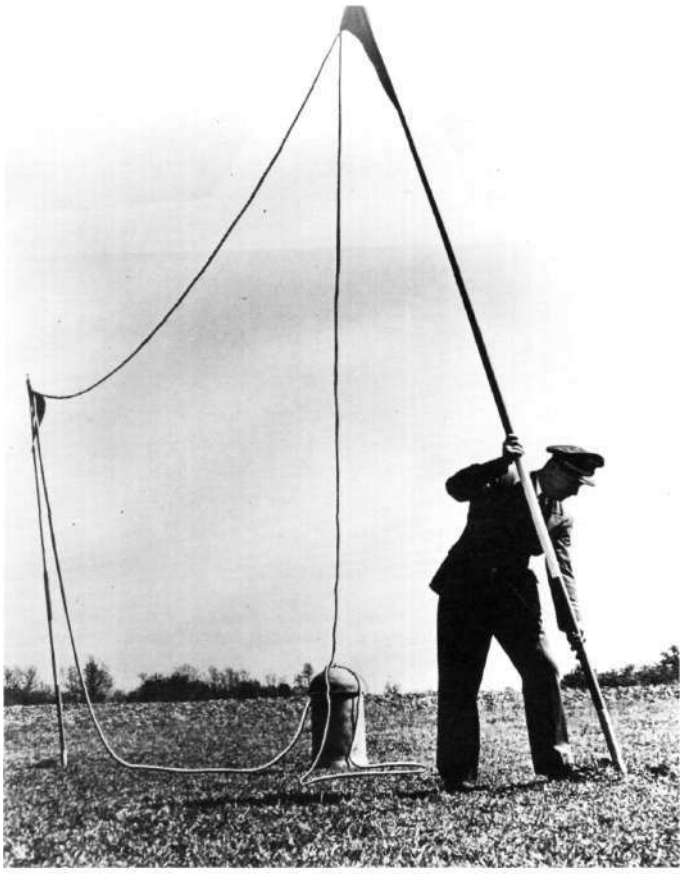
options were investigated. It was found (at one extreme) that reliable pickups could be made from a single-prong hook extending as few as three feet below the aircraft's wheels in combination with a ground station only three feet tall. Several retractable arm configurations were tried. Also, the properties of a new product of the du Pont family's chemical firm, Nylon, in different rope weaves, were examined. It was determined that Nylon's strength and elastic qualities could be employed to cope with the stress of rapidly accelerating a picked-up load to flight speeds. Beyond that, a totally different pickup mechanism was designed and tested. Patent records list Stuart Crosby Plummer as inventor of the system.

Plummer's scheme, totally different than pioneering methods, required new equipment on aircraft and at ground stations. A 15.5-foot-long, two-inch-diameter, laminated ash arm was mounted at the forward side of the Stinson's floor hatch. It pivoted downward from a retracted belly position to an extended 45-degree angle with a single-prong pickup hook steadily poised at the lower end. In the cabin, a compact mechanism consisting of a reel, brake, and electric motor was installed near the hatch on the floor. Nylon rope, 3/8-inch diameter and 40 feet long, connected the hook to the reel.

The revised ground stations used portable, almost flimsy, poles, each in three sections—aluminum tubes below and a length of bamboo at top. Set upright in ground sockets, they were 20 feet apart, 20 feet high at first, but soon reduced to 12 feet. Orange-colored canvas triangles with wire hitch-pin clips held aloft the loop of 3/8-inch Nylon rope attached to the cargo container set on the ground between the poles.

Design and construction of the delivery containers remained relatively unchanged since they met two primary requirements: excellent protection of mail and express whether being dropped or picked up, and aerodynamic/ weight qualities to allow them to trail stably in tow.

Using this improved equipment, the pilot would descend much lower than before and at higher airspeed (up to 120 mph) in approaching a station for transfer of cargo. The incoming delivery, its rope trailing above and behind the hook, was released by the pilot about 200 feet in front of the poles to free-fall as before. As the plane crossed the poles, the extended arm contacted the Nylon transfer rope causing it to pull free from the holding clips; at the same time, the rope slid down the boom into the hook which then disengaged from position. Under strain of lifting and accelerating the burden, the Nylon ropes stretched. This tension on the ropes caused the pickup mechanism to freely, though briefly, unspool more rope. Then, as the captured load gained speed, the unit's brake automatically, but smoothly, stopped paying out rope. Elongation of the Nylon ropes, characteristically without rapid recoil, concurrent with rapid, brief unwind of the pickup line was so effective in dissipating energy, strain on the aircraft was usually barely perceptible to flight crews. Once the flight mechanic determined there was no fouling



Aluminum tubing, bamboo-tipped pickup station poles were 12 feet tall (originally 20 feet). Wire clips on canvas flags held 3/8-inch nylon rope aloft. Protective container, 28.5 inches tall, rested on ground. (USAir)

Beechcraft D18C-T in factory air pickup tests. Three Twin Beeches were procured. (Beech Aircraft Corp.)

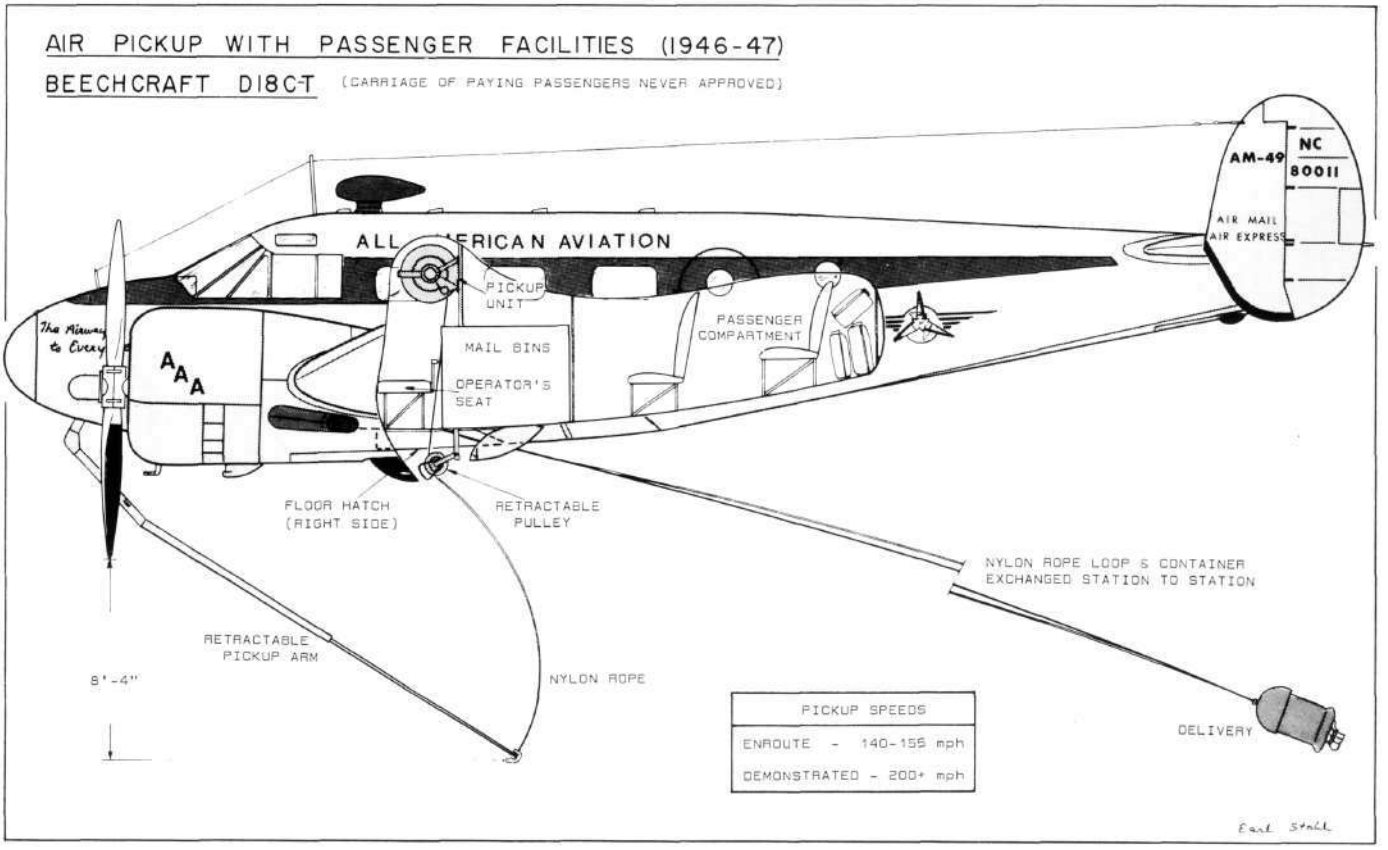
during the procedure, an electric motor was used to quickly draw the container close—the last 30 feet to bring the container into the cabin being accomplished by hand.

All of the Stinsons were fitted with the pickup unit, designated AAS4, by early 1941. Pilots were then able to make exchanges with greater accuracy and at higher speeds. Terminal-to-terminal speed was rescheduled upward five mph to 110 mph; also, cargo load limit was elevated from the previous 25 to 50 pounds. With an electric-powered reel replacing the old hand crank, workload for the flight mechanics was eased in handling containers for drop and retrieval. Further, the task for ground messengers to set up deliveries became less strenuous and quicker than hoisting and stretching the replaced heavy hemp rope to the tops of the old tall poles; this was particularly important when the volume of shipments required multiple pickups. Flight crews and ground attendants alike found the new system to be a vast improvement. Over the next nine years more than one-half million aerial pickups would be accomplished, and the concept would be the basis for wartime applications to snatch troop-carrying gliders aloft and even enable humans to be whisked from dangerous, remote locations.

Favorable Development Era—In retrospect it is evident that award of the permanent routes was at an advantageous time. Many businesses were regaining vigor as the Great Depression of the '30s waned. World War II was overwhelming much of Europe creating demand for American products, many from the region served by AAA. Then, too, our nation's impending involvement in the conflict would soon tax all communications and delivery networks. Such factors during the war years would cause pickup mail volumes to reach almost one million pounds a year. Likewise, air express hauled in a contractual arrangement with Railway Express Agency would mount to 168,000 pounds in one year. In fact, demand for AAA's service soon required a second round trip on Route 49D to Jamestown. One town on 49D, Corry, Pennsylvania, had an aircraft parts supplier, Air Associates, Inc., that relied heavily on air pickup to move its finished product to customers. To handle their shipments, multiple pickups were common. On one occasion, pilot Dave Patterson and flight mechanic Ralph Monaco had to make 33 successive pickups to get the load on board before they could head to the next station! Since flight crews' pay was based on route miles flown as opposed to time in flight, Corry was often not the most popular station along the way. In following years, daily service was doubled on other routes. At one point, the fleet of Stinsons grew to 11.

Encouraged by these early successes to bridge the gap between major cities with scheduled air service and the small communities without such benefits, broad expansion of on-the-fly mail service was sought by community leaders, some legislators and aspiring air carriers. A potential competitor, expecting to use AAA's method, applied to establish seven pickup routes in the Midwest. About the same time, All American Aviation sought not only to expand its existing network, but also create a vast new system throughout the Northeast. Broadening the horizon, in defining his vision of the potential for feeder lines, AAA president, Richard du Pont, strongly advocated, and indeed, sought authority to carry revenue passengers on pickup routes. With the United States' declaration of war in December 1941, however, government consideration of any such growth was placed on indefinite hold.

Early Impact of War on **AAA**—Beyond the mounting regional importance of their airline, All American personnel increasingly became engaged in other facets of the war effort. By June 1942, Richard du Pont was making glider pickup



demonstrations for high-ranking Army Air Corps personnel. Soon, pilots Norman Rintoul and Lloyd Santmyer joined the military, where along with AAA engineers and technicians, capability to pick up and tow large troop- and cargo-carrying gliders was rapidly advanced. During the war years, for various missions, a variety of aircraft including Douglas C-47, Boeing B-17, Noorduyn UC-64, and even a Grumman F6F were fitted with apparatus evolved from the airmail pickup system.

In a sensational undertaking, guarded "Secret" at the time, it was shown that humans could be safely lifted from small clearings by a low-flying plane. An earlier incident at Huntingdon, Pennsylvania, had "planted the seed." There, perhaps unwittingly, the messenger had accepted an express package with 25 chicks consigned to Miami. Minutes later, after a 100-plus mph pickup, when flight mechanic Cecil Lingar opened the protective delivery container, he was astonished to have pullets on board, unharmed and chirping. Some time later, following successful experiments with larger animals, paratrooper, Lt. Alexis Doster, volunteered to suit up with a special harness to allow old pro, now Air Corps Captain, Norm Rintoul, flying a former All American *Wasp*-powered Stinson (NX 2311, used exclusively for testing), show that a human could be safely snatched from ground to air. The British, particularly, made some use of the technique to recover operatives from enemy territory. After the war, on a number of occasions, AAA employee, Bernard Cain, was picked up by Rintoul before large crowds at air shows.

Change **of Command**—The war effort had an especially devastating impact on All American Aviation. In April 1943, Richard du Pont resigned his position of president to become head of the Army's expanding glider program. In only five months he would lose his life, along with three others, in a test of a new, large cargo glider. It was a tragic loss to the nation and aerial commerce.

When du Pont resigned, Halsey R. Bazley was named president. Highly qualified, he had been vice president of operations at the Pittsburgh hub. A proficient pilot with experience back to the first World War, he was also a seasoned administrator who shared his predecessor's vision of extending pickup routes across this nation and beyond; further, he strongly supported du Pont's ideas of carrying revenue passengers on the scheduled mail runs. Hal Bazley's elevation to top position was viewed favorably by flight crews and ground personnel alike because of his detailed familiarity with day-to-day operating requirements.

To accomplish their jobs, pilots sometimes applied the sort of knowledge, skill and daring exercised by barnstormers and airmail pilots of pioneering years. Frequently they would find themselves pushing beyond the limits of "contact flying." As mentioned earlier, during the trial, first year, no flight rules were imposed by the Post Office Department other than to keep visual contact, but with the award of permanent routes, CAB set weather minimums of 500-feet ceiling and one-mile visibility as viewed from the cockpit. En route, if pilots became "stuck" and had to pull up on instruments to return to base, that action had to be justified by a letter of explanation; by very liberal interpretation of weather observations from the Stinson's left seat, pilots found it not necessary to write many such letters. In fact, octogenarian, Captain Lloyd Santmyer, reminisced, "If we had followed those rules, we would have gone bankrupt in one year." That seemed to

reflect the attitude of flight crews to get their tasks accomplished.

Observers Fly Along—Without CAB approval to carry paying passengers, the limited few invited to view events from the Stinson's cabin were sometimes journalists. In good weather the trips for them were pleasant, scenic journeys punctuated each few minutes with descents to exchange cargo. Mostly, however, they wrote about trips when the going was more difficult

Paul Trescott, a newspaper reporter for the long-defunct *Philadelphia Bulletin,* told of his evening trip on Route 49F from Harrisburg to Pittsburgh. "First pickup out of Harrisburg was Mount Union and as we crossed the mountains, going west, storm clouds were piling up. We went into rain; the ground disappeared. The motor roared on. We crossed one mountain, then another, and glided down. Ahead, smokepot flares marked the base of pickup poles. It was like dusk. Mail was dropped, more mail picked up. The plane soared up. Mountains were ahead. The ship tossed. Rain fell in torrents. Trees below us whipped in the wind. Through a gap in the mountains we passed, if we had come down 50 feet, we'd have landed on a highway. The windshield was leaking; the flight mechanic handed me a couple of mail bags to drape over my legs and shed the water. They worked well. Huntingdon lay ahead. The plane dipped, but the messenger from the Post Office had not erected the poles. So we circled once in the rain. By that time the messenger was out, and with him a couple of spectators. The pickup point is on a hill with a sharp drop on two sides. It takes a lot of finesse to drop a mail bag just right, but pilot Tom Kincheloe did it. On the plane roared through the storm to Williamsburg, a small town with a paper mill. We got the mail there without seeing much more than the smokepots burning.

Continuing, Trescott relates: "Duncansville [Altoona] was next, we took on mail there without incident. Then up the mountain near the famous Horseshoe Curve, we slid close to the trees and away to the next ridge; finally, we came to one mountain higher than the rest. The plane seemed to stand still. 'Downdraft,' said Kincheloe. 'They're bad.' Anyway, we finally reached a point where either the plane got higher or the mountain lower and the plane slipped over. On the other side was a town. It was dark. We circled low, the pilot looking for the pickup point. Another circle, and still no sign of the pickup poles. Kincheloe grunted, 'Two towns and both wrong.' He turned the plane away, flew a couple of minutes. Then the plane dipped easily, dropped one cargo and took on another. The town was Portage, the route map said, but nearby towns looked just like it.

"Johnstown was a smudge but the pickup near a golf course was a cinch. So were the dips at Blairsville and Latrobe. Between Latrobe and Greensburg there is only three minutes' flying time, but it was enough. In that scant period Lowden had sorted the pouches and had the container ready to drop. A white banner was between the poles at Greensburg, and it was raining cats and dogs. 'Knew it,' said the pilot. 'At least two pickups.' We snared one container. It was full of mail. Lowden emptied it quickly while we made a circle. We dropped it and picked up another. Still the white banner between the poles. We circled again, ready to make another pickup, but found the messenger taking down the poles. He had forgotten to remove the banner signaling necessity for another pickup. He waved us on, but what was said in the plane must have burned his ears."

Longtime pickup airmail pilots (L-R) Capt. David Patterson, Capt. Thomas Kincheloe and Capt. Clyde Hauger. Kincheloe flew All American's pickup routes from the first day to the last, 10 years later.
(Courtesy Clyde D. Hauger, Jr.)

Noted *Air Facts* magazine editor, Leighton Collins, spent several days in the winter of 1942-43 as a passenger on various routes. He was greatly impressed with the skill of pilots and their detailed knowledge of the terrain. On an evening flight returning up the Ohio River (Route 49B) snow flurries became frequent and heavier; ice collected on the cowling hinges. With conditions deteriorating, Collins wrote pilot "Clyde Hauger's attitude became strictly professional." Winding from side to side of the river, to keep opposite the steepest hills, they passed an Army P-40 and DC-3 forced down by foul flying conditions. There was heavy static on the radio; Pittsburgh could not be contacted for a weather update. With a feeling of awed confidence that Hauger knew exactly where he was, they would from time to time cut away from the river for a few miles to make a pickup. For Collins, it was uncanny—amid the snow flurries the pickup poles, lonely messenger, his or her car, the mail container would loom ahead, right over the nose. Then the snatch, a steep turn and back to the river. Further along it was so bad Hauger landed to have a messenger take him to a phone to query the dispatcher about weather ahead. It was holding. In 10 minutes they were skimming terrain again headed for the last four pickups when the engine roughened, the cowling shook. Hauger wheeled into a 180-degree turn to make for a field to get the mail load to a post office and then take a rare bus trip home.

Mrs. Richard du Pont, on several occasions, went along to see "how they manage to get by in such bad weather when nobody else would consider taking off." On a trip, Pittsburgh to Williamsport, with pilot Clyde Hauger, flying under a low ceiling with rain turning to snow and the air very rough, they were unable to cross mountains east of DuBois. With ice gathering on the wings, Hauger flew parallel to the range and then "ducked into a narrow pass. I looked up and

on both sides saw those mountains. They looked awfully big and very near, it was terribly rough, and we were winding down this pass making a sharp turn here and there. Clyde told me they do this often when they can't get over the mountain . . . that kind of flying is interesting and fun."

On another occasion, Captain Dave Patterson and his flight mechanic were making their way through the same gap. He later admitted, "I should not have gone in and knew it. About halfway through I saw I was going on instruments and did not have enough room for a level turn. I knew the mountain on the far side of the next bend was too high to clear in a straight climb." Pulling up into the overcast in a right, climbing turn with the pickup man hanging over the hatch all the way, yelling trees were just below, they made it.

Another cut through the mountains just northwest of Johnstown, the Conemaugh Gap, 1,350 feet deep, 4.5 miles long, became the passageway when Laurel Ridge was shrouded in clouds. One All American pilot related, in stormy weather between its precipitous slopes, turbulence could be frightening.

Weather Takes Its Toll—Often confronted by such difficult flying conditions, serious incidents were bound to arise. Foster Thomas once attempted to return to Williamsport when trapped by a blinding snow and sleet storm. In near zero-zero conditions, he got only as far as the Bellefonte airfield. Upon touching down, the wheels broke through hard crust covering five inches of snow, causing his *Reliant* to flip over the nose to its back. The crew was unhurt.

Luck was with a crew in the spring of 1943 when an exceptionally powerful downdraft forced one of the planes down into scrub trees near a crest of the Tuscarora Mountain range. Captain Russell Crow, flight mechanic Ed Louden and a pickup trainee were unscathed, the cargo unharmed; the Stinson was heavily damaged but salvageable.

Six months later and 50 miles south, another Appalachian ridge claimed a flight. Captain Thomas Bryan and Victor Gasbarro, in fog and rain, had made the afternoon pickup at Chambersburg. To reach the next destination, Gettysburg, 2,100-foot-high South Mountain had to be crossed. Brian climbed in clouds to a safe altitude and allowed time to clear the ridge. However, unexpectedly strong headwinds slowed groundspeed; they began to descend, still in clouds, only to crash near the top of Piney Mountain. Their collision with scrub trees, underbrush and rocks was accompanied with a generous portion of good fortune since their injuries were painful but not life-threatening. The Stinson's right wing was torn away and the engine separated from the nose. When the flight failed to arrive over the Gettysburg station, search crews were organized. Bryan with a broken foot and Gasbarro with lacerated head wandered in fog, rain and underbrush in darkness for eight hours before coming upon a deserted hunter's cabin where they rested. Persistent poor weather prevented an aerial search, but later the next day a police rescue team found them. The mail and express remained undamaged. In the midst of wartime shortages of aircraft and parts, a road was hacked up rugged terrain to salvage the wreckage.

Some time later, Vic Gasbarro had another close encounter when the windshield of their SR-10 was damaged upon collision with electrical wires strung from hill to hill across the Juniata River. Pilot Millard Lossing had remained low to follow the river to the next station. After the wires encounter, further pickups were abandoned, but they continued in flight to home base.

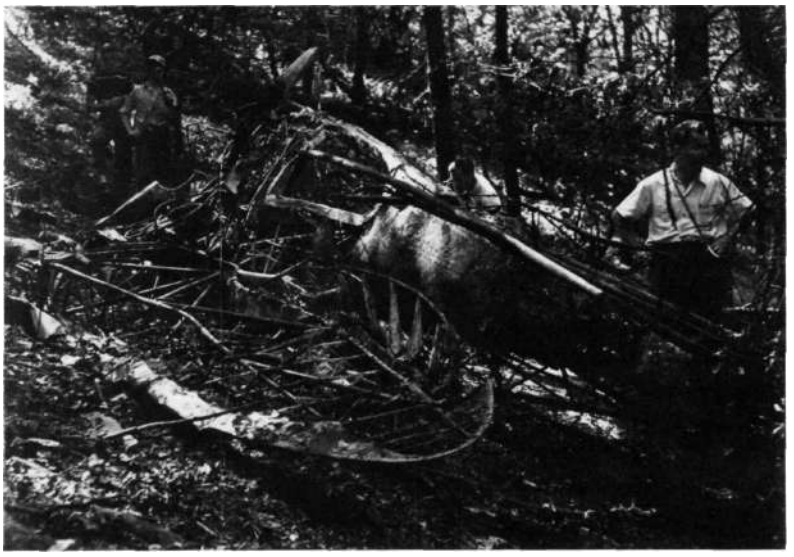
Supporting Services—Early on, an impediment to smooth operations was inability for timely communications with messengers at pickup points. When flying delays were imminent, word from the dispatcher was sent by telephone or even telegraph, but local messengers, by that time on their ways to prepare for plane arrival, were usually out of touch. A major improvement commenced in early 1941 when technician John Graham was sent to each town to install Motorola radio receivers in messenger's cars. Thereafter, the base radio operator would keep those along routes informed of schedule deviations, or, sometimes, request a note to pilot be placed in the outgoing bag when communications with a flight were erratic. Pilots would also "blind-broadcast" to advise stations ahead of multiple deliveries, or announce he was over-flying a station because of unacceptable local flying conditions.

Though often not adequately acclaimed, the mechanical staff responsible for airworthiness of an airline's equipment occupies a position of supreme importance. With All American's Stinsons operating at minimum altitudes over rough terrain, frequently in poor weather, few, if any, air carriers demanded more of their fleet; their aircraft were regularly subjected to pounding turbulence as well as the stress on airframes from sometimes abrupt pull-ups after exchanges of cargos. With two- to four-dozen pickups each round trip, engines, particularly, were stressed by frequent cycles of power changes to repeatedly climb, briefly cruise and then descend. Working on planes operated in such an environment, AAA mechanics undoubtedly acquired more vital knowledge of Stinson SR-10Cs and Lycoming R-680 engines than any others.

Aircraft were maintained at Allegheny County Airport under supervision of Edward D. Musser. Nine *Reliants* could be accommodated in their hangar along with shops for machine, sheet-metal, radio and instrument work; another room was set up for sewing fabric covers for the airframes. Engines and propellers were overhauled in a separate building which also housed the pilot's Link Trainer.

Being unique for small operations of that period, Musser was cited for his implementation of an orderly maintenance program to keep track of parts, materials and status of aircraft, along with due dates to inspect and maintain aircraft and engine components. This assured vital servicing while guarding against overloading shop capacity. Differing levels of maintenance were conducted at intervals of 15, 60, 120 and 450 flight hours. Major overhauls of airframes were scheduled at 4,500 hours.

As many as 50 technicians were engaged in the maintenance effort. Seven supervisors directed about 20 "A&E" licensed mechanics who were assisted by an equal number of apprentices. Two inspectors assured compliance with CAA and company standards. Most maintenance was carried out at



Burned wreckage of AAA Stinson NC 21107 crashed August 3, 1944, on fog-shrouded, forested hillside after pickup at Yorksville, Ohio. Gerald Lindemuth and Ralph Monaco, though seriously injured, survived. Most of the mail was destroyed. (Courtesy Ralph Monaco)

night, starting as soon as the planes completed the late-day tours. Like the flight crews, AAA's maintenance personnel were a competent, dedicated, proud bunch who recognized their key roles for safety, reliability and success of the venture. Queried decades later about their confidence in the mechanical staff, pilots had only words of admiration and praise.

Expansion Prospects Revived—Throughout the war years there was steady growth of All American's on-the-fly delivery services. During the fiscal year ending in mid-1945, 1,370,826 miles were flown, 969,698 pounds of mail carried and 75,787 pickups made. Comparison of miles actually flown with scheduled miles, never lower than 89.3 percent, one year reached 95.8 percent. (In contrast, when the Post Office Department sponsored the first year of operation, 70 percent completion of schedules was hoped for.)

In the midst of that successful achievement, when the Civil Aeronautics Board determined it was opportune to accept applications for new feeder-line routes, President Bazley was ready, submitting proposals to serve the New York-New England, Southeastern, Great Lakes and Middle Atlantic regions with 55 routes to serve 1,156 communities. If all AAA's requests were granted, Bazley estimated a fleet of 128 single- and twin-engine aircraft would be required to carry out the mission. Stalwart boosters, Congressman Jennings Randolph and Senator Pat McClarran strongly endorsed such growth before each house of Congress.

Meanwhile, in an effort aimed at enhancing the value of AAA's service to communities, by seeking to transport outgoing mail well after the close of daily business activity, the idea of nighttime pickup operations was revived. (It had been tried briefly in November 1939 when the original grapple pickup system was in use.) New demonstrations were conducted a short distance from the Pittsburgh base, at Bettis Field, where airport lighting could be blacked out to simulate conditions at en route sites. In place of the early neon ribbon lighting, this time, to mark position of the pickup station, a single light was mounted atop each of the 12-foot-tall pickup poles. Although pilots again proved it could be done, the Civil Aeronautics Board, once more, deferred granting permission for implementation.

Looking for other ways to extend use of their well-proven pickup capabilities, studies were made to evaluate the practicality of commercial glider service whereby one or more motorless craft, loaded with manufactured goods or perishable food products, would be picked up by a large tow-plane for release over destinations along a route. In an effort to demonstrate viability of the concept, in fall 1945, a Schweizer TG-3 glider (with shortened wings), loaded with cases of live lobsters, was picked up from a beach at Hingham Bay, Massachusetts, and towed to Bendix Field, New Jersey, for release. After a few well-publicized trips, the venture was abandoned.

From the outset, interest in All American's equipment and methods extended beyond our borders. Even during the height of war, representatives of business from Great Britain, Australia, Sweden, Central and South America came to observe. Opportunities for immediate introduction of pickup service were seen in Brazil where All American organized a subsidiary and sent a small contingent to provide engineering assistance and crew training. Pickup gear was installed on an aged Junkers JU-52 trimotor of a cooperating Brazilian airline, but the venture never matured to the point of regular service.

Once termination of the war seemed in sight, aircraft manufacturers began anxiously contemplating their futures with preliminary designs of commercial aircraft, including feeder-airliners, on their drawing boards. Hal Bazley and key-All American personnel, advancing their plan to add passengers on their mail runs, discussed their projected requirements for combined passenger-pickup service with various makers including Boeing, Curtiss-Wright, Douglas, Lockheed and Martin. At conclusion of the exercise, an order was placed with Lockheed for five of their proposed 16-passenger *Saturn* aircraft. Although a prototype *Saturn* was completed and tested, Lockheed abandoned the project without any commercial production.

Serious Accidents Occur—With routine mail-hauling operations continuing, the ever-present threat of serious mishaps again became reality. Valley fogs are a common occurrence in the Appalachian region. On an August 1944 morning, pilot Gerald Lindemuth and flight mechanic Ralph Monaco were working their way down the Ohio River route toward Huntington, West Virginia. In fog they approached the Yorkville, Ohio airport, site of the station for Wheeling, Martins Ferry and Bridgeport. After exchanging the incoming and outbound containers, they pulled up in seriously reduced visibility only to clip tops of trees. A 17-year-old youth, working on his car, heard the Stinson's familiar engine growl after pickup, but moments later realized the sound had stopped. Racing across a corn field, through an orchard and up a hillside, he found the two airmen on the ground a short distance from their burning plane. Captain Lindemuth had been trapped in the deformed wreckage, but despite a broken leg and fractured ankles, somehow managed to wrench free. Thrown clear, Ralph Monaco had attempted to assist his

pilot's escape, but became unable because of serious hip injury. Flames destroyed the aircraft, NC21107, along with 34 of the 37 mail bags on board. Both crew members recovered.

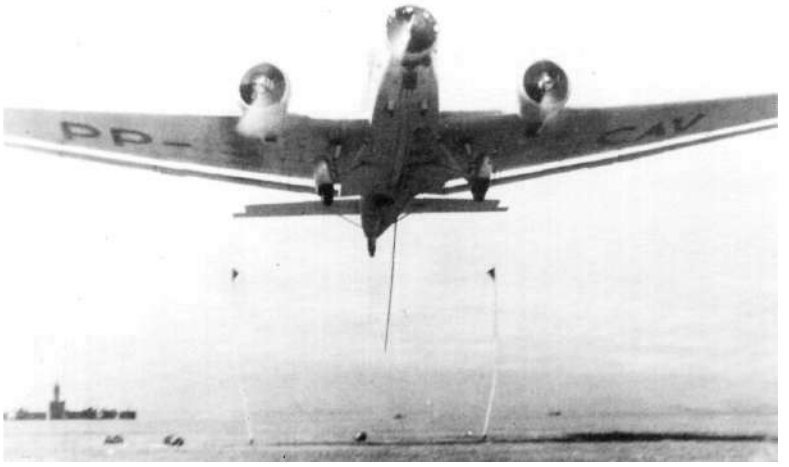
By early fall 1944, All American Aviation's Stinsons had traveled a total of 3,691,000 miles and made 290,000 inflight cargo exchanges without a single fatality. Unfortunately, on September 29, 1944, that remarkable achievement ended. Perhaps easing of piloting qualifications, as the war dragged on, was a factor contributing to their first fatal events since the pilots involved had less total and, perhaps, a different background of flight experience than was required at the very beginning of operations.

In the first instance, delivery of morning mail at State College, Pennsylvania, was normal, but the rope attached to the outgoing container parted, leaving the cargo on the ground. The broken rope, still attached to the hook, was brought on board. Expecting the messenger would need the rope, pilot Wilson Scott decided to fly across the station to drop it for a second try. The aircraft was observed to enter a shallow left turn with the degree of bank angle increasing as the radius of turn tightened. Upon completion of a full turn, his flight mechanic later reported, indicated airspeed had decayed from 85 to 50 mph. The aircraft nosed down steeply into trees 400 feet from the pickup site. Wilson Scott received fatal injuries; flight mechanic Robert Taylor suffered serious injuries. Aircraft NC21129 was almost totally destroyed.

In another few months tragedy would strike again. While attempting to take mail on board at Greensburg, Pennsylvania, the outgoing transfer rope was struck by a landing gear leg, where it hung. In a steep turn, preparing to land to remove the burden, the Stinson stalled and descended rapidly. Albert Holstrum, a recently hired pilot, received fatal injuries; his crewman, Cecil Lingar, was hurt but recovered.

New Aircraft Ordered—Concern was mounting over the tiring fleet of aircraft. Production of Stinson *Reliants* had ceased years earlier; parts were increasingly scarce with many replacement items having to be made in-house. In a move towards alleviating the matter, Bazley, in the summer of 1945, announced a surplus Canadian-built Noorduyn UC-64A, powered by a 550-hp Pratt & Whitney *Wasp,* had been purchased from the Reconstruction Finance Corporation, and it would be overhauled and modified to a "Norseman" V by the manufacturer. Ruggedly built, it was 20 mph faster and had far greater cabin volume and useful load capacity than the Stinson SR-10Cs. There was every reason to expect the type would be a suitable replacement for the Stinsons since UC-64s had been employed at home and aboard for military missions, including the very exacting human pickups.

Around the same time an order was placed for two new Beechcraft D18C-T aircraft, each to be powered by two Wright-Continental R9A, 525-hp engines. Instead of the usual accommodations for eight passengers, All American's would have pickup gear in the forward cabin and, aft of a bulkhead, seats for four. In the continuing absence of Civil Aeronautics Board approval for combined pickup-passenger service, AAA intended, in the interim, to conclusively prove viability of the concept in demonstration runs with invited, nonpaying passengers going along for the ride.



Joint venture with a Brazilian airline (1944-45) to operate combined passenger/pickup planes was abandoned. An aged Junkers Ju52 had pickup apparatus installed for trials and training.
(Courtesy Clyde D. Hauger, Jr.)

Change of Leadership—When co-founder and president, Richard du Pont, entered the Army Air Corps in 1943, Halsey Bazley was designated interim president. With the war-duty death of du Pont, it might have been expected that Bazley's position was secure. But, as the war began to wind down, controlling du Pont interests wanted a leader with fresh, perhaps, much broader vision to plan the airline's future. Company officer and du Pont family confidant, Charles Wendt, was given the task of quietly seeking prospective candidates. As the result of his search, Col. Robert M. Love, returning to civilian life from the Air Transport Command, was picked to become president beginning in January 1946. Hal Bazley was returned to his former position of vice president in charge of operations.

Right from the start, Love found himself in an almost adversarial status with various employees, including his predecessor, Bazley. Some pilots anticipated he would undertake to run the company like the Army, or possibly worse, one of the big airlines. For his part, Love had no admiration for the "hair-raising aspects of pickup lines" and the "wild, individualistic tactics" of some of the company's pilots. Likely, he had heard of exploits of pilots who pushed on in foul weather as well as the tales about some flight crews who picked up fruit and fresh-baked food from a clandestine pickup station at a farm where some pretty ladies enjoyed waving at low-flying planes.

Upon arrival, Love was in the midst of a variety of serious operating matters. With armed forces rapidly disbanding and contracts for war materials canceled, peace in Europe and the Pacific caused mail and express volumes to plummet. All the while, compensation paid by the government to transport mail had not kept pace with costs, so All American found itself operating at an ever-mounting loss; ongoing efforts to have plane-mile rates boosted remained unresolved. To further complicate matters, trunkline service to AAA's

important southern terminal, Huntington, West Virginia, was stopped by transcontinental carrier, American Airlines; that action largely negated any advantage of moving mail and express to that transfer point on key Routes 49A and 49B. Beyond that, the company's long-sought-after authority to make nighttime pickups and to carry passengers along with the mail remained unapproved.

Fortunately, one trouble spot was alleviated within months when CAB sanctioned extension of Route 49B from Huntington to Cincinnati where trunkline connections were reestablished. In the process, pickups at two additional towns en route to the new Ohio terminal were approved, bringing the systemwide number of communities served to 121.

New Aircraft Problems—When the new, larger, single-engine Noorduyn aircraft was placed in service, contrary to expectations, it did not begin to eradicate the flight equipment problem. The *Norseman* soon became unpopular with pilots for pickup duty. Captain Harvey Thompson explained pickup planes had to respond almost instantly to control inputs. The Noorduyn, "a good, stable plane," was much less nimble than the familiar Stinsons; in turbulence, close to the ground, for example, a pilot could feed in aileron control to pick up a wing without receiving the required immediate aircraft response. Similarly, sluggishness about the pitch axis created a few moments of serious anxiety for Thompson at a West Virginia station when he attempted to arrest descent and level off before crossing the pickup poles. In the absence of immediate change of flight path, he shouted warning to his pickup man, but fortunately, at the last moment the plane leveled, avoiding a serious incident. With pilots uncomfortable because of torpid control response, the *Norseman* was relegated to backup use and then offered for sale.

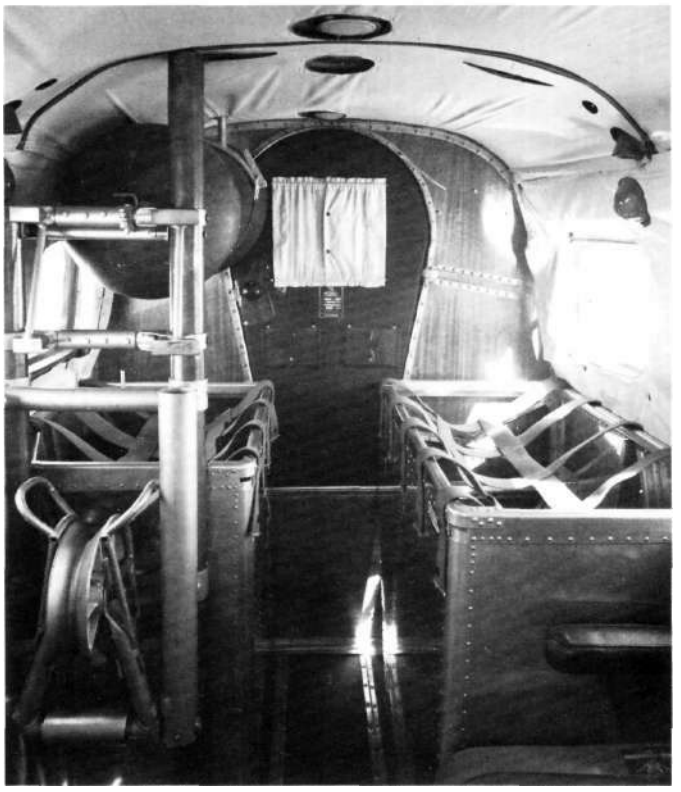
Next, delivery of the new Twin Beechcrafts fell behind schedule. The first was belatedly accepted with an experimental license to permit pilot familiarization and pickup tests to commence. While awaiting certification, the plane was restricted from revenue-producing mail and express flights. It was not until one-half year later, on November 26, 1946, that Captain Tom Kincheloe departed on the first scheduled Twin Beech mail flight; the second D18C-T was placed in service three months later. With introduction* of those modern, high-powered ships on Routes 49A and 49B, scheduled block-to-block speed jumped 50 mph to 160 mph. Soon after, a third Twin was purchased for backup and training.

Despite the Twin Beech's established record of a decade of excellent service, unrelenting problems plagued All American's new D18C-Ts. Several thousand D18s, in various commercial and military versions, had been produced with Pratt & Whitney *Wasp Jr.* engines of 450 hp. AAA, however, opted for more power by ordering 525-hp engines designed by Wright and built by Continental Motors; this type engine was used in WWII tanks, only later being adapted to aircraft use. The powerplants quickly proved to be unsatisfactory; at a board of directors meeting, president, Love, lamented maintenance costs were excessive, overhauls being required after as few as 300 hours of operation—only half the anticipated frequency for major maintenance. Cracked nose cases were said to be among the problems encountered. At one time nine engines were in various states of availability, that number being required to keep two aircraft at work on the routes. One employee remembered they "wore grooves in roads between Pittsburgh and the factory at Muskegon, Michigan," trying to have airworthy engines on hand. He related, one day a truck returned from the factory with two engines, one of the engines was installed in record time; it was started and "the thing actually disintegrated."

Another Tragedy—On April 29, 1947, a dreadful event occurred at Bellefonte, Pennsylvania. During the pickup

Noorduyn *Norseman* Mark V, here fitted with advanced pickup apparatus, was considered a likely replacement for the aged, weary Stinson fleet. (Graetz Photo via Noorduyn)

Beechcraft Model D18C-T, powered by 525-hp Continental-Wright R9A engines, and internally configured for combined mail pickup and passenger service. Civil Aeronautics Board approval to carry revenue passengers was never granted. (Beech Aircraft Corp.)



Twin Beech pickup compartment. Retractable reel, lower left. Model 15 pickup unit (not installed) mount, middle left. Mail/express bins, left and right. Passenger compartment behind bulkhead. (USAir)

attempt, the hook apparently disengaged from the extended boom without grasping and holding the transfer rope attached to the outgoing load. As the Stinson proceeded beyond the poles, at about 35 feet altitude, it abruptly nosed down, hit, flipped inverted and burned. Gearhart Porter, pilot, and Robert Schneider, flight mechanic, were killed. The mail and aircraft were destroyed. National Transportation Board, Federal Aviation Agency and others claim they have no official report in their files on this accident. However, it appeared the plane's pickup line whipped freely in the airstream and struck the elevator enabling the disengaged hook to grasp the trailing edge of the elevator. Several pilots familiar with the tragedy suggested tension on the rope pulled the elevator downward with such force, the pilot could not maintain pitch control to arrest the resulting abrupt dive.

Pickup Future Questioned—By mid-1947 the future of rural airmail service was being critically examined by government agencies. In a series of Civil Aeronautics Board hearings, costs, and indeed, even the reasonableness of continuing to transport mail by pickup planes were increasingly scrutinized. In the interim, however, to deal with immediate issues, hiking plane-mile rates, along with offering two years of retroactive payments, was proposed by CAB because of All American's accumulating losses. Next, a probe was initiated to consider (1) the present and potential airmail volume on AM 49 routes; (2) the benefit to the public and Post Office Department; (3) possible lack of other revenue generators besides mail on these routes; and (4) current and future costs to the government. In a further jab, the Board cited concern over increasing costs arising from substituting "$100,000 Twin Beechs" on two of the routes in place of single-engine Stinsons in light of diminishing mail loads. Finally, and most significantly, attention was directed to the Post Office's successful introduction of mobile highway units which moved mail at optimum hours for a total expense of 18 cents in contrast to All American's 1946 compensation of 40.73 cents a mile.

Within months a decisive blow further blackened All American's long-held vision of the future when the Civil Aeronautics Board rendered a long-awaited decision by rejecting their repeated applications for authority to carry passengers on pickup routes. This was totally unexpected by some within AAA since sometime earlier, CAB agents, after riding the mail runs, had filed reports considered to support and encourage the idea. While commending the airline for "initiative and energy" in conducting experiments, the regulatory agency concluded "the type operation contemplated requires frequent descents to low altitude for property and mail pickups which would expose passengers to hazards that do not attend the flight of conventional aircraft."

Inflight Structural Failure—If there remained any hope for reversal of that decision, it was totally wiped out on the morning of December 6, 1947. One of the new Beechcrafts was dispatched Pittsburgh to Cincinnati in clear, calm weather. After several routine cargo exchanges as the flight progressed, mail was dropped at Wellsburg, West Virginia, an instant before the outgoing bag was hooked. As the Twin Beech commenced to climb away, the right wing folded upward. Immediately out of control, the aircraft struck earth 650 feet beyond the pickup station, claiming the lives of veteran Captain Thomas Bryan and flight mechanic Burger Bechtel. At a Board meeting several days later, president Love announced the remaining two D18s were grounded; the weary Stinson fleet would carry on.

Along with government agencies, plane maker Beech investigated circumstances leading to the disaster. It was determined the lower spar cap of the outer wing panel had failed in tension six inches outboard of the wing attach bolts.

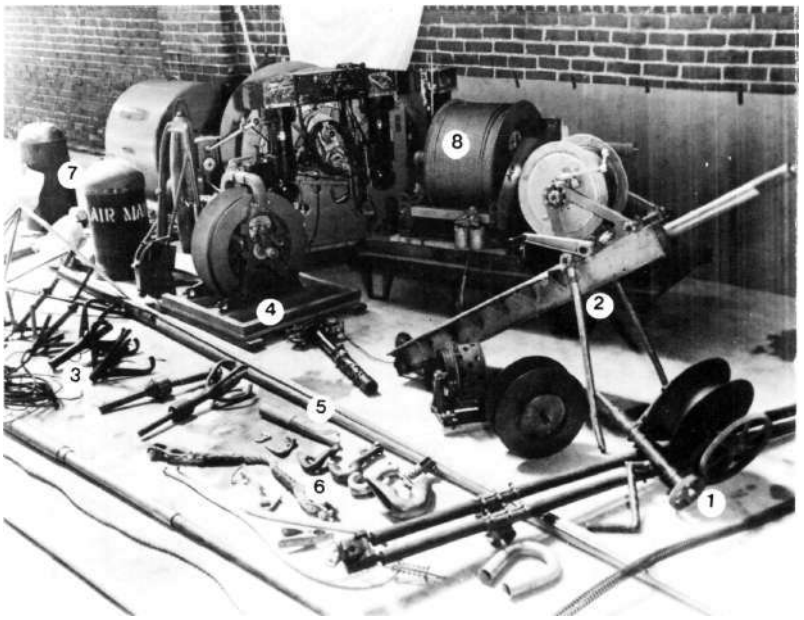
Bureau of Standards tests of failed metal components disclosed evidence of decarburization—a metallurgical condition, possibly degrading tensile strength. After study of that data, Beech and Civil Aeronautics Authority engineers asserted the amount of decarburization found was well within allowable limits of then existing government specifications as well as company standards, so was not the primary cause.

Oddly, National Transportation Safety Board, Federal Aviation Agency and others claim to not have copies of the official accident investigation of this significant occurrence. A record of conversations between Beech Aircraft and Civil Aeronautics Authority engineers, however, suggests the All American D18s were specified by AAA and designed by Beech for a less demanding mode of operation than they were ultimately subjected to in both test runs and routine service. Beech engineering personnel contended it was understood pickups would be made at 130 mph, but they later found (as did CAA engineers) some pickups may have been made at speeds as high as 200-plus mph. Further, they later estimated, operating up to eight hours a day between 20 and 1,000 feet altitude, in commonly existing mountain turbulence, the D18s were subjected to five to 10 times as many gusts, with two to three times the severity of air roughness encountered by average transport aircraft. The plane manufacturer concluded high-speed operations at low altitude, and possibly, very high-speed mail pickups resulted in more fatigue and/or loads than had been anticipated based on customer's specifications. The accident aircraft, NC 80011, had flown a total of only 2,324 hours.

Captain Harvey Thompson, who piloted all of AAA's aircraft types, including scheduled pickup runs in the Twin Beechs, found the D18s to be responsive, pleasant planes to fly. He questioned the post-accident assertions that cargo exchanges were actually made at speeds higher than originally intended by the airline. Normal pickup speed was 140-155 mph, and he believed some demonstrations may have been made at 170 mph. When the aircraft were phased into the pickup operation, Beech pilots were said to have flown along to observe the planned mode of use, so they were believed to be well aware of typical flying conditions.

After the structural failure, accelerometers were installed on the remaining D18s to record maximum loads encountered, however, only limited use was made of the aircraft thereafter.

Time for Change—Given the postwar trend of events, it was increasingly apparent All American Aviation was swimming against a swift-running tide; a new course had to be set. Robert Love, when brought in to replace Hal Bazley, was tasked to consider company options beyond pickup operations. Along with du Pont family financial advisor, Charles Wendt, he saw the most promising opportunity as seeking to convert to a conventional, short-haul passenger airline. That idea, however, was widely unpopular among many of the flight and support personnel who held to the view their unique operation was vital to their service area, and, indeed, should be expanded across the nation. In time, though, a majority of the board of directors agreed that pickup service as a national goal was doomed, so they voted to seek change.



Air pickup artifacts: 1) Dr. Lytle Adams' experimental reel/shock absorber device, 1936. 2) AAA's hand-operated winch/shock absorber used with steel cable, grapple, 1929-41. 3) Experimental grapples, 1939-41. 4) Latter stage development of AAS4 pickup unit. 5) Retractable boom used on Stinson SR-10CS. 6) Experimental hooks used with booms. 7) Fiber dome/ rubber skirt delivery containers, 1939-49. 8) Heavy-duty pickup units for troop-carrying gliders, etc. (USAir)

Besieged with applications, in a series of postwar decisions, Civil Aeronautics Board approved startup of numerous feeder airlines throughout the states. Among them, All American, in February 1948 was granted authority for short-haul passenger services in the Middle Atlantic Region provided their routes would not substantially duplicate existing pickup lines. The Board reasoned declining use, attended with rapidly escalating costs, made pickup service no longer in the public interest. Beyond that, transferring the mail subsidy from pickup to an approved successor operation would provide necessary financial support. Confronted with those requirements, AAA petitioned for abandonment of all five AM 49 pickup routes. As might be expected, postal authorities vigorously supported pickup termination, contending the cost to carry each piece of mail on AAA's planes had become so financially burdensome, in effect, nothing was left to pay other carriers receiving transferred mail, nor to cover Post Office handling expenses. Communities on mail pickup routes, but not slated to be on the planned passenger network, hotly protested the upcoming suspension of their links to the nation's trunkline air system without success.

All American management moved swiftly to plan transition to a passenger carrier. Orders were placed with Douglas Aircraft Company to convert war-surplus C-47s to DC-3s configured for feeder-line duty. The five existing mail /express runs would be terminated, one at a time, at about three-week intervals. First to go was Route 49A suspending service through Charleston, West Virginia. Two days after that first termination, at 7:00 A.M., March 7, 1949, under a new name, All American Airways, Inc. Chief Pilot Norman Rintoul departed Washington, D.C., in a DC-3 with six stops for passengers en route to Pittsburgh.

Yet Another Crash—But the pickup saga was not over. A final tragic event took place in the last few weeks as the remaining mail routes were being phased out. Captain Bill Burkhart, who almost a decade earlier started as a flight mechanic, landed Stinson NC 18488 at Clarksburg's Benedum Airport to unload cargo unsuited for normal freefall delivery. The task was accomplished quickly without the engine being stopped. In departing, the aircraft was observed to travel further down the runway and climb slower than usual. Inexplicably, instead of proceeding straight ahead over a valley, the pilot made a shallow right turn towards rising terrain. Nearing a hill, the angle of bank became very steep; control was lost and the aircraft plunged, almost vertically, to a hillside. Captain Burkhart and his crewman, William Steinbrenner, perished. The aircraft burned.

The Civil Aeronautics Board conducted a detailed investigation to determine probable cause. Examination of the Smith propeller and its governing mechanism disclosed blade angles were set for en route cruise. There was no logical explanation why the propeller pitch was not set for takeoff/ climb requirements.

End of an Era—On June 30, 1949, the final scheduled pickup flights were made, Pittsburgh to Jamestown, New York, and return. The very last pickup station before reaching home base was Natrona Heights where the local Aero Club held a farewell ceremony; a decade earlier that same air-minded group had provided funds to purchase ground equipment so their small community would benefit from the new mode of air service forecast to become commonplace throughout the nation. Fittingly, Norm Rintoul and Vic Yesulates brought the unique venture to a close, flying a reliable, sturdy, but tired Stinson *Reliant* SR-10C. They were among the few who perfected equipment and procedures employed at the start, and Rintoul piloted the very first scheduled trip on May 10, 1939.

Seven Stinson aircraft TO BE SOLD WITH OR WITHOUT EQUIPMENT. MAKE OFFER, were advertised in *Aviation Week* magazine by the successor airline, All American Airways, as the era closed.

At a time when transportation and communication systems were inadequate, the venture was a worthy undertaking. Novel and spectacular, it was a service that required few airports and no enormous investment of public or private funds. Delivery of mail and small packages was speeded with a level of reliability exceeding all expectations. Innovation and progressive development of pickup apparatus by All American's engineering staff, beyond the founding mission, contributed notably to the Great War effort.

In fulfilling the mail hauling contracts, over 11.5 million miles were flown; in the course of the activity about 30 AAA pilots made almost 630,000 delivery/pickups. Seven lives were lost, all in the latter years, after routes were familiar and the pickup procedure routine. Skimming mountain ridges and descending into valleys, mostly behind a single engine, through fog, rain, snow, ice, seen early on as the greatest danger, resulted in some crashes injuring several crews and damaged aircraft, but those hazards claimed none of the lives.

In the end, wise leadership, confronted by mounting evidence that aerial pickup routes had outlived their usefulness, moved, though reluctantly at first, to become a short-haul regional passenger airline. That successor airline, All American Airways, later became Allegheny Airlines; through continued growth, acquisitions and mergers, it is now one of the nation's major air carriers, USAir. •

REFERENCES

Materials on air pickup: articles, clippings, pamphlets, notes, photocopies, photographs were gathered over more than five decades. Sources include:
—All American Aviation, Inc.
• Annual Reports, 1942-49
• Air Pick-Up Hand Book
• AM 49er's Club (Newsletter) 1986-92
• The Pick-Up (Employee Publication) 1940-45
• The Triple A Story, 1938-46. Capt. Frank Petee
• Employees (oral or written communication): Capt. Clifford R. Barraclough, Raymond Garcia, John F. Graham, Clyde D. Hauger, Jr., Capt. Thomas T. Kincheloe, Ralph Monaco, Peter M. Opar, Capt. Lloyd M. Santmyer, Walter H. Setz, Capt. Harvey M. Thompson, Charles W. Wendt, and Capt. Junius M. West.
—Records of All American Aviation, Inc., Hagley Museum and Library, Wilmington, Delaware.
—A Headline History of Air Pick-Up 1939-46, Library of Congress, Washington, DC.
—Paper by James G. Ray, 1939, American Society of Engineers.
—Magazines: *Aero Digest,* 1930-31, 1934, 1938-45; *Air Facts,* 1943; *Air Progress,* 1963-64; *Air Transport,* 1945; *Aviation,* 1929, 1931, 1938-39, 1944-45; *Aviation News,* 1943-47; *Aviation Week,* 1945-49; *Business Week,* 1940; *Modern Transport,* 1941; *Popular Aviation,* 1939-41; *Scientific American,* 1928-29.
—Newspapers: Greensburg, Pa., D*ally Tribune;* Johnstown, Pa., *Tribune;* Martins Ferry-Bellaire, Ohio, *Times-Leader;* Morgantown, W. Va., *Dominion News;* Pittsburgh, Pa., *Press, Sun Telegraph;* Youngstown, Ohio, *Daily Vindicator.*
—Books: *Airlines of the United States,* R.E.G. Davis; *The Airway to Everywhere,* W. David Lewis & William F. Trimble: *The Aviation Year Book,* 1946; *Leviathan, The World's Greatest Ship,* Frank O. Braynard.
—Accident Information: Beech Aircraft Corp.; Civil Aeronautics Board.
—Other Contributors: Charles T. Hill, Robert H. Noorduyn, John Underwood, Norwin Public Library, Irwin, Pa.

ABOUT THE AUTHOR

At the same time he was a regular contributor of numerous model airplane construction articles to *Model Airplane News, Air Trails, Flying Aces* and other magazines, Earl Stahl was the All American Aviation messenger in his hometown, Johnstown, Pa. After World War II, over a period of more than 40 years, he was, successively, a wind tunnel model maker, operator of several large supersonic wind tunnels, and, finally, Chief of Operations Support at NACA/ NASA, Langley Research Center.